ITE204-COMPUTER ARCHITECTURE AND ORGANIZATION

MCQ

1. The average time required to reach a storage location in memory and obtain its contents
is called the

(A) seek time (B) turnaround time

(C) access time (D) transfer time

2. The idea of memory hierarchy is based
(A) on the property of locality of reference (B) on the heuristic 90-10 rule
(C) on the fact that references generally tend to cluster (D) all of the above

3. Write Through technique is used in which memory for updating the data
(A) Virtual memory (B) Main memory

(C) Auxiliary memory (D) Cache memory

4. what is the transfer rate for non random access memory?
a) Tn=Ta+(N/R) b) Tn=Ta-(N/R) c) Tn=Ta*(N/R)

d) none

5. Memory unit accessed by content is called
(A) Read only memory (B) Programmable Memory

(C) Virtual Memory (D) Associative Memory

6. In a fixed point binary division algorithm, if E is equal to zero, what updation is done in Qn and A registers
a) Qn=0, A=A+B, b) Qn=1,A=A-B
c) Qn=NULL, A=A d) Qn=NUL,A=0

7. How to calculate the total capacity of the internal memory?
a) Total memory= Number of words in memory * word length
b) Total memory= Number of words in memory / word length
c) Total memory= Number of words in memory - word length
d) number of words+ word length.

8. The performance of cache memory is frequently measured in terms of a quantity called
a) hit ratio b) miss ratio

c) average ratio d) ratio

9. The _____ that enables one to make a comparison of desired bit locations within a word for specific match and to do this for all words simultaneously .
a) Direct access b) indirect access

c) associative access d) random

11. In DMA transfers, the required signals and addresses are given by the
a) Processor
b) Device drivers

c) DMA controllers
d) The program itself

12. After the complition of the DMA transfer the processor is notified by
a) Acknowledge signal
b) Interrupt signal
c) WMFC
signal

13. The techinique whereby the DMA controller steals the access cycles of the processor to operate is called
a) Fast conning
b) Memory Con
c) Cycle stealing
d) Memory stealing

14. To overcome the conflict over the possession of the BUS we use _____
a) Optimizers
b) BUS arbitrators
c) Multiple BUS structure

15. Which one of these is characteristic of RAID 5?
a. Distributed parity
b. No Parity
c. All parity in a single disk
d. Double Parity

16. The Centralised BUS arbitration is similar to _____ interrupt circuit
a) Priority
b) Parallel
c) Single
d) Daisy chain

17. Which of the following raid levels provides maximum usable disk space?
a. RAID 1
b. RAID 0
c. RAID 5
d. RAID 6

18. An array of disks is more likely to fail compared to a single disk. How is it that RAID arrays still manage to provide more data protection compared to a single disk?
a. Using either mirroring or striping
b. Using either mirroring or parity
c. Using better quality disks
d. Using dedicated hardware

19. Which level of RAID refers to disk mirroring with block striping?
a) RAID level 1
b) RAID level 2
c) RAID level 0
d) RAID level 3

20. Which two RAID types use parity for data protection?
a. RAID 1
b. RAID 4
c. RAID 1+ 0
d. RAID 5

1. Consider the following sequence of micro–operations

MBR ← PC

MAR ←
X PC ←Y

Memory ←MBR

Which one of the following is a possible operation performed by this sequence?

(A) Instruction fetch (B) Operand fetch (C) Conditional branch (D) Initiation of interrupt service

2. The load instruction is mostly used to designate a transfer from memory to a processor register known as____.

A. Accumulator B. Instruction Register

C. Program counter D. Memory address Register

3. For computers based on three - address instruction formats, each address field can be used to specify which of the following:

S1: A memory operand
S2: A processor register

S3: An implied accumulator registers

(A) Either S1 or S2
(B) Either S2 or S3
(C) Only S2 and S3
(D) All of S1, S2 and S3

4. The addressing mode used in an instruction of the form ADD X Y, is _____.

A. Absolute B. indirect

C. index D. none of these

5. The effective address of the following instruction is , MUL 5(R1,R2)

a) 5+R1+R2
b) 5+(R1*R2)
c) 5+[R1]+[R2]
d) 5*([R1]+[R2])

6. When we use auto increment or auto decrement, which of the following is/are true
1) In both, the address is used to retrieve the operand and then the address gets altered.

2) In auto increment the operand is retrieved first and then the address altered.
3) Both of them can be used on general purpose registers as well as memory locations.

a) 1,2,3
b) 2
c) 1,3
d) 2,3

7. The load instruction is mostly used to designate a transfer from memory to a processor register known as____.

A. Accumulator B. Instruction Register

C. Program counter D. Memory address Register

8. Logic X-OR operation of (4ACO)H & (B53F)H results _____.

A. AACB B. 0000

C. FFFF D. ABCD

9. Generally Dynamic RAM is used as main memory in a computer system as it_____.

A. Consumes less power B. has higher speed

C. has lower cell density D. needs refreshing circuitry

10. If the main memory is of 8K bytes and the cache memory is of 2K words. It uses associative mapping. Then each word of cache memory shall be_____.

A. 11 bits B. 21 bits

C. 16 bits D. 20 bits

11. A system uses 3 page frames for storing process pages in main memory. It uses the Least Recently Used (LRU) page replacement policy. Assume that all the page frames are initially empty. What is the total number of page faults that will occur while processing the page reference string given below?

4, 7, 6, 1, 7, 6, 1, 2, 7, 2

A. 4 B. 6 C. 2 D. 7

12. A computer has a 256 KByte, 4-way set associative, write back data cache with block size of 32 Bytes. The processor sends 32 bit addresses to the cache controller.Each cache tag directory entry contains, in addition to address tag, 2 valid bits, 1 modified bit and 1 replacement bit.The size of the cache tag directory is

    (A) 160 Kbits (B) 136 Kbits (C) 40 Kbits (D) 32 Kbits

13. Cache memory works on the principle of_____.

A. Locality of data . Locality of memory

C. Locality of reference D. Locality of reference & memory

14. When process requests for a DMA transfer ,
    a) Then the process is temporarily suspended
    b) The process continues execution
    c) Another process gets executed
    d) Both a and c
15. In DMA transfers, the required signals and addresses are given by the
    a) Processor
    b) Device drivers
    c) DMA controllers
    d) The program itself
16. From amongst the following given scenarios determine the right one to justify interrupt mode of data transfer

    i) Bulk transfer of several kilo-byte
    ii) Moderately large data transfer of more than 1kb
    iii) Short events like mouse action
    iv) Keyboard inputs
    a) i and ii
    b) ii
    c) i,ii and iv
    d) iv
    17. Which one of the following is true with regard to a CPU having a single interrupt request line and single interrupt grant line…??

    i) Neither vectored nor multiple interrupting devices is possible.
    ii) Vectored interrupts is not possible but multiple interrupting devices is possible.
    iii) Vectored interrupts is possible and multiple interrupting devices is not possible.
    iv) Both vectored and multiple interrupting devices is possible.
    a) iii
    b) i,iv
    c) ii,iii
    d) iii,iv
18. What is the unique characteristic of RAID 6 (Choose one)?
    a. Distributed Parity
    b. Striping
    c. Two independent distributed parity
    d. Mirroring
19. Which of the following combinations can support RAID 05?
    a. 2 sets with 3 disks each

b. 3 sets with 2 disks each
c. 4 sets with 3 disks each
d. 4 sets with 1 disk each

20. The minimum duration of the active low interrupt pulse for being sensed without being lost must be
    a) greater than one machine cycle
    b) equal to one machine cycle
    c) greater than 2 machine cycles
    d) equal to 2 machine cycles
21. If two interrupts, of higher priority and lower priority occur simultaneously, then the service provided is for
    a) interrupt of lower priority
    b) interrupt of higher priority
    c) both the interrupts
    d) none of the mentioned
22. The data-in register of I/O port is
    a) read by host to get input
    b) read by controller to get input
    c) written by host to send output
    d) written by host to start a command
23. Which one of the following connects high-speed high-bandwidth device to memory subsystem and CPU.
    a) expansion bus
    b) PCI bus
    c) SCSI bus
    d) none of the mentioned

24. _____ register keeps track of the instructions stored in program stored in memory.

(A)AR (Address Register) (B) XR (Index Register) (C) PC (Program Counter)

(D) AC (Accumulator)

25. A group of bits that tell the computer to perform a specific operation is known as

(A) Instruction code (B) Micro-operation (C) Accumulator (D) Register

26.In a computer architecture a BUS is _____

A. A collection of computers
B. A collection of wires
C. A collection of shared communication wires
D. A software to transport data

27.A RAM chip has a capacity of 1024 words of 8 bits each (1K×8). The number of 2× 4 decoders with enable line needed to construct a 16K×16 RAM from1K×8 RAM is

A. 4
B. 5
C. 6
D. 7

28.What is the minimum number of NAND gates required to implement a 2-input EXCLUSIVE-OR function without using any other logic gate?

A. 3
B. 4
C. 5
D. 6

29.What are the states of the Auxiliary Carry (AC) and Carry Flag (CF) after executing the following 8085 program? MVI H, 5DH; MIV L, 6BH; MOV A, H; ADD L

A. AC=0 and CY=0

B. AC=1 and CY=1
C. AC=1 and CY=0
D. AC=0 and CY=1

30. Which of the following statement is false?

A. Virtual memory implements the translation of a program's address space into physical memory address space
B. Virtual memory allows each program to exceed the size of the primary memory
C. Virtual memory increases the degree of multiprogramming
D. Virtual memory reduces the context switching overhead

31. How many 8-bit characters can be transmitted per second over a 9600 baud serial communication link using asynchronous mode of transmission with one start bit, eight data bits, two stop bits, and one parity bit?

A. 600
B. 800
C. 876
D. 1200

Course : Computer Architecture

Addressing modes

1. Registers R1 and R2 of a computer contain the decimal values 1200 and 4600 respectively. What is the effective address of the memory operand for

the following instructions

(i) Load 20(R1), R5

(ii) Subtract R1, R5

(A) 1220 and 5830 (B) 5830 and 4599

(C) 1200 and 4599 (D) 1220 and 1200

2. Which amongst the following refers to Absolute addressing mode

(A) move R1, R2 (B) move LOC1, LOC2

(C) move LOC1, R2 (D) move LOC2, R1

3. Computers use addressing mode techniques for _____.

(A) Giving programming versatility to the user by providing facilities as pointers

to memory counters for loop control

(B) To reduce no. of bits in the field of instruction

(C) Specifying rules for modifying or interpreting address field of the instruction

(D) All the above

4. Which of the following address modes calculate the effective address as address part of the instruction) + (content of CPU register)

(A) Direct Address Mode (B) Indirect Address mode.

(C) Relative address Mode. (D) Indexed address Mode.

5. A Program Counter contains a number 825 and address part of the instruction contains the number 24. The effective address in the relative address mode, when an instruction is read from the memory is

(A) 849. (B) 850.

(C) 801. (D) 802.

6. In which addressing mode the operand is given explicitly in the instruction

(A) Absolute. (B) Immediate.

(C) Indirect. (D) Direct.

7. Content of the program counter is added to the address part of the instruction in order to obtain the effective address is called.

(A) relative address mode. (B) index addressing mode.

(C) register mode. (D) implied mode.

8. Word 20 contains
40

Word 30 contains

50 Word 40

contains 60 Word

50 contains 70

Which of the following instructions does not, load 60 into the Accumulator

(A) Load immediate 60
(B) Load direct 30
(C) Load indirect 20
(D) both (A) & (C)

Von-Neumann architecture

9. Which of the following is not a part of instruction cycle?

(A) Fetch phase (B) Decode phase

(C) Wait Phase (D) Execute phase

10. After fetching the instruction from the memory, the binary code of the instruction goes to

(A) Program counter. (B) Instruction registers.

(C) Accumulator. (D) Instruction pointer.

11. What is the content of Stack Pointer (SP)?

(A) Address of the current instruction
(B)Address of the next instruction

(C) Address of the top element of the stack
(D) Size of the stack.

12. The address to the next instruction lies in

(A) Program Counter (B) Instruction Register

(C) Memory Buffer Register (D) Accumulator register

13. _____ register keeps track of the instructions stored in program stored in memory.

(A) AR (Address Register) (B) XR (Index Register)

(C) PC (Program Counter) (D) AC (Accumulator)

14. When an instruction is read from the memory, it is called

(A) Memory Read cycle (B) Fetch cycle

(C) Instruction cycle (D) Memory write cycle

15. What is the content of Stack Pointer (SP)?

(A) Address of the current instruction
(B)Address of the next instruction
(C) Address of the top element of the stack
(D) Size of the stack.

Instruction formats

16. The following segment of instructions belong to ADD R1

```
MOV  R1, R2
MUL  R3
OUT  03H
```

(A) General Register Organization CPU
(B) Accumulator Type CPU
(C) Stack Type CPU
(D) information not sufficient to decide

17. A Stack-organized Computer uses instruction of

(A) Indirect addressing (B) Two-addressing

(C) Zero addressing (D) Index addressing

18. A group of bits that tell the computer to perform a specific operation is known as

(A) Instruction code (B) Micro-operation

(C) Accumulator (D) Register

19. MRI indicates

(A) Memory Reference Information.

(B) Memory Reference Instruction.

(C) Memory Registers Instruction.

(D) Memory Register information

20. Zero address instruction format is used for
(A) RISC architecture.
(B) CISC architecture.
(C) Von-Neuman architecture.
(D) Stack-organized architecture.

Instruction classifications

21. The load instruction is mostly used to designate a transfer from memory to a processor register known as

(A) Accumulator (B) Instruction Register

(C) Program counter (D) Memory address Register

22. The instructions which copy information from one location to another either in the processor's internal register set or in the external main memory are called

(A) Data transfer instructions. (B) Program control instructions.

(C) Input-output instructions. (D) Logical instructions.

Main memory

23. Generally Dynamic RAM is used as main memory in a computer system as it

(A) Consumes less power (B) has higher speed

(B) has lower cell density (D) needs refreshing circuitary

24. Dynamic RAM consumes _____ Power and _____ then the Static RAM. (A)more, faster (B) more, slower

(A) less, slower (D) less, faster

25. Which of the memory holds the information when the Power Supply is switched off?

(A)Static RAM (B) Dynamic RAM

(C) EEROM (D) None of the above

26. Which of the memory holds the information when the Power Supply is switched off?
    A. Static RAM
    B. Dynamic RAM
    C. EEROM
    D. None of the above
27. Information is written to the ____ chips by the manufacturer and this information cannot be changed.
    A. SROM
    B. Shadow RAM
    C. DRAM
    D. ROM
28. An ____ chip is a special ROM chip that the manufacturer can reprogram by using a speacil programming device that uses ultraviolet light.
    A. DDRAM
    B. ROM
    C. EPROM
    D. VRAM
29. You can update the software on the ____ by running a speacil software setup program provided by the manufacturer.
    A. EEPROM
    B. POST
    C. EPROM
    D. BIOS
30. What characteristic of RAM memory makes it not suitable for permanent storage?

(A) too slow (B) unreliable

(C) it is volatile (D) too bulky

31. The access method used for magnetic tape is_____
    a) Direct b) Random c) Sequential d) None of the above

Cache memory

32. Cache memory sits between

(A) CPU and RAM (B) RAM and ROM

(D) CPU and Hard Disk (D) None of these

33. The idea of cache memory is based
    (A) on the property of locality of reference

(B) on the heuristic 90-10 rule
(C) on the fact that references generally tend to cluster
(D) all of the above

34. Write Through technique is used in which memory for updating the data

(A) Virtual memory
(C) Main memory
(B) Auxiliary memory
(D) Cache memory

35. What is called the configuration where when the CPU stores a data on the memory cache this data isn't immediately written to the RAM?

A. Write Back
B. Write Through
C. Write Out
D. Write In

E. None of the above

36. When the CPU needs a certain data and it is not loaded in the memory cache and the CPU needs to load this data directly from RAM we say that there was a:
    A. Transmission delay
    B. Rotational delay
    C. Cache hit
    D. Cache miss
    E. None of the above
37. Which cache mapping function does not require a replacement algorithm?
    A. Direct mapping
    B. Set associative mapping
    C. Fully associative mapping
38. Cache memory works on the principle of
    (A) Locality of data.
    (B) Locality of reference
    (C) Locality of memory
    (C) Locality of reference & memory
39. Which of the following memories has the shortest access times?
    A. Cache memory
    B. Magnetic bubble memory
    C. Magnetic core memory
    D. RAM
40. Which is the fastest cache mapping function?
    A. Direct mapping
    B. Set associative mapping
    C. Fully associative mapping
41. The performance of cache memory is frequently measured in terms of a quantity called

    a. Miss ratio. (B) Hit ratio.

    b. Latency ratio. (D) Read ratio.

42. The method for updating the main memory as soon as a word is removed from the Cache is called
    A. Write-through
    B. write-back
    C. protected write
    D. cache-write
43. How many different addresses are required by the memory that contain 16K words?

    (A)16,380 (B) 16,382

    (C)16,384 (D)

16,386

44. Which cache write mechanism allows an updated memory location in the cache to remain out of date in memory until the block containing the updated memory location is replaced in the cache?
    A. Write through
    B. Write back
    C. Both
    D. Neither

Virtual memory

45. In a virtual memory system, the addresses used by the programmer belongs to

    (A) memory space. (C) physical addresses.

    (B) address space. (D) main memory address.

46. A page fault

    (A) Occurs when there is an error in a specific page.
    (B) Occurs when a program accesses a page of main memory.
    (C) Occurs when a program accesses a page not currently in main memory.
    (D) Occurs when a program accesses a page belonging to another program.

I/O devices; I/O fundamentals, DMA

47. Which disk is one of the important I/O devices and its most commonly used as permanent storage devices in any processor:
    (A) Hard disk
    (B) Optical disk
    (C) Magneto disk
    (D) Magneto Optical disk
48. A monitor consists of :
    (A) ARU
    (B) BRT
    (C) CRT
    (D) ARU
49. LCD stands for:
    (A) Liquid crystal display
    (B) Liquid catalog display
    (C) Liquid crystal data
    (D) Liquid code display

50. Printer is a:
(A) Hardcopy
(B) Softcopy
(C) Both a & b
(D) None of these

51. _____interface is an entity that controls data transfer from external device, main memory and or CPU registers:

    (A) I/O interface
    (B) CPU interface
    (C) Input interface
    (D) Output interface
52. To resolve problems of I/O devices there is a special hardware component between CPU and_____ to supervise and synchronize all input output transfers:
    (A) Software
    (B) Hardware
    (C) Peripheral
    (D) None of these
53. I/O modules are designed with aims to:
    (A) Achieve device independence
    (B) Handle errors
    (C) Speed up transfer of data
    (D) Handle deadlocks
    (E) Enable multi-user systems to use dedicated device
    (F) All of these
54. In devices 2 status reporting signals are:
    (A) BUSY
    (B) READY
    (C) Both a & b
    (D) None of these
55. _____is a single address space for storing both memory and I/O devices:
    (A) Memory-mapped I/O
    (B) Isolated I/O
    (C) Separate I/O
    (D) Optimum I/O
56. Following are the disadvantages of memory-mapped I/O are:
    (A) Valuable memory address space used up
    (B) I/O module register treated as memory addresses
    (C) Same machine intersection used to access both memory and I/O device
    (D) All of these

57. Two ways in which computer buses can communicate with memory in case of I/O devices by using:
    (A) Separate buses for memory and I/O device
    (B) Common bus for memory and I/O device
    (C) both a & b
    (D) none of these
58. There are 2 ways in which addressing can be done in memory and I/O device:
    (A) Isolated I/O
    (B) Memory-mapped I/O
    (C) Both a & b
    (D) None of these
59. I/O module must recognize a_____ address for each peripheral it controls:
    (A) Long
    (B) Same
    (C) Unique
    (D) Bigger
60. Each interaction b/w CPU and I/O module involves:
    (A) Bus arbitration
    (B) Bus revolution
    (C) Data bus
    (D) Control signals
61. Which are 4 types of commands received by an interface:
    (A) Control, status, data output, data input
    (B) Only data input
    (C) Control, flag, data output, address arbitration
    (D) Data input, data output, status bit, decoder
62. 2 control lines in I/O interface is:
    (A) RD, WR
    (B) RD,DATA
    (C) WR, DATA
    (D) RD, MEMORY
63. If CPU and I/O interface share a common bus than transfer of data b/w 2 units is said to be:
    (A) Synchronous
    (B) Asynchronous
    (C) Clock dependent

(D) Decoder independent

64. _____is a single control line that informs destination unit that a valid is available on the bus:
    (E) Strobe
    (F) Handshaking
    (G) Synchronous
    (H) Asynchronous
65. What is disadvantage of strobe scheme:
    (E) No surety that destination received data before source removes it
    (F) Destination unit transfer without knowing whether source placed data on data bus
    (G) Can't said
    (H) Both a & b
66. In_____ technique has 1 or more control signal for acknowledgement that is used for intimation:
    (A) Handshaking
    (B) Strobe
    (C) Both a & b
    (D) None of these
67. Modes of transfer b/w computer and I/O device are:
    (A) Programmed I/O
    (B) Interrupt-initiated I/O
    (C) DMA
    (D) All of these
68. _____operations are the results of I/O operations that are written in the computer program:
    (A) Programmed I/O
    (B) DMA
    (C) Handshaking
    (D) Strobe
69. _____is a dedicated processor that combines interface unit and DMA as one unit:
    (A) Input-Output Processor
    (B) Only input processor
    (C) Only output processor
    (D) None of these

70. _____is a special purpose dedicated processor that is designed specially designed for data transfer in network:
    (A) Data Processor
    (B) Data Communication Processor
    (C) DMA Processor
    (D) Interrupt Processor
71. _____processor has to check continuously till device becomes ready for transferring the data:
    (A) Interrupt-initiated I/O
    (B) DMA
    (C) IOP
    (D) DCP
72. Interrupt-driven I/O data transfer technique is based on_____ concept:
    (A) On demand processing
    (B) Off demand processing
    (C) Both a & b
    (D) None of these
73. Which technique helps processor to run a program concurrently with I/O operations:
    (A) Interrupt driven I/O
    (B) DMA
    (C) IOP
    (D) DCP

Interrupts

74. PSW is saved in stack when there is a
    (A) Interrupt recognized
    (B) Execution of RST instruction
    (C) Execution of CALL instruction
    (D) All of these
75. When CPU is executing a Program that is part of the Operating System, it is said to be in

    (A) Interrupt mode (B) System mode

    (C) Half mode (D) Simplex mode

76. What is a trap?

(A) External interrupt (B) Internal Interrupt.

(C) Software Interrupt (D) Error

77. 3 types of exceptions are:
    (A) Interrupts
    (B) Traps
    (C) System calls
    (D) All of these
78. Which exception is also called software interrupt:
    (A) Interrupt
    (B) System calls
    (C) Traps
    (D) All of these
79. User programs interact with I/O devices through:
    (A) Operating system
    (B) Hardware
    (C) Cpu
    (D) Microprocessor
80. Which table handle store address of interrupt handling subroutine:
    (A) Interrupt vector table
    (B) Vector table
    (C) Symbol link table
    (D) None of these
81. Which technique is used that identifies the highest priority resource by means of software:
    (A) Daisy chaining
    (B) Polling
    (C) Priority
    (D) Chaining
82. _____interrupt establishes a priority over the various sources to determine which request should be entertained first:

(A) Priority interrupt
(B) Polling
(C) Daisy chaining
(D) None of these

83. _____method is used to establish priority by serially connecting all devices that request an interrupt:
(A) Polling
(B) Daisy chaining
(C) Priority
(D) None of these

84. In daisy chaining device 0 will pass signal only if it has:
(A) Interrupt request
(B) No interrupt request
(C) Both a & b
(D) None of these

85. VAD stands for:
(A) Vector address
(B) Symbol address
(C) Link address
(D) None of these

86. _____interrupt method uses a register whose bits are set separately by interrupt signal for each device:
(A) Parallel priority interrupt
(B) Serial priority interrupt
(C) Both a & b
(D) None of these

87. _____register is used whose purpose is to control status of each interrupt request in parallel priority interrupt:
(A) Mass
(B) Mark
(C) Make
(D) Mask

88. The ANDed output of bits of interrupt register and mask register are set as input of:
(A) Priority decoder
(B) Priority encoder
(C) Priority decoder
(D) Multiplexer

89. Which 2 output bits of priority encoder are the part of vector address for each interrupt source in parallel priority interrupt:
    (A) A0 and A1
    (B) A0 and A2
    (C) A0 and A3
    (D) A1 and A2
90. What is the purpose of A0 and A1 output bits of priority encoder in parallel priority:
    (A) Tell data bus which device is to entertained and stored in VAD
    (B) Tell subroutine which device is to entertained and stored in VAD
    (C) Tell subroutine which device is to entertained and stored in SAD
    (D) Tell program which device is to entertained and stored in VAD
91. When CPU invokes a subroutine it performs following functions:
    (A) Pushes updated PC content(return address) on stack
    (B) Loads PC with starting address of subroutine
    (C) Loads PC with starting address of ALU
    (D) Both a & b
92. Which two RAID types use parity for data protection?
    a. RAID 1
    b. RAID 4
    c. RAID 1+ 0
    d. RAID 5
93. 3. Which one of these is characteristic of RAID 5?
    a. Distributed parity
    b. No Parity
    c. All parity in a single disk
    d. Double Parity
94. 4. What is the unique characteristic of RAID 6 (Choose one)?
    a. Distributed Parity
    b. Striping
    c. Two independent distributed parity
    d. Mirroring
95. 5. Which of the following combinations can support RAID 05?
    a. 2 sets with 3 disks each
    b. 3 sets with 2 disks each

c. 4 sets with 3 disks each
d. 4 sets with 1 disk each

96. 6. What is the minimum number of disks required for RAID1?
a. 1
b. 2
c. 4
d. 5

97. Which of the following raid levels provides maximum usable disk space?
a. RAID 1
b. RAID 0
c. RAID 5
d. RAID 6

98. An array of disks is more likely to fail compared to a single disk. How is it that RAID arrays still manage to provide more data protection compared to a single disk?
a. Using either mirroring or striping
b. Using either mirroring or parity
c. Using better quality disks
d. Using dedicated hardware

ITE302 - Database Systems / Comprehensive Exam Quesions

1. Assume that a table R with 1000 records is to be joined with another table S with 10000 records. What is the maximum number of records that would result in if we join R with S and the equi-join attribute of S is the primary key?

(a) 1,000	(b) 10,000
(c) 1,00,00,000	(d) 11,000

2. Consider a schedule S1 given below;

R1(A); W1(A); R2(B); R2(A); R1(B); W2(A+B); W1(B); where R1 and W1 are read and write operations of transaction T1 and R2 and W2 are read and write operations of transaction T2.

Which of the following is correct regarding schedule S1?

(a) S1 is a serializable schedule	(b) A deadlock will occur if 2PL is used
(c) S1 is a conflict serializable schedule	(d) S1 is a view serializable schedule

3. Consider a relation R (A, B). If A B is a trivial functional dependency and A is the super key for R, then what is the maximum normal form R can be in?

(a) 3NF	(b) 2NF
(c) BCNF	(d) 1NF

4. Which of the following is a disadvantage of file processing system?

(I) Efficiency of high level programming,

(II) Data Isolation

(III) Integrity issues

(IV) Storing of records as files

(a) I only	(b) III only
(c) II and III only	(d) II and IV only

5. The data manipulation language used in SQL is a,

(I) Procedural DML

(II) Non-Procedural

DML (III) Modification

DML (IV) Declarative

DML

(a) I and II only	(b) III and IV only
(c) II and IV only	(d) I and IV only

6. Which of the following is not a function of a DBA?

(a) Table creation	(b) Index creation
(c) User creation	(d) Application creation

7. Assume a relation R with keys X, Y and Z, where X, Y, and Z are sets of one or more attributes. Also assume that Y is a subset or equal to X and Z is a subset of X and Y. Which of the following is true for this case?

(a) X and Y are candidate keys of R	(b) Y and Z are the candidate keys of R
(c) X is the only candidate key of R	(d) Z is the only candidate key of R

8. Assume relations R and S with the schemas R (A, B, C) and S (B, D). Which of the following is equivalent to r ⋈ s?

(a) □*r.B = s.B* (*r* ⋈ *s*)	(b) □*r.A, r.B, r.C, s.D* (□*r.B = s.B* (*r* x *s*))
(c) □*r.A, r.B, s.B, r.C, s.D* (□*r.B = s.B* (*r* x *s*))	(d) □*r.A, r.B, s.B, r.C, s.D* (□*r.B = s.B* (*r* ⋈ *s*))

9. Consider a relational table with the schema R (A, B, C). Assume that the cardinality of attribute A is 10, B is 20, and C is 5. What is the maximum number of records R can have without duplicate?

(a) 35	(b) 100
(c) 1000	(d) 200

10. Which of the following operator in SQL would produce the following result if applied between two relations Employee and Department?

Eno	EName	DeptNo	DName
111	Kumar	100	Sales
222	Steve	200	Finance
Null	Null	300	Admn
244	Meera	400	Mktg

(a) Outer Join	(b) Natural Join

(c) Cartesian Join	(d) Projection Join

11. Consider the schedules given below. All of them involving at least three transactions. The read operation on a data item x is represented as ri(x) and a write operation is represented as wi(x) where i is the transaction number. Which one of them is conflict serializable?

(a) r2(x), r1(x), w2(x), r3(x), w1(x)	(b) r2(x), w2(x), r3(x), r1(x), w1(x)
(c) r1(x), r2(x), w1(x), r3(x), w2(x)	(d) r3(x), r2(x), r1(x), w2(x), w1(x)

12. Consider a disk with following specification; sector size - 512 bytes, tracks per surface - 2000, sectors per track - 60, double-sided platters - 4, and average seek time - 20 msec. For a 5400 rpm hard disk for one revolution, if a single track of data can be transferred, then what is the transfer rate?

(a) 2727 Kbytes/second	(b) 2020 Kbytes/second
(c) 5400 Kbytes/second	(d) 2048 Kbytes/second

13. Assume that a table CUSTOMER has 10000 records. If the block size 1024 bytes and the record size is 80 bytes, how many records can be stored in each block to achieve maximum performance and how many blocks are required to store the entire table?

(a) 12, 834	(b) 13, 833
(c) 24, 834	(d) 23, 833

14. Consider a relation R (A, B, C, D, E) with set of functional dependencies F = {A□BC, CD□E, B□D, E□A}. Which of the following is one of the candidate keys of R?

(a) ABC	(b) B

(c) E	(d) ED

15. Given R = ABCDEFGH and set of functional dependencies F = {BH$\square$C, BH$\square$F, E$\square$F, A$\square$D, F$\square$A, BH$\square$E, C$\square$E, F$\square$D}, which of the following is redundant set of functional dependencies?

(a) BH$\square$C, F$\square$D, F$\square$A	(b) BH$\square$C, F$\square$D, BH$\square$E
(c) BH$\square$E, A$\square$D, F$\square$D	(d) BH$\square$C, A$\square$D, BH$\square$E

16. Assume a relation ACCOUNT (acno, balance, type, branch, last_accessed) with 1 million records. If a SQL query "SELECT balance FROM account WHERE balance>5000" would produce 800000 records, which one of the following is the optimized version of relational algebra expressions that is equivalent to the given SQL query?

(a) σ*balance* (Π*balance*>5000 (*account*))	(b) σ*balance*>5000 (Π*balance* (*account*))
(c) Π*balance* (σ*balance*<5000 (*account*))	(d) Π*balance*>5000 (σ*balance* (*account*))

17. Consider the ER diagram given below;

If *depositor* is a one-to-many relationship from account to customer, then this ER diagram can be reduced to which of the following relational schemas?

(a) Customer (customer-name, customer-street, customer-city, account-number) Account(account-number, balance)	(b) Customer (customer-name, customer-street, customer-city, account-number) Account(account-number, balance, customer-name) Depositor (customer-name, account-number)
(c) Customer (customer-name, customer-street, customer-city) Account(account-number, balance) Depositor (customer-name, account-number)	(d) Customer (customer-name, customer-street, customer-city) Account(account-number, balance, customer-name)

18. The conjunctive selection operation $\sigma\theta 1 \wedge \theta 2\ (E)$ is equivalent to _____

(a) $\sigma\theta 1(E)$ U $\sigma\theta 2\ (E)$	(b) $\sigma\theta 1(E) \cap \sigma\theta 2\ (E)$
(c) $\sigma\theta 1(\sigma\theta 2(E))$	(d) $\pi\theta 1(E)$ U $\pi\theta 2\ (E)$

19. Assume a table Employee (Eno, Ename, Dept, Salary, Phone) with 10000 records. Also assume that Employee has a non-clustering index on Salary, clustering indexes on Dept and Phone. If there is a SQL query "SELECT Eno FROM Employee WHERE Salary/12 = 10000", which of the following will happen during query execution?

(a) Query will use index of Salary	(b) Query will use index of Dept
(c) Query will use index of Phone	(d) Query will not use index

20. Which of the following concurrency control mechanisms insist unlocking of all read and write locks of transactions at the end of commit?

(a) Strict 2 Phase Locking	(b) Simple 2 Phase Locking

(c) Timestamp ordering	(d) Rigorous 2 Phase Locking

DBMS MCQs

2. What are the desirable properties of a transaction? A) Atomicity, consistency, isolation, deadlock

B) Atomicity, consistency, isolation, durability C) Atomicity, concurrency, isolation, durability

3. If a transaction T has obtained an exclusive lock on item Q, then T can A) read Q B) write Q C) both read and write Q D) write Q but not read Q

4. If two relations R and S are joined, then the non matching tuples of both R and S are ignored in

A) left outer join B) right outer join C) full outer join D) inner join

5. The FD A → B , DB→ C implies
A) DA→ C B) A → C C) B → A D) DB → A

3. The process of analyzing the given relation schemas based on their functional dependencies is known as
A) Dependency B) normalization C) both a and b D)none

4. Block-interleaved distributed parity is RAID level
(A) 2. (B) 3 (C) 4. (D) 5.

7. Maximum height of a B+ tree of order m with n key values is

A) $Log_m(n)$ B) (m+n)/2 C) $Log_{m/2}(m+n)$ D) None of these

8. What operator performs pattern matching?

A) LIKE B) NULL C) NOT NULL D) IS NULL

9. Manager's salary details are hidden from the employee. This is called as

(D) Conceptual level data hiding
(E)Physical level data hiding
(F)External level data hiding
(G) Local level data hiding

4. Which of the following statements is false?
   Any relation with two attributes is in BCNF.
   A relation in which every key has only one attribute is in 2NF.
   A prime attribute can be transitively dependent on a key in 3NF relation.
   A prime attribute can be transitively dependent on a key in BCNF relation.
5. A clustering index is created when _____.
   primary key is declared and ordered
   no key ordered
   foreign key ordered
   there is no key and no order
6. Which of the following is not a consequence of non-normalized

database? A) Update Anomaly B) Insertion Anomaly C) Redundancy D)

Lost update problem

7. An ER Model includes

I. An ER diagram portraying entity types.

II. Attributes for each entity type

III. Relationships among entity types.

IV. Semantic integrity constraints that reflects the business rules about data not captured in the ER diagram.

(A) I, II, III & IV (B) I & IV

(C) I, II & IV (D) I & III

5. If the closure of an attribute set is the entire relation then the attribute set

is a A) Super key B) candidate key C) primary key D) not a key

6. Which of the following are the advantages of DBMS?
A) Redundancy is controlled B) unauthorized access is restricted

C) enforce integrity constraints D) all of these

2 Division operation is ideally suited to handle queries of the type :
a) customers who have no account in any of the branches in Delhi.
b) customers who have an account at all branches in Delhi.
c) customers who have an account in atleast one branch in Delhi.
d) customers who have only joint account in any one branch in Delhi
3 Which of the following is true ?
I. Implementation of self-join is possible in SQL with table alias.

II. Outer-join operation is basic operation in relational algebra.

III. Natural join and outer join operations are equivalent.

b) I and II are correct. (B) II and III are correct.
e) Only III is correct. (D) Only I is correct.
9. What kind of mechanism is to be taken into account for converting a weak entity

set into strong entity set in entity-relationship diagram ?

Generalization (B) Aggregation

(C) Specialization (D) Adding suitable attributes

19. The best normal form of relation scheme R (A, B, C, D) along with the set of functional dependencies F = {AB →C, AB → D, C → A, D → B} is

(A) Boyce-Codd Normal form (B) Third Normal form

Second Normal form (D) First Normal form

12. Identify the minimal key for relational scheme R(A, B, C, D, E) with functional dependencies F = {A → B, B → C, AC → D}

(A) A (B) AE (C) BE (D) CE

14. _____ users work on canned transactions
a. sophisticated b. naïve c. DBA d. casual

15. If a hospital has to store the description of each visit of a patient according to date what attribute you will use in the patient entity type?
a. Composite b. complex c. multi valued d. weak entity

16. Passing the request from one schema to another in DBMS architecture is called as _____

a. Mapping b. Communication c. Relational d. network

17. _____gives the concepts to describe the structure of the database.
a. Data Model b. Relational model c. Domain model d. Schema model

5. _____is the description of the database

a. schema b. schema construct c. schema evolution d. snapshot

18. The advantage of DBMS over file systems is
a. redundancy b. data dependence c. multiple user d. single user

19. Changing the conceptual schema without having to change the external schema is called as _____

a) physical data independence b) logical data independence c) data model d) relational model

20. _____is the first schema to be designed when you are developing a DBMS
a) conceptual b) relational c) physical d) hierarchical

20. Creating a B Tree index for your database has to specify in _____. a. DDL b. SDL c. VDL d. TCL

21. DBMS cannot be classified on
a) data model b) Number of sites c) Number of users d) Concurrency level

21. _____attribute is used when the values are not divisible
a) Simple b) derived c) multiple d) descriptive

(E) Which of this is not a implementation data model
a. a. UML b. Relational c. Hierarchical d. network

(F) The relationship that exists within the same entity type is called as _____ relationship.
a. Identifying b. recursive c. logical d. physical

e) Adding a new column to a table comes in a. a. DDL b. SDL c. VDL d. TCL

f) To change the access path programs are categorized under _____ data independence.
a. Physical b. logical c. internal d. external

16. The data type describing the types of values that can appear in each column is called _____.

b.
a. Domain Tuple c. Attribute d. Relation

7. The set of all attributes of a relation is called default _____.
a. Primary Key b. Super Key c. Foreign Key d. Alternate key

b Minimal super key of a relation is called _____.

a. Primary Key b. Super Key c. Foreign Key d. Alternate key

19. R has n tuples and S has m tuples, then the Cartesian product of R and S will produce _____ tuples.

a. n+m b. n*m c. n / m d. n-m

20. _____ constraint is specified between two relations and is used to maintain the consistency among tuples of the two relations

a. primary b. check c. referential d. secondary

b) In Relational model, the table is called a _____.

a. Domain b. Tuple c. Attribute d. Relation

22. The combination of selection and Cartesian product operators is _____ operator

a. Division b. Set difference c. Join d. Union

e) The attributes in foreign key and primary key have the same _____.

a. Number of tuples b. Number of attributes c. Domain d. Symbol

24. _____ join requires that the two join attributes have the same name in both relations.

a. Theta Join b. Equi join c. Self join d. Natural join

25. The expected size of the join result divided by the maximum size is called _____.

a. Join cardinality b. join selectivity c. join count d. number of rows

ITE303- Data Communication and Computer Networks

6. Error correction and error detection happens in _____ layer.

Physical layer
Data link layer
Session layer
Application layer

7. _____ uses reliable message stream.
- Connection oriented service
- Connection less service
- UDP
- RS232

8. X.25 Networks is _____
- Packet switched
- Circuit switched
- Connection less service
- UDP

9. ATM uses a ____ packet size
- Fixed 53byte
- Randomized
- Taken care by TCP fragmentation
- 48byte

10. Switch works in ____ layer of OSI model.
- 2,3
- 3
- 2
- 1,2,3,4

11. Elements in network core:

(A) Routers
(B) Applications
(C) Hosts
(D) Servers

2 Each router must implement some queuing discipline. Queuing allocates _____
(C) Bandwidth
(D) Protocol
(E) Connectivity parameters
(F) QoS levels

3 In _____ mechanism arriving packets get dropped when queue is full regardless of flow or importance
(C) Drop tail
(D) FIFO
(E) Leaky bucket
(F) STF

4 Mapping from ASCII strings to binary network address is done by _____
(C) DNS
(D) DHCP
(E) IMAP
(F) SNMP

5 Network Interface card contains _____
(C) MAC address
(D) IP address
(E) Port no.
(F) Seq no.

6 In datagram network packets typically routed using destination ___
(C) Host id.
(D) IP address
(E) Port no
(F) Mac address

7 In dynamic routing mechanism the route changes in response to _____
(C) link cost changes
(D) time
(E) fragmentation size
(F) sequence order

8. In _____ least cost paths from one node is computed
- Dijkstra algo
- Fredmen algo
- Schezen algo
- Domen algo

9. A backbone network that connects LANs in several buildings is sometimes referred to as a
- campus-wide network.
- Internet
- Extranet
- internet

10. _____ operate at the network layer, connecting two or more network segments that use the same or different data link layer protocols, but the same network layer protocol.
- Routers
- Firewall
- Bridges
- Gateway

11. The _____connects different backbone networks together
- core layer
- access layer
- distributed layer
- link layer

12. TCP manages a point-to-point and _____ connection for an application between two computers
- full-duplex
- simple
- half duplex
- multi
- point

13. A virtual circuit connection consists of two endpoints. Each endpoint is a pair of integers
- host, port
- socket, port
- address, port

seqno, port

4 UDP has a smaller overhead then TCP, especially when the total size of the messages is

a) Small
b) Large
c) Segmented
d) Sequenced

5 Reliability in network is directly proportional to ____

a) Availability
b) Failure
c) Speed
d) Routing

1. How switching is performed in the internet?

7. Datagram approach to circuit switching at data link layer
8. Virtual circuit approach to message switching at network layer
9. Datagram approach to message switching at datalink layer
10. Datagram approach to packet switching at network layer.

2. A telephone switch is a good example of which of the following types of switches.

8. packet
9. buffer
10. fabric
11. circuit

3. A bit-stuffing based framing protocol uses an 8-bit delimiter pattern of 01111110. If the output bit-string after stuffing is 01111100101, then the input bit-string is

10. 0111110100
11. 0111110101
12. 0111111101
13. 0111111111

4. In the following pairs of OSI protocol layer/sub-layer and its functionality, the **INCORRECT** pair is

10. Network layer and Routing
11. Data Link Layer and Bit synchronization
12. Transport layer and End-to end process communication
13. Medium Access Control sub-layer and Channel sharing

5. Which one of the following protocols is NOT used to resolve one form of address to another one?

13. DNS
14. ARP
15. DHCP
16. RARP

6. The transport layer protocols used for real time multimedia, file transfer, DNS and email, respectively are

13. TCP, UDP, UDP and TCP
14. UDP, TCP, TCP and UDP

15. UDP, TCP, UDP and TCP
16. TCP, UDP, TCP and UDP
7. Which of the following transport layer protocols is used to support electronic mail?

2 SMTP
3 IP
4 TCP
5 UDP
8. In one of the pairs of protocols given below, both the protocols can use multiple TCP connections between the same client and the server. Which one is that?

15. HTTP,FTP
16. HTTP,TELNET
17. FTP,SMTP
18. HTTP,SMTP
9. The protocol data unit (PDU) for the application layer in the Internet stack is

16. Segment
17. Datagram
18. Message
19. Frame
10. In an Ethernet local area network, which one of the following statements is TRUE?

17. A station stops to sense the channel once it starts transmitting a frame.
18. The purpose of the jamming signal is to pad the frames that are smaller than the minimum frame size.
19. A station continues to transmit the packet even after the collision is detected.
20. The exponential backoff mechanism reduces the probability of collision on retransmissions.
11. In the IPv4 addressing format, the number of networks allowed under Class C addresses is

18. 2^{14}
19. 2^{7}
20. 2^{21}
21. 2^{24}
12. Which one of the following fields of an IP header is NOT modified by a typical IP router?

19. Checksum
20. Source address
21. Time to Live (TTL)
22. Length
13. If a class B network on the Internet has a subnet mask of 255.255.248.0, what is the maximum number of hosts per subnet?

21. 1022
22. 1023
23. 2046
24. 2047
14. Assume that source S and destination D are connected through two intermediate routers labeled R. Determine how many times each packet hasto visit the network layer and the data link layer during a transmission from S to D.

22. Network layer – 4 times and Data link layer-4 times
23. Network layer – 4 times and Data link layer-3 times
24. Network layer – 4 times and Data link layer-6 times
25. Network layer – 2 times and Data link layer-6 times

15. Identify the correct sequence in which the following packets are transmitted on the network by a host when a browser requests a webpage from a remote server, assuming that the host has just been restarted.

22. HTTP GET request, DNS query, TCP SYN
23. DNS query, HTTP GET request, TCP SYN
24. DNS query, TCP SYN, HTTP GET request
25. TCP SYN, DNS query, HTTP GET request

16. An IP router with a Maximum Transmission Unit (MTU) of 1500 bytes has received an IP packet of size 4404 bytes with an IP header of length 20 bytes. The values of the relevant fields in the header of the third IP fragment generated by the router for this packet are

(G) MF bit: 0, Datagram Length: 1444; Offset: 370
(H) MF bit: 1, Datagram Length: 1424; Offset: 185
(I) MF bit: 1, Datagram Length: 1500; Offset: 370
(J) MF bit: 0, Datagram Length: 1424; Offset: 2960

17. One of the header fields in an IP datagram is the Time to Live (TTL) field. Which of the following statements best explains the need for this field?

g) It can be used to priortize packets
h) It can be used to reduce delays
i) It can be used to optimize throughput
j) It can be used to prevent packet

looping

18. Using public key cryptography, X adds a digital signature σ to message M, encrypts <M, σ >, and sends it to Y, where it is d

ecrypted. Which one of the following sequences of keys is used for the operations?

8. Encryption: X's private key followed by Y's private key; Decryption: X's public key followed by Y's public key
9. Encryption: X's private key followed by Y's public key; Decryption: X's public key followed by Y's private key
10. Encryption: X's public key followed by Y's private key; Decryption: Y's public key followed by X's private key
11. Encryption: X's private key followed by Y's public key; Decryption: Y's private key followed by X's public key
19. Suppose that everyone in a group of N people wants to communicate secretly with N-1 others using symmetric key cryptographic system. The communication between any two persons should not be decodable by the others in the group. The number of keys required in the system as a whole to satisfy the confidentiality requirement is

c 2N
d N(N-1)
e N(N-1)/2
f $(N-1)^2$
20. A layer -4 firewall (a device that can look at all protocol headers up to the transport layer)

CANNOT

c) block entire HTTP traffic during 9:00PM and 5:00AM
d) block all ICMP traffic
e) stop incoming traffic from a specific IP address but allow outgoing traffic to the same IP address
f) block TCP traffic from a specific user on a multi-user system during 9:00PM and 5:00AM
f) In Circuit Switching, resources need to be reserved during
the a) Data transfer phase
b) Teardown phase.
c) Setup phase

d) Propagation phase

g) The resources needed for communication between end systems are reserved for the duration of session between end systems in _____
a) Packet switching
b) Circuit switching
c) Line switching

d) Frequency switching

3.If message in Segmentation and Reassembly (SAR) sub layer of Application Adaptation Layer 3/4 has value of Segment type is 11 then it is called a

11. Beginning message
12. Ending message
13. Single-segment message
14. Middle message

13. Congestion control and quality of service is qualities of the
a) ATM
b) DH
c) Frame Relay
d) SONET

14. The local host and the remote host are defined using IP addresses. To define the processes, we need second identifiers called.....
(A) UDP addresses
(B) transport addresses
(C) Port addresses
(D) TCP addresses

15. UDP uses..... to handle outgoing user datagrams from multiple processes on one host.
15. Flow Control
16. Multiplexing
17. Demultiplexing
18. Data Control

7. The ..... protocol defines a set of messages sent over either User Datagram Protocol (UDP) port53 or Transmission Control Protocol(TCP) port53.

2 Name space
3 DNS
4 Domain space
5 Zone transfer

16. Which type of error detection uses binary division?
a) Parity
b) Longitudinal redundancy checking
c) Checksum checking
d) Cyclic redundancy checking

17. When a network interface has a failure in its circuitry, it sends a continuous stream of frames causing the Ethernet LAN to enter a Collapse state. This condition is known as _____.

Scattering
Blocking
Jabbering
Refreshing

e) Value of checksum must be recalculated regardless of
De-fragmentation
Fragmentation
Transferred
Shared

f) Dotted-decimal notation of 10000001 00001011 00001011 11101111 would be
v) 193.131.27.255
vi) 129.11.11.239
vii) 192.168.10.9
viii) 172.16.11.3

e) Which one of the following allows a user at one site to establish a connection to another site and then pass keystrokes from local host to remote host?
a)
HTTP
b) FTP

c) Telnet
d) Sonet

f) These networking classes encapsulate the "socket" paradigm pioneered in the (BSD) Give the abbreviation of BSD?
a) Berkeley Software Distribution
b) Berkeley Socket Distribution

c) Berkeley System Data

d) Berkeley Synchronization Data

g) Digital signature envelope is decrypted by using _____.
Merchant Private Key.
Payment's Private Key.
Payment Public Key.
Merchant's Public Key.

h) The processed S/MIME along with security related data is called as _____.
Public Key Cryptography Standard.
Private Key Cryptography Standard.
S/MIME.
MIME.

19. _____ Substitution is a process that accepts 48 bits from the XOR operation.

a. S-box.
b. P-box.
c. Expansion permutations.
d. Key transformation.

20. In ……. Mode, the authentication header is inserted immediately after the IP header.

a. Tunnel
b. Transport
c. Packet switching
d. Payload of the header

21. _____ uniquely identifies the MIME entities uniquely with reference to multiple contexts.

a. Content description.
b. Content-id.
c. Content type.
d. Content transfer encoding.

22. Which one of the following is a cryptographic protocol used to secure HTTP connection? a) Stream Control Transmission Protocol (SCTP)

b) Transport Layer Security (TSL)

c) Explicit Congestion Notification (ECN)
d) Resource Reservation Protocol

20. ---------- is a mode of operation for a block cipher, with the characteristic that each possible block of plaintext has a defined corresponding ciphertext value and vice versa.

20. Foot printing
21. Hash Function
22. Water Mark
23. Electronic Code Book

Multiple Choice Questions on Microprocessor & its peripherals

8086:

12. The 16 bit flag of 8086 microprocessor is responsible to indicate _____
    the condition of result of ALU operation
    the condition of memory
    the result of addition
    the result of subtraction

2. The BIU contains FIFO register of size _____ bytes

   A. 8 B. 6 C. 4 D. 12

3. The _____ translates a byte from one code to another code

   A. XLAT B. XCHNG C. POP D. PUSH

4. A 20-bit address bus allows access to a memory of capacity

   A. 1 MB B. 2 MB C. 4 MB D. 8 MB

5. If the offset of the operand is stored in one of the index registers, then it is
   (A) based indexed addressing mode
   (B) relative based indexed addressing mode
   (C) indexed addressing mode
   (D) none of the mentioned

8 2. Which of the following is not a data copy/transfer instruction?
   (C) MOV
   (D) PUSH
   (E) DAS
   (F) POP

7. Match the following

   a) MOvSB/SW1) loads AL/AX register by content of a string

   b) CMPS 2) moves a string of bytes stored in source to destination

   c) SCAS 3) compares two strings of bytes or words whose length is stored in CX

register

d) LODS 4) scans a string of bytes or words

a-3,b-4,c-2,d-1
a-2,b-1,c-4,d-3
a-2,b-3,c-1,d-4
a-2,b-3,c-4,d-

7. 20. NOP instruction introduces
   Address
   Delay
   Memory location

8255 (Programmable Input – Output Port)

6 All the functions of the ports of 8255 are achieved by programming the bits of an internal register called
a) data bus control
b) read logic control
c) control word register
d) none

11. The data bus buffer is controlled by
a) control word register
b) read/write control logic
a) data bus
b) none

14. The port that is used for the generation of handshake lines in mode 1 or mode 2 is
port A
port B
port C Lower
port C Upper

8257 (DMA Controller)

14. In 8257 (DMA), each of the four channels has
a pair of two 8-bit registers
a pair of two 16-bit registers
one 16-bit register
one 8-bit register

17. The common register(s) for all the four channels of 8257 are
a) DMA address register
b) terminal count register
c) mode set register and status register
none of the mentioned

6 In 8257 register format, the selected channel is disabled after the terminal count condition is reached when
a) auto load is set
b) auto load is reset
c) TC STOP bit is reset
d) TC STOP bit is set

15. The pin that requests the access of the system bus is

19. HLDA
20. HRQ
21. A
DSTB

8254 (Programmable Interval Timer)

20. The number of counters that are present in the programmable timer device 8254 is
    a) 1
    b) 2
    c) 3
    d) 4
21. The mode that is used to interrupt the processor by setting a suitable terminal count is
    a. mode 0
    b. mode 1
    c. mode 2
    d. mode 3
22. In control word register, if SC1=0 and SC0=1, then the counter selected is
    a) counter 0
    b) counter 1
    c) counter 2
23. The counter starts counting only if
    a. GATE signal is low
    b. GATE signal is high
    c. CLK signal is low
    d. CLK signal is high
25. The result of MOV AL, 65 is to
    store A. store 0100 0010 in AL
    B. store 42H in AL

    a) store 40H in AL
    b) store 0100 0001 in AL
26. One operation that is not given by magnitude comparator
(K) equal
(L) less
(M) greater
(N) addition
2. Adding 1001 and 0010 gives output of

A. 1011

k) 1111
l) 0
m) 1010
3. Magnitude comparator compares using operation of

12. addition
13. subtraction
14. division
15. multiplication
4. A Boolean function may be transformed into

g logical diagram
h logical graph
i map
j matrix
5. Is it possible to find two algebric expressions that specify same function

g) no
h) yes
i) maybe
j) never
6. Using 10's complement 72532- 3250 is

h) 69282
i) 69272
j) 69252
k) 69232
7. X=1010100 and Y=1000011 using 2's complement X-Y is

15. 10111
16. 101101
17. 10011
18. 10001
8. X=1010100 and Y=1000011 using 1's complement Y-X is

16. -10111
17. -10011
18. -10001
19. -11001

9. Table that is not a part of asynchronous analysis procedure

19. transition table
20. state table
21. flow table
22. excitation table

10. Shift registers are used for

6 shifting
7 rotating
8 adding
9 both a and b

11. Two variables will be represented by

18. eight minterms
19. six minterms
20. five minterms
21. four minterms

12. Adjacent squares represents a

v) circle
vi) variable
vii) literal
viii) minterm

13. Eight minterms will be used for

g) three variables
h) four variables
i) five variables
j) six variables

14. Minterms are arranged in map in a sequence of

ix) binary sequence
x) gray code
xi) binary variables
xii) BCD code

15. A circuit that converts n inputs to 2^n outputs is called

A. encoder

i) decoder
j) comparator
k) carry look ahead
16. Encoders are made by three

23. AND gate
24. OR gate
25. NAND gate
26. XOR gate
17. Decoder is a

24. combinational circuit
25. sequential circuit
26. complex circuit
27. gate
18. BCD to seven segment is a

21. encoder
22. decoder
23. comparator
24. carry look ahead
19. One that is not type of flipflop is

22. JK
23. T
24. RS
25. ST
20. Flip-flops can be constructed with two

23. NAND gates
24. OR gates
25. AND gates
26. NOT gates
21. RS flip-flops are also called

2 RS latch
3 SR latch
4 TS latch
5 ST latch

22. Decimal digit in BCD can be represented by

24. 1 input line
25. 2 input lines
26. 3 input lines
27. 4 input lines
23. In BCD no. 1010 has

E. meaning
F. no meaning
G. value
H. Vcc
24. To perform product of maxterms Boolean function must be brought into

E. and terms
F. or terms
G. not terms
H. nand terms
25. In excitation table of D flipflop next state is equal to

E. present state
F. next state
G. input state
H. D state
26. X+y=z represents operation that is

E. AND
F. OR
G. NOT
H. XOR
27. Design procedure of combinational circuit involves

E. 4 steps
F. 5 steps
G. 6 steps
H. 8 steps
28. In design procedure input output values are assigned with

A. numeric values

E. letter symbols
F. 0's
G. 1's

29. Output of AND gates in SOP is connected to

A. NOT gates
B. OR gates
C. AND gates
D. XOR gates

30. Mod-6 and mod-12 counters are most commonly used in:

A. frequency counters
B. multiplexed displays
C. digital clocks
D. power consumption meters

31. How many illegitimate states has synchronous mod-6 counter ?

A.3

B.2

C.1

D.6

32. The clock signals are used in sequential logic circuits to

A.Tell the time of the day

B.Tell how much time has elapsed since the system was turned on

C.Carry parallel data signals

D.Synchronize events in various parts of system

33. To build a mod-19 counter the number of flip-flops required is

A.3

B.5

C.7

D.9

33. The main difference between JK and RS flip-flop is that

A.JK flip flop needs a clock pulse

B.There is a feedback in JK lip-lop

C.JK flip-flop accepts both inputs as 1

D.JK flip-flop is acronym of Junction cathode multivibrator

34. Which of the following unit will choose to transform decimal number to binary code ?

A.Encoder

B.Decoder

C.Multiplexer

D.Counter

35. Simplified form of the boolean expression (X + Y + XY) (X + Z) is

A.X + Y + Z

B.XY + YZ

C.X + YZ

D.XZ + Y

36. Which of the following boolean expressions is not logically equivalent to all of the rest ?

A.ab + (cd)' + cd + bd'

B.a (b + c) + cd

C.ab + ac + (cd)'

D.bd' + c'd' + ab + cd

37. Which of the following statements is true ?

A.(A + B) (A + C) = AC + BC

B.(A + B) (A + C) = AB + C

C.(A + B) (A + C) = A + BC

D.(A + B) (A + C)= AC + B

38. A graphical display of the fundamental products in a truth-table is known as

A.Mapping

B.Graphing

C.T-map

D.karnaugh-map

39. The minimum number of NAND gates required to implement the Boolean function. A + AB' + AB'C is equal to

A.zero

B.1

C.4

D.7

40. Which of the following logic expression is incorrect?

A.1 $\oplus$ 0 = 1

B.1 ⊕ 1 ⊕ 0 =1 C.1 ⊕ 1 ⊕ 1 = 1 D.1 ⊕ 1 = 0

Data Structures and Algorithms

1. In a min-heap:

A - parent nodes have values greater than or equal to their children B - parent nodes have values less than or equal to their children

C - both statements are true D - both statements are wrong

2 - Minimum number of moves required to solve a Tower of Hanoi puzzle is A - 2 n^ 2

B – 2^ n-1 C – 2^ n - 1 D - 2n – 1

3. Which of the following asymptotic notation is the worst among all? A - On + 9378

B - O(n ^3)

C – n^O1

D – 2^On

4.Maximum degree of any vertex in a simple graph of vertices n is A - 2n - 1

B - n

C - n + 1 D - n – 1

5.Which of the following algorithm is not stable? A - Bubble Sort

B - Quick Sort

C - Merge Sort

D - Insertion Sort

6.Which of the following is example of in-place algorithm? A - Bubble Sort

B - Merge Sort

C - Insertion Sort
D - All of the above

7.After each iteration in bubble sort

A - at least one element is at its sorted position.

B - one less comparison is made in the next iteration. C - Both A & B are true.

D - Neither A or B are true

8. Time required to merge two sorted lists of size m and n, is A - Om| n

B - Om + n

C - Omlogn

D – Onlogm

9.If queue is implemented using arrays, what would be the worst run time complexity of enqueue and dequeue operations?

A - On, On

B - On, O1

C - O1, On

D - O1, O1

10. What happens when you push a new node onto a stack?

13. The new node is placed at the front of the linked list
14. The new node is placed at the back of the linked list
15. The new node is placed at the middle of the linked list

D. No Changes happens

6. A queue in which insertion and deletion takes places from any position is called .....

A. circular queue

(G) random of queue

(H) priority

(I) dequeue

14. In Binary trees nodes with no successor are called .....

8. End nodes

9. Terminal nodes

10. Final nodes

11. Last nodes

13. The depth of complete binary tree is given by .....

7 Dn = n log2n

8 Dn= n log2n+1

9 Dn = log2n

10Dn = log2n+1

12. The post order traversal of binary tree is DEBFCA. Find out the pre order traversal.

A. ABFCDE

B. ADBFEC

C. ABDECF

D. ABDCEF

13. If every node u in G adjacent to every other node v in G, A graph is said to be

isolated

complete

finite

strongly connected

16. If CurrNode pointer points to the previous node in the list and NewNode points to the newly created Node, the address assignments to be done for inserting a node in the middle of a singly linked list is

CurrNode->Next = NewNode; NewNode->Next = CurrNode->Next
NewNode->Next = CurrNode->Next; CurrNode->Next = NewNode;
CurrNode->Next = NewNode->Next; NewNode->Next = CurrNode;
CurrNode = NewNode

17. Identify the sorting technique that supports divide and conquer strategy and has (n2) complexity in worst case

Insertion
Shell
Merge
Quick

17. The run time of the following algorithm is Procedure A(n)
If(n<=2) return(1)
Else
return(A(sqrt(n))
a)O(n)

b) O(logn)
c)
O(loglogn)
d) O(1)

18. For non-negative functions, f(n) and g(n), f(n) is theta of g(n) if and only if
7 f(n) = O(g(n)) and f(n) = Ω(g(n))
8 f(n) = O(g(n)) and f(n) = o((g(n))
9 f(n) = O(g(n)) and f(n) = ω (g(n))
10 f(n) = Q(g(n)) and f(n) = Ω(g(n))

22. **The degree of a leaf node is:**
1
b) 0

c: -
1
d:2

Data Structures and Algorithms

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C – 2^ n -
1 D - 2n –
1

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B - n

C - n +
1 D - n
– 1

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B - On, O1

C - O1, On

D - O1, O1

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B. ADBFEC

C. ABDECF

D. ABDCEF

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24. isolated
25. complete
26. finite
27. strongly connected

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27. NewNode->Next = CurrNode->Next; CurrNode->Next = NewNode;
28. CurrNode->Next = NewNode->Next; NewNode->Next = CurrNode;
29. CurrNode = NewNode

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a. Insertion

c) Shell

27. Merge
28. Quick

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Procedure A(n)
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return(A(sqrt(n)) a)O(n)

b) O(logn) c)
O(loglogn) d) O(1)

(P) For non-negative functions, f(n) and g(n), f(n) is theta of g(n) if and only if
n) f(n) = O(g(n)) and f(n) = Ω(g(n))

o) f(n) = O(g(n)) and f(n) = o((g(n))
p) f(n) = O(g(n)) and f(n) = ω (g(n))
q) f(n) = Q(g(n)) and f(n) = Ω(g(n))

16. **The degree of a leaf node is:**

1
0
2)-1
d:2

Data Structures and Algorithms

1. Which among the following is not a linear data structure?

a) Graphs b) Linked lists c) Circular linked lists d) Arrays

l) For the given infix expression a+b^c*(d-e) where '^' denotes the EX-OR operator, the corresponding prefix expression is

a) +a^b*cde b) +a*^bc-de c) ^+ab*c-de d) + a^bc*de

19. Which of the following is termed as reverse polish notation?

Big-O notation b) Little-Oh notation c) Prefix notation d) Postfix Notation

4. What does the code snippet given below do?

```
void fun1(struct node* head)

{

 if(head == NULL)
  return;

 fun1(head->next); printf("%d
 ", head->data);

}
```

a) Prints all nodes of linked lists

b)Prints all nodes of linked list in reverse order

c)Prints alternate nodes of Linked List d)Prints alternate nodes in reverse order

5. Given the following structure template, choose the correct syntax for accessing the 5^{th} subject marks of the 3^{rd} student.

```
struct stud

{

    int
    marks[6];
```

char
sname[20];
char
rno[10];

}s[10];

a) stud[2].marks[4] b) stud[4].marks[2] c) s[2].marks[4] d) s[4].marks[2]

6. What is the postfix expression for the following infix expression? Infix = a+b%c>d

a) abcd>%+ b) abc%d>+ c) ab+c%d> d) abc%+d>

7. Among the following which is not the application of a stack?

a) Postponing data usage b) Job scheduling c) Backtracking d) none

20. Which of the following is not correct to create an integer array of size 20?

(A) int *a= (int*) malloc(20*sizeof(int)) ;
(B) int *a= (int*) malloc(80) ;
c) int x; int *a= (int*) malloc(20*sizeof(x)) ;
d) All are correct

9. If a , b , c, are three nodes connected in sequence in a singly linked list

struct node *temp=a;

while(temp!=NULL)

{

temp=temp->next; printf("$");

}Assuming 'c' to be the last node, the output is

a) $$$ b) $$ c) NULL d) error

23. You are given pointers to first and last nodes of a singly linked list, which of the following operations are dependent on the length of the linked list?

a) Delete the first element
b) Insert a new element as a first element
c) Delete the last element of the list
d) Add a new element at the end of the list

11. On adopting shell sort technique, the output of the array (21,62,14,9,30,77,80,25) after a pass with increment size =3, is

10 9 30 14 21 25 77 80 62
11 9 25 14 21 30 77 80 62

129 14 21 25 30 62 77 80

13 the same array

12. Consider a dynamic queue with two pointers: front and rear. What is the time needed to insert an element in a queue of length of n?

a) O(log2n) b) O(n). c) O(1). d) O(n log2n).

22. If a , b , c, are three nodes connected in sequence in a singly linked list, what is the statement to be added to change this into a circular linked list?

a) a->next=b b) b->next=c c) c->next=a d) all

ix) In which of the following hashing methods, the below expression is used to find the home address, given a 6-digit number as the key.

Sum=key%100+(key/100)%100+(key/10000).

Modulo division b) Key offset c) Pseudo random d) Fold shift

xiii) Which sorting technique uses a data structure similar to the one used in bucket hashing?

Quick b) Merge c) Heap d) Radix

16. For the array (77 ,62,114,80,9,30,99), write the order of the elements after two passes using the Radix sort.

a) 80 30 62 114 77 9 99

b) 114 30 62 77 9 99

c) 9 114 30 62 77 80 99

d) 9 30 62 77 80 99 114

17. Which of these is asymptotically bigger?

a) $79n^2+43n$ b) $65n^3+34n$ c) $6*2^n$ d) none

l) If a[ ] is the array containing the elements to be sorted using radix sort, during the first iteration in which the LSD is considered, row number in 2D array to which an element
has to be stored is given by

a) a[i]/10%10 b) a[i]%10/10 c) a[i]%10 d) a[i]/100%10

19. temp=root->left;

while(temp->right!=NULL)

temp=temp->right;

return temp;

The above code snippet for a BST with the address of the root node in pointer 'root'

returns

27. Inorder successor of the root
28. Maximum element in the right subtree of root
29. Both a and b
30. Inorder predecessor of the root

28. For a tree which has no right subtree, if the inorder sequence is DBEA, its preorder sequence cannot be
    a) ABDE b) BADE c) AEBD D) ABED

1. When determining the efficiency of algorithm, the space

factor is measured by

25. Counting the maximum memory needed by the algorithm
26. Counting the minimum memory needed by the algorithm
27. Counting the average memory needed by the algorithm
28. Counting the maximum disk space needed by the algorithm

2. The complexity of Bubble sort algorithm is

26. O(n)
27. O(log n)
28. O(n2)
29. O(n log n)

3. Linked lists are best suited

27. for relatively permanent collections of data
28. for the size of the structure and the data in the structure are constantly changing

for both of above situation

6 for none of above situation

4. If the values of a variable in one module is indirectly changed by another module, this situation is called

internal change
inter-module change
side effect
side-module update

5. In linear search algorithm the Worst case occurs when

The item is somewhere in the middle of the array
The item is not in the array at all
The item is the last element in the array
The item is the last element in the array or is not there at all

6. For an algorithm the complexity of the average case is

Much more complicated to analyze than that of worst case
Much more simpler to analyze than that of worst case
Sometimes more complicated and some other times simpler than that of worst case
None or above

7. The complexity of merge sort algorithm is

O(n)
O(log n)
O(n2)
O(n log n)

8. The complexity of linear search algorithm is

O(n)
O(log n)
O(n2)
O(n log n)

9. When determining the efficiency of algorithm the time factor is measured by

Counting microseconds

Counting the number of key operations

Counting the number of statements

Counting the kilobytes of algorithm

10. Which of the following data structure is linear data structure?

Trees

Graphs

Arrays

None of above

11. The elements of an array are stored successively in memory cells because

by this way computer can keep track only the address of the first element and the addresses of other elements can be calculated

2 the architecture of computer memory does not allow arrays to store other than serially

3 both of above

4 none of above

12. Which of the following data structure is not linear data structure?

Arrays
Linked lists
Both of above
None of above

13. The Average case occur in linear search algorithm

When Item is somewhere in the middle of the array
When Item is not in the array at all
When Item is the last element in the array
When Item is the last element in the array or is not there at all

14. Two main measures for the efficiency of an algorithm are

Processor and memory
Complexity and capacity
Time and space
Data and space

15. Finding the location of the element with a given value is:

Traversal
Search
Sort
None of above

16. Which of the following case does not exist in complexity theory

Best case
Worst case
Average case
Null case

17. The operation of processing each element in the list is known as

a. Sorting
b. Merging
c. Inserting
d. Traversal

18. Arrays are best data structures

a. for relatively permanent collections of data
b. for the size of the structure and the data in the structure are constantly changing
c. for both of above situation
d. for none of above situation

19. Each array declaration need not give, implicitly or explicitly, the information about

a. the name of array
b. the data type of array
c. the first data from the set to be stored
d. the index set of the array

20. The complexity of Binary search algorithm is

a. O(n)
b. O(log)
c. O(n2)
d. O(n log n)

21. Which if the following is/are the levels of implementation of data structure

A) Abstract level
B) Application level
C) Implementation level
D) All of the above

22. A binary search tree whose left subtree and right subtree differ in hight by at most 1 unit is called ……

A) AVL tree

B) Red-black tree
C) Lemma tree
D) None of the above

23. …….. level is where the model becomes compatible executable code

A) Abstract level
B) Application level
C) Implementation level
D) All of the above

24. Stack is also called as

A) Last in first out
B) First in last out
C) Last in last out
D) First in first out

25. Which of the following is true about the characteristics of abstract data types?

i) It exports a type.
ii) It exports a set of operations

A) True, False
B) False, True
C) True, True
D) False, False

26. …… is not the component of data structure.

A) Operations
B) Storage Structures
C) Algorithms
D) None of above

27. Which of the following is not the part of ADT description?

A) Data
B) Operations
C) Both of the above
D) None of the above

28. Inserting an item into the stack when stack is not full is called

……. Operation and deletion of item form the stack, when stack is not empty is called ……..operation.

A) push, pop

B) pop, push

C) insert, delete
D) delete, insert

29. ……. Is a pile in which items are added at one end and removed from the other.

A) Stack
B) Queue
C) List
D) None of the above

30. …… is very useful in situation when data have to stored and

then retrieved in reverse order.

A) Stack
B) Queue
C) List
D) Link list

31. Which data structure allows deleting data elements from and inserting at rear?

A) Stacks
B) Queues
C) Dequeues D) Binary search tree

32. Which of the following data structure can't store the non-homogeneous data elements?

A) Arrays
B) Records
C) Pointers
D) Stacks

33. A ..... is a data structure that organizes data similar to a line in the supermarket, where the first one in line is the first one out.

A) Queue linked list
B) Stacks linked list
C) Both of them
D) Neither of them

34. Which of the following is non-liner data structure?

Stacks
List
Strings
Trees

35. Herder node is used as sentinel in .....

Graphs
Stacks
Binary tree
Queues

36. Which data structure is used in breadth first search of a graph to hold nodes?

Stack
queue

Tree
Array

37. Identify the data structure which allows deletions at both ends of the list but insertion at only one end.

Input restricted dequeue
Output restricted qequeue
Priority queues
Stack

38. Which of the following data structure is non linear type?

Strings
Lists
Stacks
Graph

39. Which of the following data structure is linear type?

Graph
Trees
Binary tree
Stack

40. To represent hierarchical relationship between elements, Which data structure is suitable?

Dequeue
Priority
Tree
Graph

41. The complexity of Bubble sort algorithm is

O(n)
O(log n)
O(n2)
O(n log n)

42. The data structure required to evaluate a postfix expression is

queue
stack
array
linked-list

43. The indirect change of the values of a variable in one module by another module is called

internal change

inter-module change
side effect
side-module update

44. The process of accessing data stored in a serial access memory is similar to manipulating data on a

heap
queue
stack
binary tree

45. Which of the following data structure is linear data structure?

Trees
Graphs
Arrays
None of above

46. The operation of processing each element in the list is known as

Sorting Merging Inserting Traversal

47. Finding the location of the element with a given value is:

Traversal
Search
Sort
None of above

48. A BST is traversed in the following order recursively: Right, root, left

The output sequence will be in

Ascending order Descending order Bitomic sequence No specific order

49. Linked lists are best suited

for relatively permanent collections of data
for the size of the structure and the data in the structure are constantly changing
for both of above situation
for none of above situation

50. Each array declaration need not give, implicitly or explicitly, the information about

the name of array
the data type of array
the first data from the set to be stored
the index set of the array

OPERATING SYSTEMS

1. In the process state transition diagram, the transition from the READY state to the RUNNING state indicates that:

16. A process was pre-empted by another process
17. A process has blocked for a semaphore or other operation
18. A process is done waiting for an I/O operation
19. A process was just created

2. Which of the following is shared between all of the threads in a process? Assume a kernel level thread implementation.

7. Register values
8. File descriptors
9. Scheduler priority
10. Local variables

3. Which of the following is not true?

9 Shortest Remaining Time next is the best preemptive scheduling algorithm in terms of turnaround time
10Priority scheduling can suffer from starvation
11 Lottery scheduling is pre-emptive
12Multi-level feedback queue guarantee equal time to all processes

4. A critical region is

15. The part of a program in which shared data is accessed
16. The most important part of the program

12. The part of the kernel that interfaces directly to the device controllers
13. The part of a program in which a bug would cause the program to exit

5. Which of the following is not used for synchronization?

11 The bakery algorithm
12The banker's algorithm
13 Busy waiting with test and set
14Monitors

6. Which of the following is not true of virtual memory?

14. It allows more efficient use of memory
15. It requires hardware support
16. It reduces the need for relocatable code
17. It requires the use of a disk or other secondary storage

7. Which of the following is not usually stored in a two-level page table?

12. Virtual page number
13. Physical page number
14. Dirty bit
15. Reference bit

8. Which of the following paging algorithms is most likely to be used in a virtual memory system?

15. FIFO
16. Second chance
17. Least Recently Used
18. Least Frequently Used

9. The purpose of a TLB is

15. To cache page translation information
16. To cache frequently used data

c. . To hold register values while a process is waiting to be

run d. To hold the start and length of the page table

10. Which of the following is not true about segmented memory management?

18. Segment length must be a multiple of the page size
19. Segmentation allows multiple linear address space in one process
20. Segmentation can be used with paging to keep segments partially resident in memory
21. A segment can be read-only for one process and read-write for another

11. System calls:

19. Provide a rich and flexible API for software developers
20. Often change dramatically between different releases of an operating system
21. Protect kernel data structures from user code
22. Allow the operating system to optimize performance

12. What is the main difference between traps and interrupts?

11 How they are initiated
12The kind of code that's used to handle them
13 Whether or not the scheduler is called
14How the operating system returns from them
13. Buffering is useful because

23. It makes it seem like there's more memory in the computer
24. It reduces the number of memory copies required
25. It allows all device drivers to use the same code
26. It allows devices and thee CPU to operate asynchronously
14. The main advantage of DMA is that it

21. Increases system performance by increasing concurrency
22. Allows the CPU to run faster
23. Reduces the traffic on the data bus
24. Removes the requirement that transfers be properly aligned
15. Which of the following disk seek algorithms would be the best choice to implement in a system that services an average of 5 disk requests per second?

26. FCFS
27. SSTF

25. SCAN
26. C-SCAN

16. Which of the following disk seek algorithms has the most variability in response time?

28. FCFS
29. SSTF
30. SCAN
31. C-SCAN

17. A typical hard drive has a peak throughput of about

30. 2 x 10^5 bytes per second
31. 2 x 10^6 bytes per second
32. 2 x 10^7 bytes per second
33. 2 x 10^8 bytes per second

18. RAID is a way to:

26. Increase hard drive latency and performance
27. Increase hard drive performance and decrease cost
28. Increase hard drive reliability and performance
29. Increase hard drive reliability and decrease cost

19. Which of these would not be a good way for the OS to improve battery lifetime in a laptop?

Shut down the hard drive until it's needed
Reduce the processor speed while it's idle
Turn off power to the memory
Shut down the modem when it's not connected

20. Which of the following is not included in an inode in Linux?

File owner
File name
File modification date
Pointer to the first data block

ITE208-Operating Systems

Multiple Choice Questions

1.Round robin scheduling is essentially the preemptive version of _____

FIFO
Shortest job first
Shortest remaining
Longest time

2.A page fault occurs

when the page is not in the memory
when the page is in the memory
when the process enters the blocked state
when the process is in the ready state

3.Let S and Q be two semaphores initialized to 1, where P0 and P1 processes the following statements wait(S);wait(Q); ---; signal(S);signal(Q) and wait(Q); wait(S);---

;signal(Q);signal(S); respectively. The above situation depicts a _____ .

k Semaphore
l Deadlock
m Signal
n Interrupt

4.What is a shell ?
k) It is a hardware component
l) It is a command interpreter
m) It is a part in compiler
n) It is a tool in CPU scheduling
5. Routine is not loaded until it is called. All routines are kept on disk in a relocatable load format. The main program is loaded into memory & is executed. This type of loading is called _____

m) Static loading
n) Dynamic loading
o) Dynamic linking
p) Overlays
6. In the blocked state

the processes waiting for I/O are found
the process which is running is found
the processes waiting for the processor are found
the process ready to execute
What is the memory from 1K - 640K called ?
Extended Memory
Normal Memory
Low Memory
Conventional Memory
8.Virtual memory is _____.

An extremely large main memory
An extremely large secondary memory
An illusion of extremely large main memory
A type of memory used in super computers.
9.The process related to process control, file management, device management, information about system and communication that is requested by any higher level language can be performed by _____.

23. Editors
24. Compilers
25. System Call
26. Caching
10.If the Disk head is located initially at 32, find the number of disk moves required with FCFS if the disk queue of I/O blocks requests are 98,37,14,124,65,67.

x) 310
xi) 324
xii) 315
xiii) 321
11.The solution to Critical Section Problem is : Mutual Exclusion, Progress and Bounded Waiting.

k) The statement is false
l) The statement is true.
m) The statement is contradictory.
n) None of the above
12.The problem of thrashing is effected scientifically by _____.

xiv) Program structure
xv) Program size
xvi) Primary storage size
xvii) Secondary storgae
13.Which of the following file name extension suggests that the file is Backup copy of another file ?

m) TXT
n) COM
o) BAS
p) BAK
14.The mechanism that bring a page into memory only when it is needed is called _____

31. Segmentation
32. Fragmentation
33. Demand Paging
34. Page Replacement
15.Switching the CPU to another Process requires to save state of the old process and loading new process state is called as _____.

29. Process Blocking
30. Context Switch
31. Time Sharing
32. Context sharing
16.Which directory implementation is used in most Operating System?

29. Single level directory structure
30. Two level directory structure

30. Tree directory structure
31. Acyclic directory structure

17. A thread

29. is a lightweight process where the context switching is low
30. is a lightweight process where the context swithching is high
31. is used to speed up paging
32. none of the above

18._____ is a high level abstraction over Semaphore.

7 Shared memory
8 Message passing
9 Monitor
10 Mutual exclusion

19. Which module gives control of the CPU to the process selected by the short-term scheduler?

28. dispatcher
29. interrupt
30. long –term scheduler
31. short-term scheduler

20. In priority scheduling algorithm, when a process arrives at the ready queue, its priority is compared with the priority of

I. all process
J. currently running process
K. parent process
L. init process

I. Assume that ‘C’ is a Counting Semaphore initialized to value ‘10’. Consider the following program segment:

P(C); V(C); P(C); P(C); P(C); V(C); V(C)

V(C); V(C); V(C); P(C); V(C); V(C); P(C)

What is the value of C?

6
12

I. 8
J. 10

I. Consider the following pseudo code fragment: printf (“Hello”);

if(!

for

k(

))

pri

ntf(

"W

orl

d");

Which of the following is the output of the code fragment?

Hello Hello World World
Hello World World
Hello World
Hello World Hello World

I. A scheduling algorithm assigns priority proportional to the waiting time of a process. Every process starts with priority zero (the lowest). The scheduler re-valuates the process priorities every T time units and decides the next process to schedule. Which one of the following is true if the processes have no I/O operations and all arrive at time zero?

This algorithm is equivalent to FCFS
This algorithm is equivalent to Round Robbin
This algorithm is equivalent to SJF
This algorithm is equivalent to Shortest Remaining Time First

H. The highest response ratio next Scheduling policy favors 'X' jobs, but is also limits the waiting time of 'Y' jobs. What are X and Y?

Shorter Jobs, Low Priority Jobs
Longer Jobs, High Priority Jobs
Longer Jobs, Shorter Jobs
Shorter Jobs, Longer Jobs

5. Which of the following instructions should be allowed only in Kernel Mode?

E. Disable all interrupts
F. Read the time-of-day clock
G. Set the time-of-day clock
H. Change the Memory Map

5 Consider the below code fragment:

```
if(fork k( ) = = 0)
{
a= a+5; printf("%d, %d \n", a, &a);
}
else
{
a= a – 5;
printf("%d %d \n", 0, &a);
}
```

Let u, v be the values printed by parent process and x, y be the values printed by child process. Which one of the following is true?

A u= x + 10 and v = y
B u= x + 10 and v≠ y
C u + 10= x and v = y
D u + 10= x and v ≠ y

2 There are 'm' processes and 'n' instances of a Resource provided. Each process needs 'P' instances of the resource. In which case deadlock will never occur?

A. (P - 1) m + 1 ≤ n
B. (P - 1) m ≤ n + 1
C. (P - 1) m + 1 < n
D. (P - 1) m ≤ n + 1

32. A system has a resource 'Z' with 20 instances; each process needs 5 instances to complete its execution. What is the minimum process in the system that may cause deadlock?

A 4
B 5
C 10
D 6

35. A solution to the Dining Philosopher's problem which avoids Deadlock can be:
Ensure that all the Philosopher's pick up the left fork before the right fork
Philosophers can select any fork randomly
Ensure that all the Philosophers except one pick up the left fork while that particular philosopher pick up right fork before left fork
Deadlock cannot be avoided

37. Which of the process transition is invalid?

Run Ready

Suspend wait Suspend ready

Wait/ Block Run

Run Terminate

41. The process in which of the following states will be in secondary memory?

New, Ready, Wait/Block

New, Wait/Block, suspend wait, Suspend ready

wait/Block, suspend wait, Suspend ready

New, suspend wait, Suspend ready

e. Degree of multiprogramming is controlled by

Long term schedule

Short term schedule

e. Medium term schedule
f. Depends on number of CPU's

e. Consider a system with 'M' CPU processors and 'N' processes then how many processes can be present in ready, running and blocked state at maximum

N, M, N
N, M, M
M, N, M
N, N+M, M

d. The main function of dispatcher is:
swapping a process to disk
assigning ready process to the CPU
suspending some of the processes when CPU load is high
bring processes from the disk to main memory

E) Consider 'n' processes sharing the CPU in a round robin fashion. Assume that the context switch takes 's' seconds. What must be the quantum 'q' such that the overhead of context switching is minimized and at same time each process is getting guaranteed execution on the CPU atleast once in every 't' seconds?

$q \leq (t - ns)/(n-1)$
$q \leq (t - ns)/(n+1)$
$q \geq (t - ns)/(n-1)$
$q \geq (t - ns)/(n+1)$

E) When two or more processes trying to execute a set of instructions and if the output depends on the order of execution of the process, this is termed as:

Critical section
Race condition
Synchronization
Progress

E) Consider the processes P1, P2, P3, P4 whose arrival times are 0, 2, 3, 5 and burst times are 7, 4, 2, 4 respectively. What is the average TAT and average WT if they follow Shortest Remaining Time First scheduling algorithm?

8.5, 3.5
8, 3.75
6, 3
4,5

E) If =0.4 and T_1=10. Consider the actual burst times of t_1, t_2, t_3 are 5, 7, 2 respectively. What is the predicted burst time of t_4 using Exponential Average method?

3.36
4.3
5.36
6.66

iii) In Multi-Processing Operating Systems:

Maximum utilization of CPU can be achieved
Maximum throughput is achieved
Maximum security can be achieved
Not suitable for Real Time Applications

E) A system has 'n' processes and each process need 2 instances of a resource. There are n+1 instances of resource provided. This could:

lead to deadlock
lead to starvation & the deadlock
never leads to deadlock
leads to inconsistency

WEB TECHNOLOGY

20. The following HTML element is used to display horizontal line

<h>
<hr>
<h2>

11. The following HTML _____ element contains meta data which is not displayed inside the document.

(A) <form>
(B) <title>
(C) <table>
(D) <frame>

13 <h2 style="color:blue">I am Blue</h2> is ____ way of styling HTML elements

(C) Inline style
(D) Internal style
(E) External style
(F) Default

17. The following HTML element helps making animated text

<ins>
<mark>
<marquee>

14. <font face="Lucida Calligraphy,Comic Sans MS,Lucida Console"> will specify _____ font

Lucida Calligraphy
Lucida Console
first available font installed on computer
last available font installed on computer

15 _____ is used to define a special CSS style for a group of HTML elements

a) class attribute
b) name attribute
c) group attribute
d) id attribute

18. The following HTML attribute is used to specify the URL of the html document to be opened when a hyperlink is clicked.

a) SRC
b) HREF
c) LINK
d) PATH

16. Which of these will create a shuffled list?

a)
b)
c) <dl>
d) Nested list

19. The _____ attribute defines the action to be performed when the form is submitted

method attribute
action attribute
onSubmit attribute
onClick attribute

17. Internet backbone refers to _____

Web browser
Web server
Data
Data route

22. _____ is referred to as Static Web

a) Web 1.0
b) Web 2.0
c) Web 3.0
d) Web 4.0

23. What does JSP stand for?

Java Scripting Pages
Java Service Pages
Java Server Pages
Java Script Program

15 How do you write "Hello World" in PHP?

a) using System.out.println
b) using Document.Write("Hello World")
c) "Hello World"
d) using echo("Hello World")

27. What are the parameters of the service method?

a) ServletRequest and ServletResponse
b) HttpServletRequest and HttpServletResponse
c) HttRequest and HttpResponse

d) Request and Response

25. How does servlet differ from CGI?

a) Light weight Process
b) Open source
c) Simple
d) Easy to remember

28. Which is the right declaration Tag in JSP?

A. <%! ..... %>)

27. <%@ .....%>)
28. <% ..... %>
29. <%= ..... %>)

32. The servlet life cycle has the following cycle.
    a. Init destroy service
    b. Service destroy
    c. Init service destroy
    d. Init service

34. How many times service() method will be executed in a servlet life cycle?
    a. Twice
    b. As many as client requests
    c. As many as server responds
    d. Once

30. In HTTP, which method gets the resource as specified in the URI
    a) GET
    b) POST
    c) PUT
    d) TRACE

29. Which of the following is not a session management technique in Servlet
    a. Password <form> field
    b. Hidden <form> field
    c. Cookies
    d. Session API

(Q) What should be the first tag in any HTML document?

<head>
<title>
<html>
<document>

2. How can you make a bulleted list?

<list>
<nl>

17. What is the correct HTML for making a hyperlink?

1) ICT Trends Quiz
2) ICT Trends Quiz
3) <http://mcqsets.com
4) url="http://mcqsets.com">ICT Trends Quiz

o Choose the correct HTML tag to make a text italic

2) <ii>
3) <italics>
4) <italic>
5) <i>

o) What is the correct HTML for adding a background color?

1 <body color="yellow">
2 <body bgcolor="yellow">
3 <background>yellow</background>
4 <body background="yellow">

q) Which attribute is used to name an element uniquely?

class
id
dot
all of above

20. What is the full form of HTTP?

Hyper text transfer protocol
Hyper text transfer package
Hyphenation text test program
(C) none of the above

24. What is the correct way of describing XML data?

a) XML uses a DTD to describe data
b) XML uses a description node to describe data
c) XML uses XSL to describe the data
d) XML uses a validator to describe the data

:

14 Which of the following can't be done with client-side JavaScript?

d) Validating a form
e) Sending a form's contents by email
f) Storing the form's contents to a database file on the server
g) None of the above

27. What is the correct JavaScript syntax to write "Hello World"?

a) System.out.println("Hello World")
b) println ("Hello World")
c) document.write("Hello World")
d) response.write("Hello World")

xiv) What is the correct syntax for referring to an external script called " abc.js"?

<script href=" abc.js">
<script name=" abc.js">
<script src=" abc.js">
None of the above

o) How to create a Date object in JavaScript?

dateObjectName = new Date([parameters])
dateObjectName.new Date([parameters])
dateObjectName := new Date([parameters])
dateObjectName Date([parameters])

xviii) <script
type="text/javascript">
x=4+"4";
document.write(x);

</script>
Output------
?

44
8
4
Error output

q) <script
type="text/javascript"> var s =
"9123456 or 80000?"; var
pattern = /\d{4}/;
var output = s.match(pattern);
document.write(output);
</script>

9123
91234
80000
None of the above

35. What makes Ajax unique?

A. It works as a stand-alone Web-development tool.

a. It works the same with all Web browsers.
b. It uses C++ as its programming language.
c. It makes data requests asynchronously.

31. What does the XMLHttpRequest object accomplish in Ajax? | Ajax
a) It's the programming language used to develop Ajax applications.
b) It provides a means of exchanging structured data between the Web server and client.
c) It provides the ability to asynchronously exchange data between Web browsers and a Web server.
d) It provides the ability to mark up and style the display of Web-page text.

32. AJAX made popular by | Ajax
a) Microsoft
b) IBM
c) Sun Micro system
d) Google

18. Which one of the following function is used to start a session?

a) start_session()
b) session_start()
c) session_begin()
d) begin_session()

11 If the directive session.cookie_lifetime is set to 3600, the cookie will live until..
d) 3600 sec
e) 3600 min
f) 3600 hrs
g) the browser is restarted

32. When you want to store user data in a session use the . . . . array.
a) $_SESSION
b) SYS_SESSION
c) $SESSION
d) $_SESSIONS

1. What does the following bit of JavaScript print out?

var a = [1,,3,4,5]; console.log([a[4], a[1],
a[5]]);

5, undefined,undefined
5,3,undefined
5,0,undefined
5,null,undefined

Web applications are frequently constructed as a distributed system utilizing a multitiered architecture with three tiers. They are:

Browser, Server, Database
Model,View, Controller
Browser,Service,Database
Model,View,Service

Which selector is used by applying a specific style for a group of elements?

a)class

b)style

c)h1

d)id

Which method is used to remove the first element of an Array object? a)pop()
b)push()

c)shift()

d)unshift()

K. Which of these methods returns x ,rounded downwards to the nearest integer?
a)ceil()

b)floor()

c)abs()

d)round()

J. Where in an HTML document is the correct place to refer to an external style sheet?

At the top of the document
At the end of the document
In the <body> section
In the <head> section

Which is the correct CSS syntax?

body:color=black

{body;color:black}

{body:color=black(body}

body {color: black}

What is the correct CSS syntax for making all the <p> elements bold?

I. <p style="text-size:bold">

J. <p style="font-size:bold">

K. p {font-weight:bold}

L. p {text-size:bold}

To link your Web page to a style sheet, you must use the _____ tag.

<STYLESHEET>

<STYLE>

<LINK>

<WEB>

10.How can you create an e-mail link?

I. <a href="mailto:xxx@yyy">

J. <mail href="xxx@yyy">

K. <mail>xxx@yyy</mail>

L. <a href="xxx@yyy">

Which of these tags are all <table> tags?

6 <table><head><tfoot>

7 <thead><body><tr>

8 <table><tr><td>

9 <table><tr><tt>

How can you make a list that lists the items with numbers?

3 <list>

4

5

6 <dl>

Choose the correct HTML to left-align the content inside a tablecell

33. <tdleft>

34. <td leftalign>

36. <td valign="left">
37. <td align="left">

HTTP is

38. a network layer protocol
39. an application layer protocol
40. a transport layer protocol
41. a network interface layer protocol

Click.This code

42. Opens a blank window
43. Opens 1.html in the same window
44. Opens 1.html in new window
45. Opens default page in new window

In HTTP, which method gets the resource as specified in the URI

f. GET
g. POST c. PUT
g. TRACE

Which of these is not a valid attribute of <tr> element?

f. valign
g. bgcolor
h. align
i. rowspan

Which attribute is used to specify the path of the image in <img> element?

e. href
f. src
g. path
h. link

1._____is the first schema to be designed when you are developing a DBMS
Ans a) **conceptual** b) relational c) physical d) hierarchical

2. Consider the following recursive C function.
Void get (int n)
{if (n<1) return;
get (n-1)
get (n-3) ;
printf ("%d",n);
If get(6) function is being called in main () then how many times will the get() function be invoked before returning to the main ( ) ?
Ans . (A) 15**(B) 25**(C) 35(D) 45

```
get(6) [25 Calls]
                                /      \
               [17 Calls] get(5)       get(3) [7 Calls]
                         /     \
                      get(4)    get(2)[5 Calls]
                     /    \
     [7 Calls] get(3)  get(1)[3 Calls]
                /     \
             get(2)   get(0)
            /    \
[3 Calls]get(1)  get(-1)
   /  \
get(0) get(-2)
```

We can verify the same by running below program.

```
# include <stdio.h>
int count = 0;

void get (int n)
{
    count++;
    if (n < 1) return;
    get(n-1);
    get(n-3);
}
int main()
{
    get(6);
    printf("%d ", count);
}
```

l

3._____ operate at the network layer, connecting two or more network segments that use the same or different data link layer protocols, but the same network layer protocol.
Ans .a) Routers b) Firewall c)Bridges b)Gateway

4.Which of the following is shared between all of the threads in a process? Assume a kernel level thread implementation.
Ans a. Register values **b. File descriptors** c. Scheduler priority d. Local variables

5.The truth table
X Y f(X,Y)
0 0 0
0 1 0
1 0 1
1 1 1
represents the Boolean function
Ans X

6.The _____ is generally used to group hosts based on the physical network topology.
Ans subnet id

7.#include
int main ()
{
static int a[]={10, 20, 30 40, 50};
static int *p[]= {a, a+3, a+4, a+1, a+2};
int **ptr=p;
ptr++;
printf ("%d%d", ptr p, **ptr);
}
The output of the program is _____.
Ans 140

8.Which of the following is not true of virtual memory?
Ans a) It allows more efficient use of memory b) It requires hardware support
c) It reduces the need for relocatable code d) It requires the use of a disk or other secondary storage

9. General Purpose Software which creates and manipulates database is
Ans ~~SQL~~ DBMS

10. The addressing mode used in an instruction of the form ADD R1, R2 is _____.
Ans .Register mode

12. The load instruction is mostly used to designate a transfer from memory to a processor register known as
Ans.A. Accumulator B. Instruction Register
C. Program counter D. Memory address Register

13. With a single resource, deadlock occurs,
Ans .

A.if there are more than two processes competing for that resource

B.if there are only two processes competing for that resource

C.if there is a single process competing for that resource

D.none of these

14. System catalogue is a system created database that describes
Ans. 1) Columns: System catalog maintains all the necessary information related to every column in a database. For Example, name of a column, associated table, size, data type, etc.

2) Tables: A system catalog maintains all the necessary information related to every table in a database. For Example: name of a table, owner, size, number of columns, etc.

3) Views: System catalog maintains all the necessary information related to every view in a database. For Example: name, owner, query which defines the view, etc.

4) Users: System catalog maintains all the necessary information related to every user in a database. For Example: user name, password, etc.

5) Privileges: It maintains all the necessary information related to every set of privileges in a database. For Example: name of grantor, name of grantee, privileges granted, object on which privileges are granted, etc.

15. What will be the output of the following C program?

```
void count(int n){
static int d=1;
printf("%d ", n);
printf("%d ", d);
d++;
if(n>1) count(n-1);
printf("%d ", d);
}
void main(){
count(3);
}
```

Ans (A) 3 1 2 2 1 3 4 4 4
(B) 3 1 2 1 1 1 2 2 2
(C) 3 1 2 2 1 3 4
(D) 3 1 2 1 1 1 2

16. Consider the following program:

```
int f(int *p, int n)
{
if (n <= 1) return 0;
else return max ( f (p+1, n-1),p[0]-p[1]);
}
int main()
{
int a[] = {3,5,2,6,4};
printf("%d", f(a,5));
}
```

The value printed by this program is
Ans . A) 2 **(B) 3** (C) 4 (D) 5

17. Which of the following is an advantage of using database systems?
Ans . A) Redundancy is controlled B) unauthorized access is restricted
C) enforce integrity constraints **D) all of these**

18. User Datagram Protocol adds no additional reliability mechanisms except one which is optional. Identify that.
Ans .~~flow controls~~ CHECKSUM

19. Simplified form of the boolean expression (X + Y + XY) (X + Z) is
Ans

[A]. X + Y + Z

[B]. XY + YZ

[C]. X + YZ

[D]. XZ + Y

20. Mutual exclusion problem occurs between
Ans among the processes that share resources.

21. What schema defines how and where the data are organized in a physical storage?
Ans. Physical database schema.

23. For the IEEE 802.11 MAC protocol for wireless communication, which of the following statements is/are TRUE ?
I. At least three non-overlapping channels are available for transmissions.
II. The RTS-CTS mechanism is used for collision detection.
III.Unicast frames are ACKed.
Ans. (A) All I, II, and III **(B) I and III only**
(C) II and III only (D) II only

24. To prevent any method from overriding, the method has to declared as,
Ans . a) static b) constant c) protected **d) final**

25. Use of _____ allows for some processes to be waiting on I/O while another process executes
Ans Scheduling system

27. The E-R model was first introduced by CHARLES BACHMAN
Ans. ~~Peter Pin-Shan Chen of Massachusetts Institute of Technology~~

28. Consider the following C program.

```
#include
int f1 (void) ;
int f 2 void ;
int x 10;
int main ()
{
int x=1;
x+=f1()+ f2()+f3()+f2() ;
printf("%d", x);
return 0;
}
int f1(){int x=25; x++; return x;}
int f2(){static int x =50; x++;return x;}
int f3(){x*=10; return x};
```

The output of the program is_____.

Ans . (A) 230
(B) 131
(C) 231
(D) 330

```
x += f1() + f2() + f3() + f2();


x = x +  f1() + f2() + f3() + f2();


f1() returns 26
```

```
f2() returns 51


f3() returns 100


second call to f2() returns 52
[Note x is static in f2()]


x = 1 + 26 + 51 + 100 + 52  = 230
```

29. _____ OS pays more attention on the meeting of the time limits.
Ans1 Distributed 2 Network **3 Real time** 4 Online

30. The protocol data unit (PDU) for the application layer in the Internet stack is
Ans (A) Segment (B) Datagram **(C) Message** (D) Frame

31. An Internet Service Provider (ISP) has the following chunk of CIDR-based IP addresses available with it: 245.248.128.0/20. The ISP wants to give half of this chunk of addresses to Organization A, and a quarter to Organization B, while retaining the remaining with itself. Which of the following is a valid allocation of address to A and B?
Ans (A) 245.248.136.0/21 and 245.248.128.0/22
(B) 245.248.128.0/21 and 245.248.128.0/22
(C) 245.248.132.0/22 and 245.248.132.0/21
(D) 245.248.136.0/24 and 245.248.132.0/21

32. The performance of cache memory is frequently measured in terms of a quantity called
Ans .Hit ratio

33. Using 10's complement 72532- 3250 is
Ans.69282

34. The father of relational database system is
Ans . Edgar Frank "Ted" Codd

35. Consider the function func shown below:

```
int func(int num) {
int count = 0;
while (num) {
count++;
num>>= 1;
}
```

return (count);
}
The value returned by func(435)is

Ans (A) 8 **(B) 9** (C) 10 (D) 11

if keep on dividing by 2, we get: 435, 217, 108, 54, 27, 13, 6, 3, 1.
Therefore, the count is 9.

36. The 16-bit 2?s complement representation of an integer is 1111 1111 1111 0101, its decimal representation is
Ans (A) 10 **(B)** 11 **(C)** -10 **(D) -11**

2's complement of (1111 1111 1111 0101)
= (1's complement of (1111 1111 1111 0101) + 1)
= ((0000 0000 0000 1010) + 1)
= 1011 in binary
= 11

It is **negative**, so answer is **(- 11)**.

37. What is the RDBMS terminology for a row
Ans tuple

38. Consider the following C program segment.
#include
intmain()
{char sl [7]="1234",*p;
p=sl+2;
***p='0';**
printf ("%s",sl)
{
What will be printed by the program?
Ans a. 12 b. 120400 **c.1204** d. 1034

Third element is made 0 so,1234 will become 1204

39. Which of the following is/are example(s) of stateful application layer protocols?
(i)HTTP
(ii)FTP
(iii)TCP
(iv)POP3
Ans A) (i) and (ii) only

(B)(ii) and (iii) only
(C) (ii) and (iv) only
(D) (iv) only

40. What is the software that runs a computer, including scheduling tasks, managing storage, and handling communication with peripherals?
Ans .Operating system

41. The relationship that exists within the same entity type is called as _____ relationship.
Ans.Recursive /UNARY

42. Which of the following is not usually stored in a two-level page table?
Ans a. Virtual page number b. Physical page number
c. Dirty bit d. Reference bit

44. TCP manages a point-to-point and _____ connection for an application between two computers
Ans a)full-duplex b)simple
~~**c)half-duplex**~~ d)multi point

45. A circuit that converts n inputs to 2^n outputs is called
Ans a) encoder **b)decoder** c)comparator d)carry look ahead

46. Normalisation of database is used to
Ans . Database normalization, or simply normalization, is the process of organizing the columns (attributes) and tables (relations) of a relational database to **reduce data redundancy and improve data integrity.**

47. The purpose of a TLB is
Ans a. To cache page translation information b. To cache frequently used data
c. . To hold register values while a process is waiting to be run
d. To hold the start and length of the page table

50.What is the maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.255.224 subnet mask?
Ans .

A]. 14

[B]. 15

[C]. 16

[D]. 30

51. To build a mod-19 counter the number of flip-flops required is
Ans 5

52. What is the RDBMS terminology for a set of legal values that an attribute can have ?
Ans a)tuple b)attribute c)relation **d)domain**

53. System calls:
Ans .
a. Provide a rich and flexible API for software developers
b. Often change dramatically between different releases of an operating system
c. Protect kernel data structures from user code
d. Allow the operating system to optimize performance

54. Consider the following program in C language:

```
#include
main()
{
int i;
int *pi = &i;
scanf(?%d?,pi);
printf(?%d\n?, i+5);
}
```

Which one of the following statements is TRUE?
Ans. (A) Compilation fails.
(B) Execution results in a run-time error.
(C) On execution, the value printed is 5 more than the address of variable i.
(D) On execution, the value printed is 5 more than the integer value entered.

56. What is the main difference between traps and interrupts?
Ans . a)How they are initiated b)The kind of code that's used to handle them
c)Whether or not the scheduler is called d)How the operating system returns from them

58. The smallest integer than can be represented by an 8-bit number in 2?s complement form is
Ans . (A) -256 **(B) -128** **(C)** -127 **(D)** 0

59. ATM uses a ____ packet size
Ans .53 bytes

60. Which of the following concurrency control mechanisms insist unlocking of all read and write locks of transactions at the end of commit?
Ans .Rigorous 2 phase locking

61. What is the RDBMS technology for the number of attributes in a relation?
Ans .Degree

62. Class D in network is used for
Ans. Used uniquely to identify multicast groups

63. 1024 bit is equal to how many byte
Ans.128

64. Consider the following C code segment:

```
int a, b, c = 0;
void prtFun(void);
main( )
{ static int a = 1; /* Line 1 */
prtFun( );
a + = 1;
prtFun( )
printf(?\n %d %d ?, a, b);
}
void prtFun(void)
{ static int a=2; /* Line 2 */
int b=1;
a+=++b;
printf(?\n %d %d ?, a, b);
}
```

What output will be generated by the given code segment if:
Line 1 is replaced by auto int a = 1;
Line 2 is replaced by register int a = 2;
Ans.(D)42
42
20

65. Buffering is useful because
Ans a. It makes it seem like there's more memory in the computer
b. It reduces the number of memory copies required
c. It allows all device drivers to use the same code
d. It allows devices and thee CPU to operate asynchronously

66. Adjacent squares in a K-Map represents a
Ans .Minterm

68. **If two interrupts, one of higher priority and other of lower priority occur simultaneously, then the service provided is for**
Ans . a) interrupt of lower priority **b) interrupt of higher priority**
c) both the interrupts d) none of the mentioned

70. **Suppose that everyone in a group of N people wants to communicate secretly with N-1 others using symmetric key cryptographic system. The communication between any two persons should not be decodable by the others in the group. The number of keys required in the system as a whole to satisfy the confidentiality requirement is**
Ans. (A) 2N **(B)** N(N – 1) **(C) N(N – 1)/2** **(D)** $(N - 1)^2$

71. **Minterms are arranged in map in a sequence of**
Ans. a) binary sequence **b) gray code** c) binary variables d) BCD code

72. **What will be the output of the following program?**

```
#include
using namespace std;

class x {
public:
int a;
x();
};
x::x() { a=10; cout<
class b:public x {
public:
b();
};
b::b() { a=20; cout<
int main ()
{
b temp;
return 0;
}
```

Ans compilation error

73. **An optimal scheduling algorithm in terms of minimizing the average waiting time of a given set of processes is _____.**
Ans. 1 FCFS scheduling algorithm
2 Round robin scheduling algorithm
3 Shorest job - first scheduling algorithm
4 None of the abov

74. **In the IPv4 addressing format, the number of networks allowed under Class C addresses is**
Ans. (A) 2^14
(B) 2^7
(C) 2^21
(D) 2^24

75. **When a program tries to access a page that is mapped in address space but not loaded in physical memory, then**
Ans . a) segmentation fault occurs b) fatal error occurs **c) page fault occurs** d) no error occurs

76. **The servlet life cycle has the following cycle.**
Ans . a. Init destroy service b. Service destroy **c. Init service destroy** d. Init service

77. **SQl allows duplicates tuples in relations, and correspondingly defines the multiplicity of tuples in the result of joins. Which one of the following queries always gives the same answer as the nested query shown below:**
select * from R where a in (select S.a from S)
Ans. (A) Select R.* from R, S where R.a=S.a
(B) Select distinct R.* from R, S where R.a=S.a
(C) Select R.* from R, (select distinct a from S) as S1 where R.a=S1.a
(D) Select R.* from R, S where R.a = S.a and is unique R

79. **Which of the following unit will choose to transform decimal number to binary code ?**
Ans .Encoder

80. **The following function computes the maximum value contained in an integer array p[ ] of size n (n >= 1).**

```
int max(int *p, int n) {
int a=0, b=n-1;
while (_____) {
if (p[a] <= p[b]) { a = a+1; }
else { b = b-1; }
}
return p[a];
}
```

The missing loop condition is
Ans. (A) a != n
(B) b != 0
(C) b > (a + 1)
(D) b != a

81. **ICMP is primarily used for**

Ans . a) error and diagnostic functions

b) addressing

c) forwarding

d) none of the mentioned

82. **Given the following schema:employees(emp-id, first-name, last-name, hire-date,dept-id, salary)departments(dept-id, dept-name, manager-id, location-id)**
You want to display the last names and hire dates of all latest hires in their respective departments in the location ID 1700. You issue the following query:SQL>SELECT last-name, hire-date
FROM employees
WHERE (dept-id, hire-date) IN
(SELECT dept-id, MAX(hire-date)
FROM employees JOIN departments USING(dept-id)
WHERE location-id = 1700
GROUP BY dept-id);
What is the outcome?
Ans . (A) It executes but does not give the correct result.

(B) It executes and gives the correct result.

(C) It generates an error because of pairwise comparison.

(D) It generates an error because the GROUP BY clause cannot be used with table joins in a subquery

83. **Which algorithm chooses the page that has not been used for the longest period of time whenever the page required to be replaced?**
Ans . least recently used algorithm

84. **Which of the following boolean expressions is not logically equivalent to all of the rest ?**
Ans . A)ab + (cd)' + cd + bd' ~~**B)a (b + c) + cd**~~ C)ab + ac + (cd)' D)bd' + c'd' + ab + cd

85. **How many address bits are needed to select all memory locations in the 16K × 1 RAM?**
Ans .14

86. **The embedded c program is converted by cross compiler to**
Ans .object file

89. **Assume a table Employee (Eno, Ename, Dept, Salary, Phone) with 10000 records.**

Also assume that Employee has a non-clustering index on Salary, clustering indexes on Dept and Phone. If there is a SQL query "SELECT Eno FROM Employee WHERE Salary/12 = 10000", which of the following will happen during query execution?

Ans

91. **Which standard TCP port is assigned for contacting SSH servers?**
Ans . a) port 21 **b) port 22** c) port 23 d) port 24

92. **If the main memory is of 8K bytes and the cache memory is of 2K words. It uses associative mapping. Then each word of cache memory shall be_____.**
Ans . A.11 bits B.21 bits **C.16 bits** D.20 bits

93. What is the output of the following program?

```
#include
using namespace std;
int main()
{
int x=20;
if(!(!x)&&x)
cout<<x;
else
{
x=10;
cout<<x;
return 0;
}} </x;
</x;
```

Ans 20 (</x and </x are ignored)

94. **Consider the following function written the C programming language.**

```
void foo (char * a ) {
if (* a & & * a ! =' ' ){
putchar (*a);
}
}
}
```

The output of the above function on input ?ABCD EFGH? is
Ans . (A) ABCD EFGH **(B)** ABCD **(C)** HGFE DCBA **(D) DCBA**

95. **Consider the following schema as:**

Product_Master (prod_id, prod_name, rate)

Purchase_details (prod_id, quantity, dept_no, purchase_date).

Choose the suitable relational algebra expressionn for Get Product_id, Product_name & quantity for all purchased products.

Ans i) Π prod_id, prod_name, quantity (σ Product_Master.prod_id=Purchase_details.prod_id (Product_Master Purchase_details))

OR

Π prod_id, prod_name, quantity (Product_Master Purchase_details)

96. **When an instruction is read from the memory, it is called**

Ans .It is called instruction cycle

97.**Let the size of congestion window of a TCP connection be 32 KB when a timeout occurs. The round trip time of the connection is 100 msec and the maximum segment size used is 2 KB. The time taken (in msec) by the TCP connection to get back to 32 KB congestion window is**

Ans . (A) 1100 to 1300

(B) 800 to 1000

(C) 1400 to 1600

(D) 1500 to 1700

98. **The minimum number of NAND gates required to implement the Boolean function. A + AB' + AB'C is equal to**

Ans .Zero

99.**For a C program accessing X[i][j][k], the following intermediate code is generated by a compiler. Assume that the size of an integer is 32 bits and the size of a character is 8 bits.**

t0 = i * 1024
t1 = j * 32
t2 = k * 4
t3 = t1 + t0
t4 = t3 + t2
t5 = X[t4]

Which one of the following statements about the source code for the C program is CORRECT?

Ans. (A) X is declared as "int X[32][32][8].

(B) X is declared as "int X[4][1024][32]".

(C) X is declared as "char X[4][32][8]".

(D) X is declared as "char X[32][16][2]".

100. **Creating a B Tree index for your database has to specify in _____.**

Ans a. DDL b. SDL c. VDL d. TCL

101. **UDP has a smaller overhead then TCP, especially when the total size of the messages is**

Ans .Small

102. The 16 bit flag of 8086 microprocessor is responsible to indicate ----------Ans.

A. the condition of result of ALU operation B. the condition of memory
C. the result of addition D. the result of subtraction

103. A solution to the Dining Philosopher?s problem which avoids Deadlock can be**:**
Ans Ensure that all the Philosophers except one pick up the left fork while that particular philosopher pick up right fork before left fork

105. The OS of a computer may periodically collect all the free memory space to form contiguous block of free space. This is called
Ans Garbage collection

106. Which of the following are used to generate a message digest by the network security protocols?
Ans.(P) RSA (**Q) SHA-1** (R) DES **(S) MD5** Q S

107. public class MyRunnable implements Runnable
{
public void run()
{
// some code here
}
}
which of these will create and start this thread?
Ans.

[A]. new Runnable(MyRunnable).start();

[B]. new Thread(MyRunnable).run();

[C]. new Thread(new MyRunnable()).start();

[D]. new MyRunnable().start();

108. The data manipulation language used in SQL is a,
(I) Procedural DML
(II) Non-Procedural DML II AND IV
(III) Modification DML
(IV) Declarative DML

109. Assume a relation ACCOUNT (acno, balance, type, branch, last_accessed) with 1 million records. If a SQL query "SELECT balance FROM account WHERE balance>5000" would produce 800000 records, which one of the following is the optimized version of relational algebra expressions that is equivalent to the given SQL query?
Ans.

(a) $\sigma balance$ ($\Pi balance$>5000 (*account*)) **(b) $\sigma balance$>5000 ($\Pi balance$ (*account*))**
(c) $\Pi balance$ ($\sigma balance$<5000 (*account*)) (d) $\Pi balance$>5000 ($\sigma balance$ (*account*))

110. DMA is useful for the operations

Ans DMA is useful for transferring data between memory and devices if large volume of data is to be transferred, or the devices have small response times.

111. What does the code snippet given below do?

```
void fun1(struct node* head)
{
if(head == NULL)
return;

fun1(head->next);
printf("%d  ", head->data);
}
```

Ans. (A) Prints all nodes of linked lists

(B) Prints all nodes of linked list in reverse order

(C) Prints alternate nodes of Linked List

(D) Prints alternate nodes in reverse order

112. Data security threats include

Ans.

A. hardware failure

B. privacy invasion

C. fraudulent manipulation of data

D. All of the above

113. A computer system implements 8 kilobyte pages and a +32-bit physical address space. Each page table entry contains a valid bit, a dirty bit, three permission bits, and the translation. If the maximum size of the page table of a process is 24 megabytes, the length of the virtual address supported by the system is _____ bits.

Ans . (A) 36 (B) 32 **(C)** 28 **(D)** 40

115. Given the following structure template, choose the correct syntax for accessing the 5th subject marks of the 3rd student.

```
struct stud
{

int marks[6];

char sname[20];
```

char rno[10];

}s[10];

Ans a) stud[2].marks[4] b) stud[4].marks[2] **c) s[2].marks[4]** d) s[4].marks[2]

116. Eight minterms will be used for
Ans three variables

117. Which of the following transport layer protocols is used to support electronic mail?
Ans TCP

118. Three concurrent processes X, Y, and Z execute three different code segments that access and update certain shared variables. Process X executes the P operation (i.e., wait) on semaphores a, b and c; Process Y executes the P operation on semaphores b, c and d; Process Z executes the P operation on semaphores c, d, and a before entering the respective code segments. After completing the execution of its code segment, each process invokes the V operation (i.e., signal) on its three semaphores. All semaphores are binary semaphores initialized to one. Which one of the following represents a deadlock-free order of invoking the P operations by the processes?
Ans . (A) X: P(a)P(b)P(c) Y: P(b)P(c)P(d) Z: P(c)P(d)P(a)
(B) X: P(b)P(a)P(c) Y: P(b)P(c)P(d) Z: P(a)P(c)P(d)
(C) X: P(b)P(a)P(c) Y: P(c)P(b)P(d) Z: P(a)P(c)P(d)
(D) X: P(a)P(b)P(c) Y: P(c)P(b)P(d) Z: P(c)P(d)P(a)

119. This topology requires multipoint connection
Ans. Bus topology

120. Consider a join (relation algebra operation) between relations r(R)and s(S) using the nested loop method. There are 3 buffers each of size equal to disk block size, out of which one buffer is reserved for intermediate results. Assuming size(r(R))
Ans.(A) relation r(R) is in the outer loop.
(B) relation s(S) is in the outer loop.
(C) join selection factor between r(R) and s(S) is more than 0.5.
(D) join selection factor between r(R) and s(S) is less than 0.5.

122. Suppose a disk has 201 cylinders, numbered from 0 to 200. At some time the disk arm is at cylinder 100, and there is a queue of disk access requests for cylinders 30, 85, 90, 100, 105, 110, 135 and145. If Shortest-Seek Time First (SSTF) is being used for scheduling the disk access, the request for cylinder 90 is serviced after servicing _____ number of requests.
Ans. (A) 1 **(B)** 2 **(C) 3** **(D)** 4

123. The number of min-terms after minimizing the following Boolean expression is _____.
[D'+AB'+A'C+AC'D+A'C'D]'
Ans . (A) 1 **(B)** 2 **(C)** 3 **(D)** 4

124. Which of the following is NOT a superkey in a relational schema with attributes V,W,X,Y,Z and primary key V Y?
Ans. A) V X Y Z **(B) V W X Z (C)** V W X Y **(D)** V W X Y Z

126. HTTP is _____ protocol
Ans .Application layer protocol

127.Consider the following C program
```
#inclue
int main()
int i, j, k 0;
j=2*3/4+2.0 / 5+8 / 5;
k-= --j;
for (i=0; i<5; i++)
{
Switch (i + k)
{
case1:
case 2 : printf ("\ n%d", i+k)
case 3 : printf ("\ n%d", i+k);
default : printf ("\n%d",i+k);
}
}
Return 0:
}
```
The number of times printf statement is executed is _____.
Ans 4

128. In which addressing mode the operand is given explicitly in the instruction
Ans.Immediate mode

129. The HTTP response message leaves out the requested object when _____ method is used
Ans a) GET b) POST **c) HEAD** d) PUT

130. Which of the following is not a part of instruction cycle?
Ans (A) Fetch phase (B) Decode phase
(C) Wait Phase (D) Execute phase

132. A process executes the code
```
fork ();
fork ();
fork ();
```
The total number of child processes created is
Ans. (A) 3 (B) 4 **(C) 7** (D) 8

134. The average time required to reach a storage location in memory and obtain its contents is called the
Ans .Acess Time

136. The relation R={A,B,C,D,E,F} with FD A,B-> C, C-> D, C->E,F holds
Ans A,B

137. After fetching the instruction from the memory, the binary code of the instruction goes to
Ans .Instruction register

138. _____ cryptography refers to encryption methods in which both the sender and receiver share the same key.
Ans symmetric cryptography

139. When CPU is executing a Program that is part of the Operating System, it is said to be in
Ans.System mode

141. Consider the following C function.

```
int fun (int n) {
int x =1, k;
if (n ==1) return x;
for (k=1; k < n; ++k)
x = x + fun (k)* fun (n - k); return x;
}
```

The return value of fun (5) is _____
Ans A) 0 **(B)** 26 **(C) 51** **(D)** 71

142. Flip-flops can be constructed with two
Ans. Nand gates

143. Using public key cryptography, X adds a digital signature σ to message M, encrypts , and sends it to Y, where it is decrypted. Which one of the following sequences of keys is used for the operations?
Ans. (A) Encryption: X's private key followed by Y's private key; Decryption: X's public key followed by Y's public key
(B) Encryption: X's private key followed by Y's public key; Decryption: X's public key followed by Y's private key
(C) Encryption: X's public key followed by Y's private key; Decryption: Y's public key followed by X's private key
(D) Encryption: X's private key followed by Y's public key; Decryption: Y's private key followed by X's public key

144. Consider an arbitrary set of CPU-bound processes with unequal CPU burst lengths submitted at the same time to a computer system. Which one of the following process scheduling algorithms would minimize the average waiting time in the ready queue?
Ans. (A) Shortest remaining time first
(B) Round-robin with time quantum less than the shortest CPU burst
(C) Uniform random
(D) Highest priority first with priority proportional to CPU burst length

145. Error correction and error detection happens in _____ layer.
Ans. Data link layer

146. If a hospital has to store the description of each visit of a patient according to date what attribute you will use in the patient entity type?
Ans.Composite

147. Decimal digit in BCD can be represented by
Ans.**4 input lines**

148. What is the return value of f(p,p) if the value of p is initialized to 5 before the call? Note that the first parameter is passed by reference, whereas the second parameter is passed by value.
int f (int &x, int c) {
c=c-1;
if (c-0) return 1;
x=x+1;
return f (x,c)*x;}
Ans. (A) 3024
(B) 6561
(C) 55440
(D) 161051

149. KDD (Knowledge Discovery in Databases) is referred to,
Ans . The term Knowledge Discovery in Databases, orKDD for short, refers to the broad process of findingknowledge in data, and emphasizes the "high-level" application of particular data mining methods.

150. Consider a 4-way set associative cache (initially empty) with total 16 cache blocks. The main memory consists of 256 blocks and the request for memory blocks is in the following order: 0, 255, 1, 4, 3, 8, 133, 159, 216, 129, 63, 8, 48, 32, 73, 92, 155 Which one of the following memory block will NOT be in cache if LRU replacement policy is used?
Ans. (A) 3 **(B)** 8 **(C)** 129 **(D) 216**

151. Design procedure of combinational circuit involves
Ans . E. 4 steps F. 5 steps G. 6 steps H. 8 steps

152. _____is used by network devices, like routers, to send error messages indicating, for example, that a requested service is not available or that a host or router could not be reached.
Ans .ICMP

153. The output of the following program is

```
main()
{
int a = 5;
int b = 10;
cout << (a>b?a:b);
}
```

Ans 10

154. Consider a disk queue with requests for I/O to blocks on cylinders 47, 38, 121, 191, 87, 11,92, 10. The C-LOOK scheduling algorithm is used. The head is initially at cylinder number 63, moving towards larger cylinder numbers on its servicing pass. The cylinders are numbered from 0 to 199. The total head movement (in number of cylinders) incurred while servicing these requests is
Ans . (A) 346 **~~(B) 165~~ (C)** 154 **(D)** 173

155. In design procedure input output values are assigned with
Ans . A. numeric values **B.letter symbols** F.0's G.1's

156. In dynamic routing mechanism the route changes in response to _____
Ans . (A) link cost changes (B) time (C) fragmentation size (D) sequence order

157. _____gives the concepts to describe the structure of the database.
Ans a. Data Model b. Relational model c. Domain model d. Schema model

158. Mod-6 and mod-12 counters are most commonly used in
Ans -
A. frequency counters
B. multiplexed displays
C. digital clocks
D. power consumption meters

159. The Third stage in designing a database is when we analyze our tables more closely and create a _____ between tables.
Ans. Relationship

160. Multiplexing is used in _____

Ans . a) Packet switching **b)Circuit switching** c)Data switching d) None of the mentioned

161. A race condition occurs when

Ans . A race condition is an undesirable situation that occurs when a device or system attempts to perform two or more operations at the same time, but because of the nature of the device or system, the operations must be done in the proper sequence to be done correctly.

162. _____ is a set of networks sharing the same routing policy

Ans Routing protocol

163. The minimum number of page frames that must be allocated to a running process in a virtual memory environment is determined by

Ans .a) the instruction set architecture b) page size

c) physical memory size d) number of processes in memory

165. Passing the request from one schema to another in DBMS architecture is called as _____

Ans. a. Mapping b. Communication c. Relational d. network

166. _____, also known as "port forwarding," is the transmission of data intended for use only within a private, usually corporate network through a public network in such a way that the routing nodes in the public network are unaware that the transmission is part of a private network.

Ans.Tunneling

167. For computers based on three - address instruction formats, each address field can be used to specify which of the following:

S1: A memory operand

S2: A processor register

S3: An implied accumulator registers

Ans .Either S1 and S2

168. What is a trap?

Ans .Internal interrupt SOFTWARE INTERRUPT

1. x is subset of y is true
2. x is subset of y is true (OR) x U y is R is true
3. x U y is R is true
4. x is subset of y is true (AND) x U y is R is true

169. A relation schema R is said to be in 4NF if for every MVD x-->>y that holds over R

Ans whenever X ->-> Y is a nontrivial MVD, then X is a superkey.

170. In Binary trees nodes with no successor are called .....

Ans .Terminal nodes

171. The Snapshot of a table is called as

Ans .Database Instance

172. In real time Operating System, which of the following is the most suitable scheduling scheme?
Ans Pre-emptive scheduling

173. Congestion control and quality of service is qualities of the
Ans . a) ATM b) DH c) Frame Relay d) SONET

174. The _____ translates a byte from one code to another code
Ans . A. XLAT

175. Which amongst the following refers to Absolute addressing mode
Ans . move LOC1, R2

176. _____ detects loss of data errors in data, requests retransmission of lost data, rearranges out-of-order data, and even helps minimize network congestion to reduce the occurrence of the other problems
Ans Transmission control protocol

177. If every node u in G adjacent to every other node v in G, A graph is said to be
Ans.Complete

178. If a virtual memory system has 4 pages in real memory and the rest must be swapped to disk. Which of the following is the hit ratio for the following page address stream. Assume memory starts empty, use the FIFO algorithm
Ans 31%

179. A relation R(a,b,c,d,e,f) with the FDs { a -> b,c; c -> d, e, f } satisfies ----- normal form at the most where ?a? is the primary key.
Ans 3NF

180. On simple paging system with 2^{24} bytes of physical memory, 256 pages of logical address space, and a page size 2^{10} bytes, how many bytes are in a page frame?
Ans 2^10

182. Course_Info{Course_no, Sec_no, Offering_dept, Credit_hours, Course_level, Instructor_ssn, Semester, Year, Days_hours, Room_no, No_of_students}.

The Course_Info has following functional dependencies:

{Course_no}à{Offering_dept, Credit_hours, Course_level}

{Course_no, Sec_no, Semester, Year}à {Days_hours, Room_no, No_of_students, Instructor_ssn }

{Room_no, Days_hours, Semester, Year} à{Instructor_ssn, Course_no, Sec_no}

Find the keys of the relation
COURSE_NO AND SECTION_NO

183. NOP instruction introduces

Ans. a) Address **b) Delay** c) Memory location d) None

184. A binary tree in which all the leaves are on the same level is called as:

Ans Perfect binary tree

185. The addressing mode used in an instruction of the form ADD X Y, is _____.
Ans .Index

186. Which of the following are sufficient conditions for deadlock?

1. **Ans. mutual exclusion**
   The resources involved must be unshareable; otherwise, the processes would not be prevented from using the resource when necessary.
2. **hold and wait or partial allocation**
   The processes must hold the resources they have already been allocated while waiting for other (requested) resources. If the process had to release its resources when a new resource or resources were requested, deadlock could not occur because the process would not prevent others from using resources that it controlled.
3. **no pre-emption**
   The processes must not have resources taken away while that resource is being used. Otherwise, deadlock could not occur since the operating system could simply take enough resources from running processes to enable any process to finish.
4. **resource waiting or circular wait**
   A circular chain of processes, with each process holding resources which are currently being requested by the next process in the chain, cannot exist. If it does, the cycle theorem (which states that "a cycle in the resource graph is necessary for deadlock to occur") indicated that deadlock could occur.

187. In ORDBMS, When an object *O* is brought into memory, they check each oid contained in *O* and replace oids of in-memory objects by in-memory pointers to those objects. This concept refers to:
Ans . pointer swizzling

188. A binary tree T has 20 leaves. The number of nodes in T having two children is
Ans. A) 18 **(B) 19 (C)** 17 **(D)** Any number between 10 and 20

189. How many 8-bit characters can be transmitted per second over a 9600 baud serial communication link using asynchronous mode of transmission with one start bit, eight data bits, two stop bits, and one parity bit?
Ans A.600 **B.800** C.876 D.1200

190. A receiving host has failed to receive all of the segments that it should acknowledge. What can the host do to improve the reliability of this communication session?
Ans.

A. Send a different source port number.

B. Restart the virtual circuit.

C. Decrease the sequence number.

D. Decrease the window size.

191. The port that is used for the generation of handshake lines in mode 1 or mode 2 is
Ans . a) port A b) port B c) port C Lower **d) port C Upper**

192. Consider the following transaction involving two bank account x and y.
read (x) ; x : = x ? 50; write (x) ; read (y); y : = y + 50 ; write (y)
The constraint that the sum of the accounts x and y should remain constant is that of
Ans. (A) Atomicity **(B) Consistency (C)** Isolation **(D)** Durability

193. A computer system implements 8 kilobyte pages and a +32-bit physical address space. Each page table entry contains a valid bit, a dirty bit, three permission bits, and the translation. If the maximum size of the page table of a process is 24 megabytes, the length of the virtual address supported by the system is _____ bits.
Ans . (A) 36 (B) 32 **(C)** 28 **(D)** 40

194. What happens when you push a new node onto a stack?
Ans . The new node is placed at the front of the linked list
195. In 8257 register format, the selected channel is disabled after the terminal count condition is reached when

Ans . a) auto load is set b) auto load is reset ~~**c) TC STOP bit is reset**~~ d) TC STOP bit is se

196. ____ users work on canned transactions
Ans .Naive

197. Which of the following information is not part of Process Control Block?

(i) Process State

(ii) Process Page table only 3

(iii) List of Open files

(iv) Stack Pointer

Ans List of open files

198. The recurrence relation capturing the optimal execution time of the Towers of Hanoi problem with n discs is
Ans (A) T(n) = 2T(n – 2) + 2 (B) T(n) = 2T(n – 1) + n (C) T(n) = 2T(n/2) + 1 **(D) T(n) = 2T(n – 1) + 1**

200. Partial Degree of multiprogramming is controlled by
Ans .The number of processes in the memory

201. Consider the following four schedules due to three transactions (indicated by the subscript) using read and write on a data item x, denoted by r(x) and w(x) respectively. Which one of them is conflict serializable?

(A) $r_1(x)$; $r_2(x)$; $w_1(x)$; $r_3(x)$; $w_2(x)$

(B) $r_2(x)$; $r_1(x)$; $w_2(x)$; $r_3(x)$; $w_1(x)$

(C) $r_3(x)$; $r_2(x)$; $r_1(x)$; $w_2(x)$; $w_1(x)$

(D) $r_2(x)$; $w_2(x)$; $r_3(x)$; $r_1(x)$; $w_1(x)$

Ans .
(A) A
(B) B
(C) C
(D) D

202. If a , b , c, are three nodes connected in sequence in a singly linked list, what is the statement to be added to change this into a circular linked list?
Ans. a) a->next=b b) b->next=c **c) c->next=a** d) all

203. The effective address of the following instruction is , MUL 5(R1,R2)
Ans . ~~**b) 5+(R1*R2)**~~ 5+R1+R2

204. X.25 Networks are _____ networks
Ans . X.25 is an ITU-T standard protocol suite for packet switched wide area network (WAN) communication. An X.25 WAN consists of packet-switching exchange (PSE) nodes as the networking hardware, and leased lines, plain old telephone service connections, or ISDN connections as physical links.

205. When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called
Ans . a) data consistency **b) race condition** c) aging d) starvation

206. Which one of the following protocols is NOT used to resolve one form of address to another one?
Ans . A) DNS **(B)**ARP **(C)DHCP** **(D)** RARP

208. Consider a schedule S1 given below;
R1(A); W1(A); R2(B); R2(A); R1(B); W2(A+B); W1(B); where R1 and W1 are read and write operations of transaction T1 and R2 and W2 are read and write operations of transaction T2. Which of the following is correct regarding schedule S1?
Ans s1 is a conflict serializable

210. The degree of a leaf node is:
Ans.0

211. The instructions which copy information from one location to another either in the processor's internal register set or in the external main memory are called
Ans. (A) Data transfer instructions. (B) Program control instructions.
(C) Input-output instructions. (D) Logical instructions.

212. State the type of multitasking supported by OS when process switched its state from 'Running' to 'Ready' due to scheduling act.
Ans .Pre-emptive

213. End-to-end connectivity is provided from host-to-host in:
Ans .

A. Network layer

B. Session layer

C. Data link layer

D. Transport laye

214. An index is clustered, if
Ans . (A) it is on a set of fields that form a candidate key.
(B) it is on a set of fields that include the primary key.
(C) the data records of the file are organized in the same order as the data entries of the index.
(D) the data records of the file are organized not in the same order as the data entries of the index.

215. Creating a B Tree index for your database has to be specified in _____.
Ans DDL

216. The protocol data unit (PDU) for the application layer in the Internet stack is
Ans.(A)Segment (B) Datagram **(C) Message** (D) Frame

217. The post order traversal of binary tree is DEBFCA. Find out the pre order traversal.
Ans. A. ABFCDE B.ADBFEC **C.ABDECF** D.ABDCEF

218. Consider six memory partitions of sizes 200 KB, 400 KB, 600 KB, 500 KB, 300 KB and 250KB, where KB refers to kilobyte. These partitions need to be allotted to four processes of sizes 357 KB, 210KB, 468 KB and 491 KB in that order. If the best fit algorithm is used, which partitions are NOT allotted to any process?
Ans . (A) 200 KB and 300 KB (B) 200 KB and 250 KB (C) 250 KB and 300 KB (D) 300 KB and 400 KB

219. PSW is saved in stack when there is a
Ans. interrupt recognized B.execution of RST instruction C.Execution of CALL instruction D.All of these

221. Which of the following is not a function of a DBA?
Ans.a)Network maintenance

222. A system uses 3 page frames for storing process pages in main memory. It uses the Least Recently Used (LRU) page replacement policy. Assume that all the page frames are initially empty. What is the total number of page faults that will occur while processing the page reference string given below?
4, 7, 6, 1, 7, 6, 1, 2, 7, 2
Ans. 6

223. What is the postfix expression for the following infix expression?

Infix = a+b%c>d

Ans. a) abcd>%+ b) abc%d>+ c) ab+c%d> **d) abc%+d>**

225. Consider a computer system with 40-bit virtual addressing and page size of sixteen kilobytes. If the computer system has a one-level page table per process and each page table entry requires 48 bits, then the size of the per-process page table is _____ megabytes.
Ans . (A) 384 **(B)** 48 **(C)** 192 **(D)** 96

227. Computers use addressing mode techniques for _____.
Ans. A. giving programming versatility to the user by providing facilities as pointers to memory counters for loop control

B. to reduce no. of bits in the field of instruction

C. specifying rules for modifying or interpreting address field of the instruction
D. All the above

228. Loss in signal power as light travels down the fiber is called?
Ans .Attenuation

232. In OSI model dialogue control and token management are responsibilities of ?

Ans . a.Session layer b.network layer c.transport layer d.data link layer

233. Which of the following is example of in-place algorithm?
Ans A - Bubble Sort B - Merge Sort **C - Insertion Sort** D -All of the above

234. Consider the 3 process, P1, P2 and P3 shown in the table.
Process Arrival time Time units Required
P1 0 5
P2 1 7
P3 3 4
The completion order of the 3 processes under the policies FCFS and RR2 (round robin scheduling) with CPU quantum of 2 time units are

```
Ans. FCFS: P1, P2, P3
     RR2: P1, P3, P2
```

235. A scheduling algorithm assigns priority proportional to the waiting time of a process. Every process starts with priority zero(the lowest priority). The scheduler re-evaluates the process priorities every T time units and decides the next process to schedule. Which one of the following is TRUE if the processes have no I/O operations and all arrive at time zero?
Ans . (A) This algorithm is equivalent to the first-come-first-serve algorithm
(B) This algorithm is equivalent to the round-robin algorithm

C) This algorithm is equivalent to the shortest-job-first algorithm..
(D) This algorithm is equivalent to the shortest-remaining-time-first algorithm

236. Which of the following operator in SQL would produce the following result if applied between two relations Employee and Department?

Eno EName DeptNo DName
111 Kumar 100 Sales
222 Steve 200 Finance
Null Null 300 Admn
244 Meera 400 Mktg
Ans. outer join

237. The run time of the following algorithm is
Procedure A(n)
If(n<=2) return(1)
Else return(A(sqrt(n))
Ans loglogn

238. The address to the next instruction lies in
Ans ~~Memory Buffer Register~~ PROGRAM COUNTER

239. Which protocol does Ping use?
Ans .ICMP

240. What is the unique characteristic of RAID 6 ?
Ans. Double distributed parity

241. The process related to process control, file management, device management, information about system and communication that is requested by any higher level language can be performed by _____.
Ans .a. Editors b.Compilers **c.System Call** d.Caching

242. Consider a dynamic queue with two pointers: front and rear. What is the time needed to insert an element in a queue of length of n?
Ans O(1)

243. Which of the following address modes calculate the effective address as address part of the instruction) + (content of CPU register)
Ans . (A) Direct Address Mode (B) Indirect Address mode.
(C) Relative address Mode. **~~(D) Indexed address Mode.~~**

244. If CurrNode pointer points to the previous node in the list and NewNode points to the newly created Node, the address assignments to be done for inserting a node in the middle of a singly linked list is

Ans . CurrNode->Next = NewNode; NewNode->Next = CurrNode->Next
NewNode->Next = CurrNode->Next; CurrNode->Next = NewNode;
CurrNode->Next = NewNode->Next; NewNode->Next = CurrNode;
CurrNode = NewNode

245. A group of bits that tell the computer to perform a specific operation is known as
Ans . A. Instruction code B. Micro-operation
C. Accumulator D. Register

246. On simple paging system with 224 bytes of physical memory, 256 pages of logical address space, and a page size 210 bytes, how many bytes are in a page frame?
Ans 2^10 same as page size

247. A 2 km long brodcast LAN has 107 bps bandwidth and uses CSMA/ CD. The signal travels along the wire at 2 *10 ^8 m/s. What is the minimum packet size that can be used on this network ?
Ans . (A) 50 bytes **(B)** 100 bytes **(C)** 200 bytes **(D)** None of these

250. The time factor when determining the efficiency of algorithm is measured by
Ans . a. Counting microseconds
b. Counting the number of key operations
c. Counting the number of statements
d. Counting the kilobytes of algorithm

251. How many 8-bit characters can be transmitted per second over a 9600 baud serial communication link using asynchronous mode of transmission with one start bit, eight data bits, and one parity bit ?
Ans . (A) 600 **(B) 800** **(C)** 876 **(D)** 1200

252. When we use auto increment or auto decrement, which of the following is/are true
1) In both, the address is used to retrieve the operand and then the address gets altered.
2) In auto increment the operand is retrieved first and then the address altered.
3) Both of them can be used on general purpose registers as well as memory locations.
Ans a) 1,2,3 b) 2 c)1,3 **d)2,3**

253. Having clause in SQL occurs with
Ans group by

254. One that is not type of flipflop is
Ans .a. JK b.T c.RS **d.ST**

255. If a node having two children is deleted from a BST, it is replaced by its
Ans . a) In-order predecessor **b)In-order successor** c) Pre-order predecessor d) None

256. The best way to retrieve todays date in DBMS is
Ans CURDATE()

257. The address resolution protoc0l (ARP) is used for
Ans . (a) Finding the IP address from the DNS
(b) Finding the IP address of the default gateway
~~**(c) Finding the IP address that corresponds to a MAC address**~~
(d) Finding the MAC address that corresponds to an IP address

258.There are 'm' processes and 'n' instances of a Resource provided. Each process needs 'P' instances of the resource. In which case deadlock will never occur?
Ans.A. (P - 1) m + 1 ≤ n B.(P - 1) m ≤ n + 1 C.(P - 1) m + 1 < n D.(P - 1) m ≤ n + 1

259. Which of the process transition is invalid?
Ans.a) Run Ready b)Suspend waitSuspend ready **c)Wait/ BlockRun** d)RunTerminate

260. All the functions of the ports of 8255 are achieved by programming the bits of an internal register called
Ans .a) data bus control b) read logic control **c) control word register** d) none

261. Which of the following algorithm is not stable?
Ans . A - Bubble Sort **B- Quick Sort** C- Merge Sort D- Insertion Sort

262. An organization has a class B network and wishes to form subnets for 64 departments. The subnet mask would be
Ans . (a) 255.255.0.0 (b) 255.255.64.0 (c) 255.255.128.0 **(d) 255.255.252.0**

264. In a packet switching network, packets are routed from source to destination along a single path having two intermediate node. If the message size is 24 bytes and each packet contains a header of 3 bytes, then the optimum packet size is
Ans .(a) 4 (b)6 (c)7 **(d)9**

265. The process in which of the following states will be in secondary memory?
Ans .a)New, Ready, Wait/Block b)New, Wait/Block, suspend wait, Suspend ready
c)wait/Block, suspend wait, Suspend ready d)New, suspend wait, Suspend ready

266. The number of counters that are present in the programmable timer device 8254 is
Ans . a) 1 b)2 **c)3** d)4

268. Identify the sorting technique that supports divide and conquer strategy and has (n2) complexity in worst case

Ans. Quick sort

269. Given the basic ER and relational models, which of the following is INCORRECT?
Ans . (A) An attribute of an entity can have more than one value
(B) An attribute of an entity can be composite
(C) In a row of a relational table, an attribute can have more than one value
(D) In a row of a relational table, an attribute can have exactly one value or a NULL value

270. If a disk has a seek time of 20ms, rotates 20 revolutions per second, has 100 words per block, and each track has capacity of 300 words. Then the total time required to access one block is.
Ans .60
Time taken to access one block = seek time + rotational delay + block transfer time
Seek time = 20 ms (given)
Rotational delay = on an average taken to be the time to rotate by half = 1/2 X time for 1 rotati X 1/20 sec s = 25 ms
Block Transfer time = block size / transfer rate = 100 / transfer rate
Now, transfer rate = Track capacity / rotation rate = 300 / (1/ 20) = 6000 word per sec = 6 word per ms
Block Transfer time = block size / transfer rate = 100 / 6 ~ 16.67 ms per blockTime taken to access one block = seek time + rotational delay + block transfer time= 20 + 25 + 16.67 = 61.67 ms

271. Station A uses 32 byte packets to transmit messages to Station B using a sliding window protocol. The round trip delay between A and B is 80 milliseconds and the bottleneck bankwidth on the path between aA and B is 128 kbps. What is the optimal window size that A should use ?
Ans.A) 20 (B)40 (C) 160 (D) 320

272.The searching technique that takes O (1) time to find a data is
Ans .Hashing

```
Round Trip propagation delay = 80ms

Frame size = 32*8 bits

Bandwidth = 128kbps

Transmission Time = 32*8/(128) ms = 2 ms


Let n be the window size.


UtiliZation = n/(1+2a) where a = Propagation time / transmission time

            = n/(1+80/2)


For maximum utilization: n = 41 which is close to option (B)
```

273.The data bus buffer is controlled by
Ans .a) control word register b) read/write control logic c) data bus d) none

274. In control word register, if SC1=0 and SC0=1, then the counter selected is
Ans .a) counter 0 **b) counter 1** c)counter 2

275. Information about a process is maintained in a _____.
Ans . 1 Stack 2 Translation Lookaside Buffer **3 Process Control Block** 4 Program Control Block

276. Which of the following is not a conversion function in SQL?
Ans http://www.lc.leidenuniv.nl/awcourse/oracle/server.920/a96540/functions7a.htm#1000047
Following are conversion functions tochar, tonumber todate tostring

277. Two computers C1 and C2 are configured as follows. C1 has IP address 203. 197.2.53 and netmask 255.255. 128.0. C2 has IP address 203.197.75.201 and netmask 255.255.192.0. Which one of the following statements is true?
Ans . (A) C1 and C2 both assume they are on the same network
(B) C2 assumes C1 is on same network, but C1 assumes C2 is on a different network
(C) C1 assumes C2 is on same network, but C2 assumes C1 is on a different network
(D) C1 and C2 both assume they are on different networks.

278. AVL trees have a faster _____
Ans.Retrival

279. Which level of RAID refers to disk mirroring with block striping?
Ans .a) RAID level 1 b) RAID level 2 c)RAID level 0 d)RAID level 3

280.The counter starts counting only if
Ans .a. GATE signal is low b.GATE signal is high c.CLK signal is low d.CLK signal is high

281.Station A needs to send a message consisting of 9 packets to Station B using a siding window (window size 3) and go-back-n error control strategy. All packets are ready and immediately available for transmission. If every 5th packet that A transmits gets lost (but no acks from B ever get lost), then what is the number of packets that A will transmit for sending the message to B?
Ans .(A) 12 (B) 14 **(C)16** (D)18
Total 16 packets are sent. See following table for sequence of events. Since go-back-n error control strategy is used, all packets after a lost packet are sent again.

1	
2	1
3	2
4	3

```
5            4
6
7            6
             7
          [Timeout for 5]


5
6            5
7            6
8
9
             8
             9
          [Timeout for 7]


7
8            7
9            8



         [Timeout for 9]
9
             9
```

282. The time required in worst case for search operation in binary tree is
Ans o(n)

283. Which of the following is shared between all of the threads in a process? Assume a kernel level thread implementation.
Ans .file descriptors.

285.To change the access path programs are categorized under _____ data independence.
Ans .

a.	b. logical	c.	d.
Physical		internal	external

287. Identify the data structure which allows deletions at both ends of the list but insertion at only one end

Ans .a) Input restricted dequeue b)Output restricted qequeue c)Priority queues d)Stack

288. In a token ring network the transmission speed is 10 bps and the propagation speed is 200 metres/ s μ . The 1-bit delay in this network is equivalent to;

Ans . A)500 metres of cable.
(B)200 metres of cable.
(C)20 metres of cable.
(D) 50 metres of cable.

Transmission delay for 1 bit t = 1/(10^7) = 0.1 micro seconds.
200 meters can be traveled in 1 micro second. Therefore, in 0.1 micro seconds, 20 meters can be traveled.

289. The address of a class B host is to be split into subnets with a 6-bit subnet number. What is the maximum number of subnets and the maximum number of hosts in each subnet?

Ans . (A) 62 subnets and 262142 hosts.
(B) 64 subnets and 262142 hosts.
(C) 62 subnets and 1022 hosts.
(D) 64 subnets and 1024 hosts.

Maximum number of subnets = 2^6-2 =62.

290. What are the desirable properties of a transaction?

Ans .Atomicity,consistency,isolation durability

291. A Boolean function may be transformed into

Ans .a logical diagram b.logical graph c.map d.matrix

293. The average time required to reach a storage location in memory and obtain its contents is called the

Ans.access time

294. In the slow start phase of TCP congesting control algorithm, the size of the congestion window

Ans . ~~A) socket (B) bind (C) listen **(D) connect**~~ increase exponentially

295. Shift registers are used for

Ans .a.shifting b.rotating c.adding **d.both a and b**

296. To represent hierarchical relationship between elements, which data structure is suitable?

Ans . Dequeue Priority Tree Graph

297. If a transaction T has obtained an exclusive lock on item Q, then T can

Ans

A) read Q

0 Answers

B) write Q

C) **both read and write Q**

D) write Q but not read Q

298. Operating System

1. Assume that ?C? is a Counting Semaphore initialized to value ?10?. Consider the following program segment:
P(C); V(C); P(C); P(C); P(C); V(C); V(C)
V(C); V(C); V(C); P(C); V(C); V(C); P(C)
What is the value of C?
Ans.a)6 **b)12** c)8 d)10

299. If two relations R and S are joined, then the non matching tuples of both R and S are ignored in
Ans. A) left outer join B) right outer join C) full outer join **D) inner join**

300. Two variables will be represented by
Ans .4 minterms

301. If a class B network on the Internet has a subnet mask of 255.255.248.0, what is the maximum number of hosts per subnet?
Ans . A) 1022 (B) 1023 **(C) 2046** (D) 2047

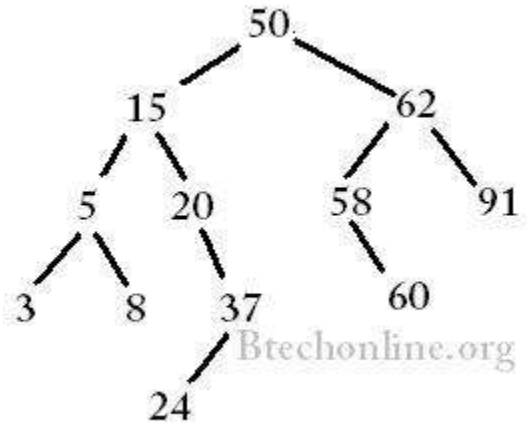
The binary representation of subnet mask is 11111111.11111111.11111000.00000000. There are 21 bits set in subnet. So 11 (32-21) bits are left for host ids. Total possible values of host ids is 2^11 = 2048. Out of these 2048 values, 2 addresses are reserved. The address with all bits as 1 is reserved as broadcast address and address with all host id bits as 0 is used as network address of subnet.
In general, the number of adder]sses usable for addressing specific hosts in each network is always 2^N – 2 where N is the number of bits for host id.

302. A binary search tree is generated by inserting in order the following integers 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24. The number of nodes in the left subtree and right subtree of the root respectively are

Ans . a) (4, 7) **(b) (7, 4)** (c) (8, 3) (d) (3, 8)

Explanation:
Difference between Binary Tree and Binary Search Tree.

Binary Tree - Tree in which each node has at most two child nodes.
Binary search tree - A binary tree in which the left child contains only nodes with values less than the parent node, and the right child contains only nodes with values greater than or equal to the parent. Binary search tree is used for efficient searching. The binary search tree for the above problem is given below.



304. The amount of time required to read a block of data from a disk into memory is composed of seek time, rotational latency, and transfer time. Rotational latency refers to _____.
Ans A. **the time its takes for the platter to make a full rotation**

B. the time it takes for the read-write head to move into position over the appropriate track
C. the time it takes for the platter to rotate the correct sector under the head
D. none of the above

305. A binary tree in which every non-leaf node has non-empty left and right subtrees is called a strictly binary tree. Such a tree with 10 leaves
Ans .Has 19 nodes

306. The FD A → B , DB→ C implies
Ans A) DA→ C B) A → C C) B → A D) DB → A

307. A computer on a 10Mbps network is regulated by atoken bucket. The token bucket is filled at a rate of 2Mbps. It is initially filled to capacity with 16Megabits. What is the maximum duration for which the computer can transmit at the full 10Mbps?
Ans. (A) 1.6 seconds
(B) 2 seconds
(C) 5 seconds
(D) 8 seconds

```
New tokens are added at the rate of r bytes/sec which is

2Mbps in the given question.


Capacity of the token bucket (b) = 16 Mbits
Maximum possible transmission rate (M) = 10Mbps
So the maximum burst time = b/(M-r) = 16/(10-2) = 2 seconds
```

308. The base (or radix) of the number system such that the equation 312/20=13.1 holds is
Ans. (A) 3
(B) 4
(C) 5
(D) 6
Explanation: Let x (≠ 0) be the base of the given equation.
We have,

LHS = $(3x^2 + x + 2) / (2x) = (3x / 2) + (1 / 2) + (1 / x)$
RHS = $x + 3 + (1 / x)$

Now, for the equation to hold true, LHS = RHS

$(3x / 2) + (1 / 2) + (1 / x) = x + 3 + (1 / x)$

$\Rightarrow 3x + 1 = 2x + 6$

$\Rightarrow x = 5$

309. A 20-bit address bus allows access to a memory of capacity
Ans 1 Mb

310. The removal of process from active contention of CPU and reintroduce them into memory later is known as _____.
Ans . 1 Interrupt **2 Swapping** 3 Signal 4 Thread

311. For which one of the following reason: does Internet Protocol (IP) use the time-to-live (TTL) field in the IP datagram header?
Ans . (A) Ensure packets reach destination within that time
(B) Discard packets that reach later than that time
(C) Prevent packets from looping indefinitely
(D) Limit the time for which a packet gets queued in intermediate routers.

Time to live (TTL) or hop limit is a mechanism that limits the lifespan or lifetime of data in a computer or network. TTL may be implemented as a counter or timestamp attached to or embedded in the data. Once the prescribed event count or timespan has elapsed, data is discarded. In computer networking, TTL prevents a data packet from circulating indefinitely.

312. The recurrence relation that arises in relation with the complexity of binary search is
Ans .t(n)=t(n/2)+k ,where k is constant

313. Consider a relation R (A, B). If A → B is a trivial functional dependency and A is the super key for R, then what is the maximum normal form R can be in?
Ans BCNF

314. The algorithm design technique used in the quick sort algorithm is
Ans.Divide and conquer

315. Which of the following is a disadvantage of file processing system?

(I) Efficiency of high level programming,

(II) Data Isolation

(III) Integrity issues

(IV) Storing of records as files

Ans

316. If the offset of the operand is stored in one of the index registers, then it is
Ans . a) based indexed addressing mode
b) relative based indexed addressing mode
c) indexed addressing mode
d) none of the mentioned

317. Which of the following assertions is false about the internet Protocol (IP) ?
Ans (A) It is possible for a computer to have multiple IP addresses
(B) IP packets from the same source to the same destination can take different routes in the network
(C) IP ensures that a packet is discarded if it is unable to reach its destination within a given number of hops
(D) The packet source cannot set the route of an outgoing packets; the route is determined only by the routing tables in the routers on the way
In computer networking, source routing allows a sender of a packet to partially or completely specify the route the packet takes through the network.
In the Internet Protocol, two header options are available which are rarely used: "strict source and record route" (SSRR) and "loose source and record route" (LSRR). Because of security concerns, packets marked LSRR are frequently blocked on the Internet. If not blocked, LSRR can allow an attacker to spoof its address but still successfully receive response packets.

318. The technique, for sharing the time of a computer among several jobs, which switches jobs so rapidly such that each job appears to have the computer to itself, is called
Ans .Time Sharing

319. The operating system of a computer serves as a software interface between the user and the _____.

Ans .Hardware

320. The common register(s) for all the four channels of 8257 are

Ans . a) DMA address register b) terminal count register **c) mode set register and status register** d)none of the mentioned

321. If Human voice is required to be digitized what will be the bit rate at 16 bits per sample?

Ans taking human voice frequency at 150 hz

Bit rate will be 150*16=2400hzps or2.4Khps

323. Consider the tree arcs of a BFS traversal from a source node W in an unweighted, connected, undirected graph. The tree T formed by the tree arcs is a data structure for computing

Ans. (A) the shortest path between every pair of vertices.

(B) the shortest path from W to every vertex in the graph.

(C) the shortest paths from W to only those nodes that are leaves of T.

(D) the longest path in the graph

BFS always produces shortest paths from source to all other vertices in an unweighted graph. The reason is simple, in BFS, we first explore all vertices which are 1 edge away from source, then we explore all vertices which are 2 edges away from the source and so on. This property of BFS makes it useful in many algorithms like Edmonds–Karp algorithm.

324. Which of the following is not a data copy/transfer instruction?

Ans. a) MOV b) PUSH **c) DAS** d) POP

325. A full binary tree with n leaves contains

Ans. 2n-1 nodes

326. Six channels, each with a 200 khz bandwidth are to be multiplexed together. what is the minimum bandwidth requirement if each guard band is 20Khz

Ans 6*200+5*20=1300

328. The collection of processes on the disk that is waiting to be brought into memory for execution forms the _____

Ans. 1 Ready queue 2 Device queue **3 Input queue** 4. Priority queu

329. Assume a relation R with keys X, Y and Z, where X, Y, and Z are sets of one or more attributes. Also assume that Y is a subset or equal to X and Z is a subset of X and Y. Which of the following is true for this case?

Ans .

(a) X and Y are candidate keys of R **(b) Y and Z are the candidate keys of R**

(c) X is the only candidate key of R (d) Z is the only candidate key of R

330. In DMA transfers, the required signals and addresses are given by the_____
Ans . a) Processor b) Device drivers **c) DMA controllers** d) The program itself

331. Which of these multiplexing techniques is digital for combining several low -rate channels into one high-rate one
Ans **Time division multiplexing**

332. The part of the operating system that coordinates the activities of other program is called the
Ans. Monitor
333. The complexity of multiplying two matrices of order m*n and n*p is
Ans.mnp

335. Assume relations R and S with the schemas R (A, B, C) and S (B, D). Which of the following is equivalent to r ⋈ s?
Ans. ~~B (above is symbol of inner join)~~

336. Switching the CPU to another Process requires saving state of the old process and loading new process state is called as _____.
Ans 1 Process Blocking **2 Context Switch** 3 Time Sharing 4 None of the above

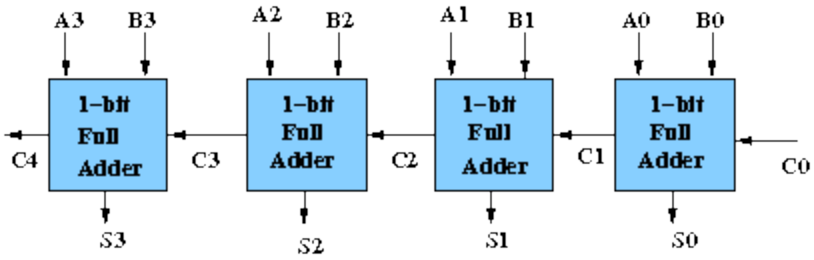
338. What are the three phases in virtual circuit switching?
Ans .Setup ,data transfer and breakdown

339. Consider a relational table with the schema R (A, B, C). Assume that the cardinality of attribute A is 10, B is 20, and C is 5. What is the maximum number of records R can have without duplicate?
Ans 1000

341. Which of the following asymptotic notation is the worst among all?
Ans . A - On + 9378 B - O(n ^3) C– n^O1 **D – 2^On**

342. Which of the following is a bit rate of an 8-PSK signal having 2500 Hz bandwidth ?
Ans **7500 bps**

343. A half adder is implemented with XOR and AND gates. A full adder is implemented with two half adders and one OR gate. The propagation delay of an XOR gate is twice that of an AND/OR gate. The propagation delay of an AND/OR gate is 1.2 microseconds. A 4-bit ripple-carry binary adder is implemented by using four full adders. The total propagation time of this 4-bit binary adder in microseconds is _____.
Ans. **(A)** 19.2 microseconds



Let us first calculate propagation delay of a single

1 bit full adder.

Propagation Delay by n bit full adder is (2n + 2)
gate delays.
[See this for formula].

Here n = 1, so total delay of a 1 bit full adder
is (2 + 2)*1.2 = 4.8 ms

Delay of 4 full adders is = 4 * 4.8 = 19.2 ms

344. Which of the following operator in SQL would produce the following result if applied between two relations Employee and Department?

Eno	EName	DeptNo	DName
111	Kumar	100	Sales
222	Steve	200	Finance
Null	Null	300	Admn
244	Meera	400	Mktg

Ans.Outer join

345. Virtual memory is _____.
Ans . 1 An extremely large main memory
2 An extremely large secondary memory
3 An illusion of extremely large main memory
4 A type of memory used in super computers.

346. The postfix expression of the given infix expression a+b*c+(d*e+f)*g is
Ans.abc*+(de*f+)g*+

347. Given the IP address 201.14.78.65 and the subnet mask 255.255.255.224. What is the subnet address ?

Ans **201.14.78.64**

351.Consider a disk with following specification; sector size - 512 bytes, tracks per surface - 2000, sectors per track - 60, double-sided platters - 4, and average seek time - 20 msec. For a 5400 rpm hard disk for one revolution, if a single track of data can be transferred, then what is the transfer rate?

Ans.capacity of tracks in the bytes is =512*60=30k approx.

Time required for 1 revolution is =1/5400=.011

Data transfer rate is .011*30k approx.=.33 or 3,300 kilobytes per sec

352. If the data unit is 111111 and the divisor is 1010. In CRC method, what is the dividend at the transmission before division ?

Ans **111111000**

353. We want to design a synchronous counter that counts the sequence 0-1-0-2-0-3 and then repeats. The minimum number of J-K flip-flops required to implement this counter is

Ans. **(A)** 1

(B) 2

(C) 4

(D) 5

Total 4.

2 J-K flip- flops for synchronous counter + 2 J-K flip-flop to make 2 bit counter.

Actually, when we are repeating again then after 3 we don't know that our Synchronous counter will go to which zero.
To make it work right, we need to move it to
1st zero after 3
2nd zero after 1
3rd zero after 2
i.e. 0 -> 1 -> 0 -> 2 -> 0 -> 3 (from here it again go to 1st zero).
In order to decide which zero to move on we use counter from 1 to 3, I have attached truth table of normal 2 bit synchronous counter using JK flip flop

355. _____ register keeps track of the instructions stored in program stored in memory.

Ans. A.AR (Address Register) B.XR (Index Register)

C.PC (Program Counter) D.AC (Accumulator)

356. The output after second iteration of the sorting technique is given below. Identify the technique used 23 45 78 8 32 56

Ans **Quick sort**

357. Assume that a table CUSTOMER has 10000 records. If the block size 1024 bytes and the record size is 80 bytes, how many records can be stored in each block to achieve maximum performance and how many blocks are required to store the entire table?
Ans **12 records per block and 834 blocks**

358. which type of EM waves are used for unicast communication such as cellular telephones, satellite networks and wireless LANS.
Ans.Radio waves

360. Consider a relation R (A, B, C, D, E) with set of functional dependencies F = {AàBC, CDàE, BàD, EàA}. Which of the following is one of the candidate keys of R?
Ans a,e,cd,bc

361. A method which creates the problem of secondary clustering is
Ans.~~Linear probing and quadratic probing~~ quadritic
363. In stop and wait ARQ, the sequence numbers are generated using
Ans **0 and 1** modulo 2 arithmatic

364. Mac Operating system is developed by which company
Ans **Apple**

365. Find the time complexity of given code snippet

for(int i=1;i<=n;i++)

for(int j=1;j<=n;j*=2)

Printf("*");

Ans nlogn
366. How many ways are present in 4-way set associative cache of 16 sets?
Ans 34 2 64 32

367. Given R = ABCDEFGH and set of functional dependencies F = {BH→C, BH→F, E→F, A→D, F→A, BH→E, C→E, F→D}, which of the following is redundant set of functional dependencies?
Ans c

368. Which of these is true for go-back-N protocol, if m is the size of sequence number field
Ans

A. **size of send window must be less than 2m and size of receiver window must be 1**

B. size of send window must be greater than 2m and size of receiver window must be 1

C.	size of send window must be less than 2m and size of receiver window must be 2m
D.	size of send window must be greater than 2m and size of receiver window must be 2m

369. RS flip-flops are also called
Ans. RS latch

370. In the running state
1. all the processes waiting for I/O to be completed are found
2. **only the process which has control of the processor is found**
3.all the processes in the job queue are found
4. all the processes waiting for the processor are found

ecuted is

371. void Function(int n)

{

int i, count =0;;

for(i=1; i*i<=n; i++)

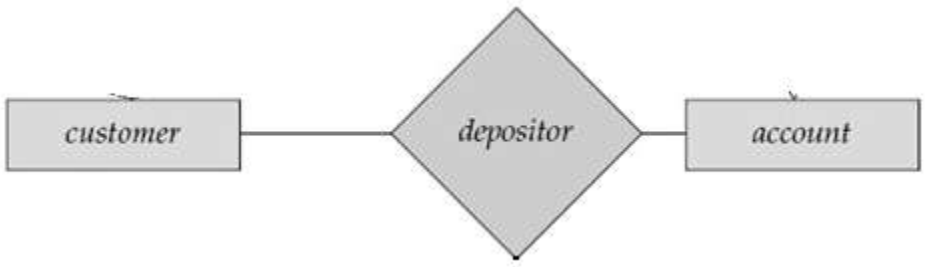
count++;

}

The time complexity of the above code snippet is

Ans (n)^(1/2)

372. Consider the entities customer (customer-name, customer-city,customer-street) and account(account-no,balance) with following relationship



If *depositor* is a one-to-many relationship from account to customer, then this ER diagram can be reduced to which of the following relational schemas?

Ans

373. To guarantee the detection of up to s errors in all cases, the minimum Hamming distance in a block code must be

Ans. S+1

- **A)** 5
- ✓ **B)** 6
- **C)** 11
- **D)** none of the above

374. The conjunctive selection operation $\sigma_{\theta 1 \wedge \theta 2}(E)$ is equivalent to _____

Ans SIGMA THETA 1 (SIGMA THETA 2(E))

375. The 1-address instructions for a=b*c + d is

Ans

```
load b
mul c
add d
store a
```

376.A critical region is

Ans . The part of a program in which shared data is accessed

377. Consider this binary search tree:

```
    14
   /  \
   2   16
  / \
  1  5
 /
 4
```

Suppose we remove the root, replacing it with something from the left

Ans 5

378. Which of the following is not used for synchronization?

Ans .a)The bakery algorithm **b)The banker's algorithm** c) Busy waiting with test and set d)Monitors

379. What is maximum throughput for slotted ALOHA ?

Ans 36%

380. While inserting the elements 71,65,84,69,67,83 in an empty binary search tree (BST) in the sequence shown, the element in the lowest level is

Ans .(A) 65
(B) 67
(C) 69
(D) 83

Explanation: Here is The Insertion Algorithm For a Binary Search Tree :

```
Insert(Root,key)
{
    if(Root is NULL)
        Create a Node with value as key and return
    Else if(Root.key <= key)
        Insert(Root.left,key)
    Else
        Insert(Root.right,key)
}
```

381. The number of inputs, minterms in full adder is
Ans ~~**3 inputs**~~ 3 INPUTS 8 MINTERMS

382. Which of the following concurrency control mechanisms insist unlocking of all read and write locks of transactions at the end of commit?
Ans .
(a) Strict 2 Phase Locking (b) Simple 2 Phase Locking
(c) Timestamp ordering **(d) Rigorous 2 Phase Locking**

383. The main function of dispatcher is:
Ans . Another component that is involved in the CPU-scheduling **function** is the**dispatcher**, which is the module that gives control of the CPU to the process selected by the short-term scheduler. It receives control in kernel mode as the result of an interrupt or system call.

384. A complex low pass signal has a bandwidth of 100kHz. What is the minimum sampling rate for this signal
Ans ***The bandwidth of a low-pass signal is between 0 and f, where f is the maximum frequency in the signal. Therefore, we can sample this signal at 2 times the highest frequency (200 kHz). The sampling rate is therefore 200,000 samples per second.***

385. Which of the following sorting algorithms has the lowest worst-case complexity?
Ans ~~**Depends on algorithm**~~
MERGE SORT

386. The process of analyzing the given relation schemas based on their functional dependencies is known as
Ans A) Dependency **B) normalization** C) both a and b D)none

387. *The major difference between a moore and mealy machine is that*
Ans. n a Mealy machine, instead, it is associated to both a state and a specific input.Moore machine output is a function only of the state of the machine, Mealy machine output is a function of the state of the machine and its inputs.

388. Consider ?n? processes sharing the CPU in a round robin fashion. Assume that the context switch takes ?s? seconds. What must be the quantum ?q? such that the overhead of context switching is minimized and at same time each process is getting guaranteed execution on the CPU atleast once in every ?t? seconds?
Ans. A) q≤ (t – ns)/ (n-1) B)q ≤ (t – ns)/ (n+1) C)q≥ (t – ns)/ (n-1) D)q ≥ (t – ns)/ (n+1)

389. What is the difference between CSMA/CD and ALOHA?
Ans .

A.	frame transmission
B.	Addition of persistence process
C.	Jamming signal
D.	**All of the above**

390. Which one of the following is the recurrence equation for the worst case time complexity of the Quicksort algorithm for sorting n(≥ 2) numbers? In the recurrence equations given in the options below, c is a constant.
Ans . (A) T(n) = 2T (n/2) + cn
(B) T(n) = T(n – 1) + T(0) + cn
(C) T(n) = 2T (n – 2) + cn
(D) T(n) = T(n/2) + cn

Explanation: In worst case, the chosen pivot is always placed at a corner position and recursive call is made for following.
a) for subarray on left of pivot which is of size n-1 in worst case.
b) for subarray on right of pivot which is of size 0 in worst case.

391. What operator performs pattern matching?
Ans A) LIKE B) NULL C) NOT NULL D) IS NULL

392. X=1010100 and Y=1000011 using 2's complement X-Y is
Ans a. 10111 b. 101101 c.10011 d.10001

393. If user A wants to send an encrypted message to user B. The plain text of A is encrypted with the _____.
Ans.Public key of user b

394. A heap memory area is used to store the
Ans dynamic elements and global an static variables

395. Identify the minimal key for relational scheme R(A, B, C, D, E) with functional

dependencies F = {A → B, B → C, AC → D}

Ans ~~A~~ AE

396. What is the content of Stack Pointer (SP)?

Ans . (A) Address of the current instruction (B)Address of the next instruction

(C) Address of the top element of the stack (D) Size of the stack.

397. Suppose T is a binary tree with 14 nodes. What is the minimum possible depth of T?
Ans .3

398. The minimum number of JK flip-flops required to construct a synchronous counter with the count sequence (0,0, 1, 1, 2, 2, 3, 3, 0, 0,??.) is
Ans . (A) 0 **(B)** 1 **(C)** 2 **(D)** 3
mod 8 up counter using 3 JK flip flops. Ignore the output of LSB

399.For an undirected graph with n vertices and e edges, the sum of the degree of each vertex is equal to
Ans 2E

400. The best normal form of relation scheme R (A, B, C, D) along with the set of functional

dependencies F = {AB →C, AB → D, C → A, D → B} is

Ans 3 normal form

401. Programs tend to make memory accesses that are in proximity of previous access this is called

Ans . 1) access locality 2) reference locality 3) temporal locality **4) spatial locality**

402. _____ scheduler selects the jobs from the pool of jobs and loads into the ready queue.
Ans. **1 Long term** 2 Short term 3 Medium term 4 None of the above

403. Which of the following disk seek algorithms would be the best choice to implement in a system that services an average of 5 disk requests per second?
Ans.FCFS

404. What happens to destination address in the header of a packet in a datagram network ?
Ans IT REMAINS SAME DURING THE ENTIRE JOURNEY

405. _____ mechanism is used for converting a weak entity set into

strong entity set in entity-relationship diagram

A. **Ans.** Generalization
B. Aggregation
C. Specialization
D. Adding suitable attributes

406. Mnemonic codes and variable names are used in

Ans ASSEMBLY LANGUAGE

407. Time required to merge two sorted lists of size m and n, is

Ans. A - Om| n **B- Om + n** C- Omlogn D– Onlogm

408. Division operation is ideally suited to handle queries of the type:

A. **Ans .** Customers who have no account in any of the branches in Delhi.
B. **Customers who have an account at all branches in Delhi**.
C. Customers who have an account in atleast one branch in Delhi.
D. Customers who have only joint account in any one branch in Delhi

409. Bayone-Neill-Concelman(BNC) connectors are used with which type of cables

Ans. **The BNC (Bayonet Neill–Concelman) connector is a miniature quick connect/disconnect radio frequencyconnector used for coaxial cable. It features two bayonetlugs on the female connector; mating is fully achieved with a quarter turn of the coupling nut**.

411. What data structure is used for depth first traversal of a graph?
Ans. Stack

412. Which of the following disk seek algorithms has the most variability in response time?

Ans SSTF

413. Graph traversal is different from a tree traversal, because
Ans. **Traversal of a graph is different than tree because. Answer: A. There can be a loop in the graph Explanation: You need to maintain an array to keep track of the vertices already visited.**

414. Which of the following instructions should be allowed only in Kernel Mode?

a. **Ans . disable all interrupts**
b. **read the time of day clock**
c. **set the time of day clock**
d. **change the memory map**

a. **Kernel mode only. Obvious**
b. **Doesn't need to be done only in kernel mode**
c. **Needs to be done only in kernel mode otherwise, a job could set the clock back to increase its processor time slice (among other things)**
d. **Kernel mode only. Obvious**

415. A clustering index is created when _____.
Ans. a)primary key is declared and ordered b)no key ordered
c)foreign key ordered d)there is no key and no order

416. One operation that is not given by magnitude comparator
AnsA. Equal
B.less

A. greater
B. addition

417. In TDM Data rate management is done by which of these strategies
Ans.

A.	Multilevel multiplexing
B.	Multi-slot allocation
C.	Pulse stuffing
D.	**all of the above**

418. Which of these is correct for synchronous Time Division Multiplexing
Ans .

A.	Data rate of link is n times faster and the unit duration is n times longer
B.	Data rate of link is n times slower and the unit duration is n times shorter
C.	Data rate of link is n times slower and the unit duration is n times longer
D.	**Data rate of link is n times faster and the unit duration is n times shorter**

419. Re-balancing of AVL tree costs
Ans log(n)

420. Supervisor call

1. Is a call made by the supervisor of the system
2. Is a call made by someone working in root director
3. Are privileged calls that are used to perform resource management functions, which are controlled by the operating systems
4. Is a call with control functions

Ans. A **supervisor call** is an instruction sent to a computer's processor that directs it to transfer computer control to the operating system's **supervisor** program.**Supervisor calls** are requests for an operating system service from the operating system itself or another running application

422. Consider a B+ tree in which the search Answer is 12 bytes long, block size is 1024 bytes,record pointer is 10 bytes long and block pointer is 8 bytes long. The maximum number of keys that can be accommodated in each non-leaf node of the tree is ____ .
Ans. (A) 49
(B) 50
(C) 51
(D) 52
Explanation:

```
Let m be the order of B+ tree


m(8)+(m-1)12 <= 1024

[Note that record pointer is not needed in non-leaf nodes]
```

```
m <= 51


Since maximum order is 51, maximum number of keys is 50.
```

423. Table that is not a part of asynchronous analysis procedure

A. **Ans .** transition table
B. state table
C. flow table
D. excitation table

424. How many swaps are required to sort the given array using bubble sort - { 2, 5, 1, 3, 4}

Ans 4 swaps

425. In communication satellite, multiple repeaters are known as?
Ans.
A] Detectors
[B]Modulators
[C]Stations
[D]Transponders

426. Paging suffer from ……..
Ans.Internal fragmentation.

427. This Key Uniquely Identifies Each Record
Ans A) Primary Key B) Key Record C) Unique Key D) Field Name

428. Error detection at the data link layer is achieved by?
Ans .
A] Bit stuffing
[B]Cyclic redundancy codes
[C]Hamming codes
[D]Equalization

430. Which of the following provides interface (UI) between user and OS
Ans shell

431. The O notation in asymptotic evaluation represents
Ans. e Big O notation defines an upper bound of an algorithm, it bounds a function only from above. For example, consider the case of Insertion Sort. It takes linear time in best case and quadratic time in worst case. We can safely say that the time complexity of Insertion sort is O(n^2). Note that O(n^2) also covers linear time.

1.it uses stack instead of queue.
2.every recursive call has to be stored.
3.both A & B are true.
4.None of the above are true.

433. Recursion uses more memory space than iteration because
Ans. This is because of the extensive use of the call stack. Recursion is generally used because of the fact that it is simpler to implement, and it is usually more 'elegant' than iterative solutions

435. Baud means? the rate at which signal changes
Ans . a unit of transmission speed equal to the number of times a signal changes state per second. For signals with only two possible states one baud is equivalent to one bit per second.

436. A group of bits that tell the computer to perform a specific operation is known as
Ans . A.Instruction code B.Micro-operation C.Accumulator D. Register

437. What is a shell ? it is a command interpreter
Ans. A shell script is a computer program designed to be run by the Unix shell, a command-line interpreter. The various dialects of shell scripts are considered to bescripting languages. Typical operations performed byshell scripts include file manipulation, program execution, and printing text.

438. A system has a resource 'Z' with 20 instances; each process needs 5 instances to complete its execution. What is the minimum process in the system that may cause deadlock?

Ans 5

439. You have 10 users plugged into a hub running 10Mbps half-duplex. There is a server connected to the switch running 10Mbps half-duplex as well. How much bandwidth does each host have to the server?
Ans.

[A]. 100 kbps

[B]. 1 Mbps

[C]. 2 Mbps

[D]. 10 Mbps

441. The constraint primary key cannot be null is called as?
Ans .Coloumn entity integrity/primary key integrity

442. A priority queue is implemented as a Max-Heap. Initially, it has 5 elements. The level-order traversal of the heap is: 10, 8, 5, 3, 2. Two new elements 1 and 7 are inserted into the heap in that order. The level-order traversal of the heap after the insertion of the elements is:
Ans. (A) 10, 8, 7, 3, 2, 1, 5
(B) 10, 8, 7, 2, 3, 1, 5
(C) 10, 8, 7, 1, 2, 3, 5
(D) 10, 8, 7, 5, 3, 2, 1

Explanation:

```
Initially heap has 10, 8, 5, 3, 2
    10
   /  \
  8    5
 / \
3   2


After insertion of 1
     10
   /   \
  8     5
 / \   /
3   2 1
No need to heapify as 5 is greater than 1.



After insertion of 7
     10
   /   \
  8     5
 / \   / \
3   2 1   7
Heapify 5 as 7 is greater than 5
     10
   /   \
  8     7
 / \   / \
3   2 1   5
No need to heapify any further as 10 is
greater than 7
```

443. A station in a network forwards incoming packets by placing them on its shortest output queue. What routing algorithm is being used?

Ans .

[A]. hot potato routing

[B]. flooding

[C]. static routing

[D]. delta routing

[E]. None of the above

444. In Multi-Processing Operating Systems:
Ans.a)Maximum utilization of CPU can be achieved b)Maximum throughput is achieved
c)Maximum security can be achieved d)Not suitable for Real Time Applications

445. A circuit produces 1's complement of the input word, one application is binary subtraction. It is called
Ans register

446. The cartesian product ,followed by select is equivalent to
Ans .Join

447. Assume that a mergesort algorithm in the worst case takes 30 second for an input of size 64. Which of the following most closely approximates the maximum input size of a problem that can be solved in 6 minutes?
Ans. (A) 256
(B) 512
(C) 1024
(D) 2048

Explanation:

```
Time complexity of merge sort is 0(nLogn)


c*64Log64 is 30

c*64*6 is 30

c is 5/64


For time 6 minutes


5/64*nLogn = 6*60


nLogn = 72*64 = 512 * 9
```

```
n = 512.
```

448. Consider the virtual page reference string
1,2,3,2,4,1,3,2,4,1 on a demand paged virtual memory system running on a computer system that has main memory size of 3 page frames which are initially empty. Let LRU, FIFO and OPTIMAL denote the number of page faults under the corresponding page replacement policy. Then
Ans. (A) OPTIMAL < LRU < FIFO
(B) OPTIMAL < FIFO < LRU
(C) OPTIMAL = LRU
(D) OPTIMAL = FIFO

Explanation:
First In First Out (FIFO)
This is the simplest page replacement algorithm. In this algorithm, operating system keeps track of all pages in the memory in a queue; oldest page is in the front of the queue. When a page needs to be replaced page in the front of the queue is selected for removal.
Optimal Page replacement:

in this algorithm, pages are replaced which are not used for the longest duration of time in the future. Least Recently Used (LRU) In this algorithm page will be replaced which is least recently used.
The Optimal will be 5, FIFO 6 and LRU 9. so, OPTIMAL < FIFO < LRU

450. In a digital counter circuit feedback loop is introduced to
Ans . A:improve distortion
B:improve stability
C:reduce the number of input pulses to reset the counter
D:synchronous input and output pulses

451. The Internet Control Message Protocol (ICMP)
Ans all of the above

452. A data dictionary does not provide information about
Ans .a)where data is located **b)size of the storage disk** c)who owns or responsible for data d)how data is used

453. How many illegitimate states has synchronous mod-6 counter ?
Ans.A.3 B.2 C.1 D.6

454. Which scheduling policy is most suitable for a time-shared operating system?

Ans (a) Shortest Job First (b) Round Robin
(c) First Come First Server (d) Elevator
Explanation:

In order to schedule processes fairly, a round-robin scheduler generally employs time-sharing, giving each job a time slot or quantum (its allowance of CPU time), and interrupting the job if it is not completed by then. It is designed especially for time-sharing systems.

455. Which of the following RDBMS does not incorporate relational algebra
Ans 1. Oracle 2. DB2 3. MS SQL 4. QB

456. Which of the following technique is used for fragment?
Ans .

A. a technique used in best-effort delivery systems to avoid endlessly looping packets

B. a technique used by protocols in which a lower level protocol accepts a message from a higher level protocol and places it in the data portion of the low level frame

C. **one of the pieces that results when an IP gateway divides an IP datagram into smaller pieces for transmission across a network that cannot handle the original datagram size**

D. All of the above

E. None of the above

457. For the array (77 ,62,114,80,9,30,99), write the order of the elements after two passes using the Radix sort
Ans .
a) 80 30 62 114 77 9 99 b) 114 30 62 77 9 99
c) 9 114 30 62 77 80 99 d) 9 30 62 77 80 99 114

458. Round robin scheduling is essentially the preemptive version of _____
Ans. FIFO

459. A ring counter is same as
Ans . The Johnson Ring Counter or "Twisted Ring Counters", is another shift register with feedback exactly the same as the standard Ring Counterabove, except that this time the inverted output Q of the last flip-flop is now connected back to the input D of the first flip-flop as shown below.

461. Which of the following is not a property of DBMS?
1. concurrent access is not possible 2. Authorized access 3. Redundancy control 4. Integrity check

Ans

462. When you ping the loopback address, a packet is sent where?

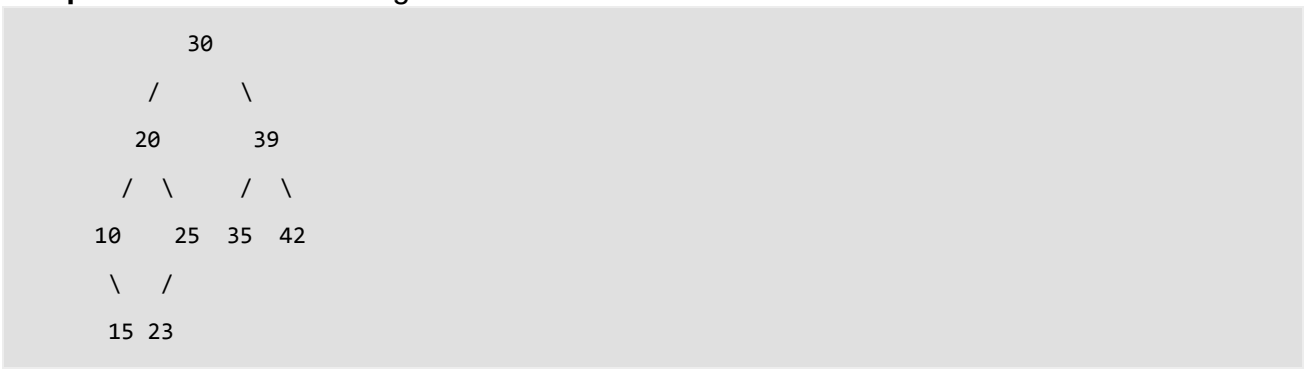
Ans. **A.** On the network
B. Down through the layers of the IP architecture and then up the layers again
C. Across the wire
D. through the loopback dongle
E. None of the above

463. In which category does the discrepancy between duplicate records belong?
Ans 1. Invalid 2. Inconsistent 3. Incomplete 4. Noisy

464. The preorder traversal sequence of a binary search tree is 30, 20, 10, 15, 25, 23, 39, 35, 42.Which one of the following is the postorder traversal sequence of the same tree?
Ans. A) 10, 20, 15, 23, 25, 35, 42, 39, 30
(B) 15, 10, 25, 23, 20, 42, 35, 39, 30
(C) 15, 20, 10, 23, 25, 42, 35, 39, 30
(D) 15, 10, 23, 25, 20, 35, 42, 39, 30

Answer: (D)

Explanation: The following is the constructed tree



465. A sequential circuit outputs a ONE when an even number (> 0) of one's are input; otherwise the output is ZERO. The minimum number of states required is
Ans.2

466. Which of the following devices assigns IP address to devices connected to a network that uses TCP/IP?
Ans .DHCP Server

467. In the blocked state
Ans .a) the processes waiting for I/O are found
b)the process which is running is found
c)the processes waiting for the processor are found
d)the process ready to execute

468. Which of the following technique is used for Time-To-Line (TTL)?
Ans.

A. **a technique used in best-effort delivery system to avoid endlessly looping packets.**

B. a technique used by protocols in which a lower level protocol accepts a message from a higher level protocol and places it in the data portion of the low level frame

C. One of the pieces that results when an IP gateway divides an IP datagram into smaller pieces for transmission across a network that cannot handle the original datagram size.

D. All of the above

471. A page fault occurs
Ans.**When the page is not in the memory**

472. Data Structures and Algorithms:
In a min-heap:
Ans. A - parent nodes have values greater than or equal to their children **B - parent nodes have values less than or equal to their children**
C - both statements are true D - both statements are wrong

473. Consider the following New-order strategy for traversing a binary tree:
1)Visit the root;
2)Visit the right subtree using New-order;
3)Visit the left subtree using New-order;
The New-order traversal of the expression tree corresponding to the reverse polish expression 3 4 * 5 - 2 ? 6 7 * 1 + - is given by:
Ans. (A) + – 1 6 7 * 2 ˆ 5 – 3 4 *
(B) – + 1 * 6 7 ˆ 2 – 5 * 3 4
(C) – + 1 * 7 6 ˆ 2 – 5 * 4 3
(D) 1 7 6 * + 2 5 4 3 * – ˆ –

Reverse Polish expression is derived through Post-Order i.e.
1) Visit Left Node
2) Visit Right Node (L R N)
3) Visit Root Node
— Acc. to Ques. New Order algorithm is :
1) Visit Root Node
2) Visit Right Node (N R L)

3) Visit Left Node

ie. New Order Expression will be a total reverse of the Post-Order algorithm

Post-Order Expression : **3 4 * 5 – 2 ^ 6 7 * 1 + –**

Hence , New Order Expression : – + 1 * 7 6 ^ 2 – 5 * 4 3

474. Routine is not loaded until it is called. All routines are kept on disk in a relocatable load format. The main program is loaded into memory & is executed. This type of loading is called

_____

Ans. 1 Static loading
2 Dynamic loading
3 Dynamic linking
4 Overlays

475. You are trying to decide which type of network you will use at your office, and you want the type that will provide communication and avoid collisions on the cable. Which of the following is the best choice?

Ans

A. Token-Ring

B. CSMA/CD

C. Ethernet

D. CSMA/CA

E. ARCnet

477. The number of clock pulses needed to shift one byte of data from input to the output of a 4-bit shift register is

Ans 10 12 16 32

478. You are working with a network that has the network ID 172.16.0.0, and you require 25 subnets for your company and an additional 30 for the company that will merge with you within a month. Each network will contain approximately 600 nodes. What subnet mask should you assign?

Ans.

[A]. 255.255.192.0

[B]. 255.255.224.0

[C]. 255.255.240.0

[D]. 255,255.248.0

[E]. 255.255.252.0

479. _____ constraint is specified between two relations and is used to maintain the consistency among tuples of the two relations

Ans referential integrity

480. For non-negative functions, f(n) and g(n), f(n) is theta of g(n) if and only if
Ans-
A f(n) = O(g(n)) and f(n) = Ω(g(n))
Bf(n) = O(g(n)) and f(n) = o((g(n))
C f(n) = O(g(n)) and f(n) = ω (g(n))
D f(n) = Q(g(n)) and f(n) = Ω(g(n))

481. If the Disk head is located initially at 32, find the number of disk moves required with FCFS if the disk queue of I/O blocks requests are 98,37,14,124,65,67.
Ans . 1 310 2 324 3 315 4 321

482. The main difference between JK and RS flip-flop is that
Ans .
A.JK flip flop needs a clock pulse
B.There is a feedback in JK lip-lop
C.JK flip-flop accepts both inputs as 1
D.JK flip-flop is acronym of Junction cathode multivibrator

483. The solution to Critical Section Problem is : Mutual Exclusion, Progress and Bounded Waiting.
Ans . a) The statement is false **b)The statement is true**. c)The statement is contradictory. d)None of the above

484. Minimum number of moves required to solve a Tower of Hanoi puzzle is
Ans
A - 2 n^ 2
B – 2^ n-1
C – 2^ n – 1
D - 2n – 1

485. Parity bit is
2. a check bit appended to an array of binary digits to make the sum of all the binary digits.

Ans **a bit which acts as a check on a set of binary values, calculated in such a way that the number of 1s in the set plus the parity bit should always be even (or occasionally, should always be odd).**

486. Changing the conceptual schema without having to change the external schema is called as _____

Ans physical data independence

487. The sign magnitude representation of binary number + 1101.011 is

Ans . 01101.011

488. Update operation will violate

Ans 1.unique constraint 2. domain constraint 3. EIC 4. RIC

489. When an inverter is placed between both inputs of an SR flip-flop, then resulting flip-lop is

Ans .D flipflop

490. A sort which relatively passes through a list to exchange the first element with any element less than it and then repeats with a new first element is called

Ans . (A) insertion sort. (B) selection sort. (C) heap sort. **(D) quick sort**.

491. Ethernet and Token-Ring are the two most commonly used network architectures in the world. Jim has heard of the different topologies for networks and wants to choose the architecture that will provide him with the most options. Which of the following would that be? Choose the most correct answer.

Ans.

A. Token-Ring because it currently can run at both 4Mbps and 16Mbps. This means that it can be used in any topology

B. Ethernet, because it is cabled using fiber-optic cable

C. Token-Ring, because it uses a MAU

D. **Ethernet, because it can be set up with most topologies and can use multiple transfer speeds**

E. Neither Token-Ring nor Ethernet is the proper choice. Only ARCnet can be used in all topologies

492. The problem of thrashing is effected scientifically by _____.

Ans.

A. **program structure**

B. program size

C. primary-storage size

D. all of the above

E. None of the above

493. is data about data
Ans metadata

a method access control technique for multiple-access transmission media.

495. CSMA (Carrier Sense Multiple Access) is
Ans. Carrier-sense multiple access (CSMA) is a media access control (MAC) protocol in which a node verifies the absence of other traffic before transmitting on a shared transmission medium, such as an electrical bus or a band of the electromagnetic spectrum.

496. Which module gives control of the CPU to the process selected by the short-term scheduler?
Ans . a) dispatcher b) interrupt c) scheduler d) none of the mentioned

497. A 2 MHz signal is applied to the input of a J-K lip-lop which is operating in the 'toggle' mode. The frequency of the signal at the output will be
Ans. 8 MHZ

498. The master slave JK lip-flop is effectively a combination of
Ans .

A. **an SR flip-flop and a T flip-flop**

B. an SR flip-flop and a D flip-flop

C. a T flip-flop and a D flip-flop

D. two T flip-flops

E. None of the above

1.the clocking is derived from the data in synchronous transmission
2.the clocking is mixed with the data in asynchronous transmission
3.the pulse height is different.
4.the bandwidth required is different

499. The main difference between synchronous and asynchronous transmission is
Ans . Comparison of synchronous and asynchronous signalling. Synchronous and asynchronous transmissions are two different methods of transmissionsynchronization. Synchronous transmissions are synchronized by an

external clock, while asynchronous transmissions are synchronized by special signals along the transmission medium .

500. Let R be the relation on the set of positive integers such that a aRb if and only if a and b are distinct and have a common divisor other than 1. Which one of the following statements about R is true?
Ans . A) R is symmetric and reflexive but not transitive
(B) R is reflexive but not symmetric and not transitive
(C) R is transitive but not reflexive and not symmetric
(D) R is symmetric but not reflexive and not transitive

Explanation: R cannot be reflexive as 'a' and 'b' have to be distinct in aRb.
R is symmetric if a and b have a common divisor, then b and a also have.

R is not transitive as aRb and bRc doesn't mean aRc. For example 3 and 15 have common divisor, 15 and 5 have common divisor, but 3 and 5 don't have.

501. The mechanism that bring a page into memory only when it is needed is called

_____

Ans . 1 Segmentation 2 Fragmentation **3 Demand Paging** 4 Page Replacement

502. What technique is often used to prove the correctness of a recursive function?
Ans .Mathematical Inductio

504. ARP (Address Resolution Protocol) is a TCP/IP protocol used to dynamically bind a high level IP Address to a low-level physical hardware address
Ans The address resolution protocol (arp) is a protocolused by the Internet Protocol (IP) [RFC826], specifically IPv4, to map IP network addresses to the hardware addresses used by a data link protocol. The protocol operates below the network layer as a part of the interface between the OSI network and OSI link layer.

505. The command which undo the transaction is
Ans .Rollback command

506. Which directory implementation is used in most Operating System?
Ans .Tree directory structure

508. When two or more processes trying to execute a set of instructions and if the output depends on the order of execution of the process, this is termed as:
Ans .a)Critical section **b)Race condition** c)Synchronization d)Progress

509. A bit-stuffing based framing protocol uses an 8-bit delimiter pattern of 01111110. If the output bit-string after stuffing is 01111100101, then the input bit-string is
Ans . (A) 0111110100
(B) 0111110101

(C) 0111111101
(D) 0111111111

Explanation: Bit Stuffing is used to create framing.

```
8-bit delimiter pattern is 01111110.


The output bit-string after stuffing is 01111100101.

The above highlighted bit is stuffed bit.
So input bit-string must be 0111110101.
```

510. If a sequence of push(1), push(2), pop,push(1),push(2),pop,pop,pop, push(2) pop operations are performed in a stack , the sequence of popped out values are

A. Ans. 2,2,1,1,2
B. 2,2,1,2,2
C. 2,1,2,2,1
D. 2,1,2,2,2

Simple push and pop in stack has done here

After pushing some element in stack when we do pop , we get element in LIFO order

511. Changing the conceptual schema without having to change physical schema is

Ans logial data independence

513. How switching is performed in the internet?

Ans

1.Datagram approach to circuit switching at data link layer
2.Virtual circuit approach to message switching at network layer
3.Datagram approach to message switching at datalink layer
4.Datagram approach to packet switching at network layer

514. The best index for range query is
Ans quad tree

515. You are given pointer p that points to the last node in a circular list and another singly linked list whose first node is pointed to by 'head' and last node is pointed to by 'tail' has to be appended to the end of the circular list. Which of the following is correct?
Ans tail->next=p->next; p->next=head;

516. A system has 'n' processes and each process need 2 instances of a resource. There are n+1 instances of resource provided. This could:
Ans.a) lead to deadlock
b)lead to starvation & the deadlock
c)never leads to deadlock

d)leads to inconsistency

518. A telephone switch is a good example of which of the following types of switches.
Ans circuit

.520. In priority scheduling algorithm, when a process arrives at the ready queue, its priority is compared with the priority of
Ans. a) all process
b) currently running process
c) parent process
d) init process

521. Commit, Savepoint, Rollback are _____
Ans TCL commands

522. Among the following which is not the application of a stack?
Ans a) Postponing data usage **b) Job scheduling** c) Backtracking d) none

523. R right outer join S on a=b gives
Ans
1. All rows from R and S
2. Rows from R and S where a=b
3. All rows from R and joined rows from S
4. All rows from S and joined rows from R

525. You are given pointers to first and last nodes of a singly linked list, which of the following operations are dependent on the length of the linked list?
Ans . (A) Delete the first element
(B) Insert a new element as a first element
(C) Delete the last element of the list
(D) Add a new element at the end of the list
Explanation: a) Can be done in O(1) time by deleting memory and changing the first pointer.
b) Can be done in O(1) time, see push() here
c) Delete the last element requires pointer to previous of last, which can only be obtained by traversing the list.

d) Can be done in O(1) by changing next of last and then last.

526. Consider a system with 'M' CPU processors and 'N' processes then how many processes can be present in ready, running and blocked state at maximum
Ans.a)N, M, N b)N, M, M c)M, N, M d)N, N+M, M

527. The following pairs of OSI protocol layer/sub-layer and its functionality, the INCORRECT pair is
Ans.a. Network layer and Routing **b. Data Link Layer and Bit synchronization**
c. Transport layer and End-to end process communication
d. Medium Access Control sub-layer and Channel sharing

530. If a , b , c, are three nodes connected in sequence in a singly linked list

struct node *temp=a;

while(temp!=NULL) {

temp=temp->next; printf("$"); }

Assuming 'c' to be the last node, the output is

Ans a)$$$ ~~b)$$~~ c)NULL d)error

531. Four jobs to be executed on a single processor system arrive at time 0 in order A, B, C, and D. Their burst time requirements are 4,1,8,1 time units respectively. Find the completion of A under round robin scheduling with time slice of one time unit.
Ans. (a) 10 (b) 4 (c) 8 **(d) 9**

532. This user makes canned transaction
Ans naive

536. For 3 page frames, the following is the reference string:

7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1.How many page faults does the FIFO page replacement algorithm produce?

Ans 15

539. Given memory partitions of 100K, 500K, 200K, 300K, and 600K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 212K, 417K, 112K, and 426K (in order)? Which algorithm makes the most efficient use of memory?
Ans Best-fit

540. Which of the following is termed as reverse polish notation?
Ans.Postfix

542. The following query is called as ? select * from emp where ssn in (select dssn from dependent order by age desc) ?;
Ans 1. Nested Query 2. Ordered query 3. Top N Query 4. Pseudo column query

543. The data type describing the types of values that can appear in each column is called _____.
Ans
a. Domain b. Tuple c. Attribute d. Relation

544. For the given infix expression a+b^c*(d-e) where '^' denotes the EX-OR operator, the corresponding prefix expression is

Ans . a) -+a^b*cde **b) +a*^bc-de** c) ^+ab*c-de d) +-a^bc*de

545. The term P means in semaphores

Ans wait

548. Let S and Q be two semaphores initialized to 1, where P0 and P1 processes the following statements wait(S);wait(Q); ---; signal(S);signal(Q) and wait(Q); wait(S);---;signal(Q);signal(S); respectively. The above situation depicts a _____ .

Ans . a.Semaphore **b.Deadlock** c Signal d.Interrupt

549. A 4-way set-associative cache memory unit with a capacity of 16 KB is built using a block size of 8 words. The word length is 32 bits. The size of the physical address space is 4 GB. The number of bits for the TAG field is

Ans. (A)5 **(B)**15 **(C)20** **(D)**25

Explanation:

In a k-way set associate mapping, cache memory is divided into sets, each of size k blocks.
Size of Cache memory = 16 KB
As it is 4-way set associative,K = 4
Block size B = 8 words
The word length is 32 bits.
size of Physical address space = 4 GB.

No of blocks in Cache Memory(N) = (size of cache memory / size of a block)

= (16*1024 bytes / 8*4 bytes) = 512 (as 1 word = 4 bytes)

No of sets(S) = (No of blocks in cache memory/ no of blocks in a set)

= N/K = 512/4 = 128

Now,size of physical address = 4GB = 4*(2^30) Bytes = 2^32 Bytes

These physical adresses are divided equally among the sets.

Hence, each set can access ((2^32)/128) bytes = 2^25 bytes = 2^23 words = 2^20 blocks

So, each set can access total of 2^20 blocks. So to identify these 2^20 blocks, each set needs TAG bits of length 20 bits.

550. The query to print alternate records (i.e even numbered) from a table is

Ans **SELECT * FROM EMP WHERE ROWID IN (SELECT DECODE (MOD (ROWNUM,2),0,ROWID,NULL) FROM EMP**

552. Which of the following is two way list?

Ans . A. Grounded header list

B. Circular header list

C. Linked list with header and trailer nodes

D. List traversed in two directions

553. Consider a join (relation algebra) between relations r(R)and s(S) using the nested loop method. There are 3 buffers each of size equal to disk block size, out of which one buffer is reserved for intermediate results. Assuming size(r(R))

Ans. (A) relation r(R) is in the outer loop.

(B) relation s(S) is in the outer loop.

(C) join selection factor between r(R) and s(S) is more than 0.5.

(D) join selection factor between r(R) and s(S) is less than 0.5.

Explanation:

Nested loop join is one of the methods to implement database in memory. A nested loop join is an algorithm that joins two sets by using two nested loops.

According to nested join,given relation R and S

For each tuple r in R do
For each tuple s in S do
If r and s satisfy the join condition
Then output the tuple <r,s>

Cost estimations for the above loop:

– b(R) and b(S) number of blocks in R and in S
– Each block of outer relation is read once
– Inner relation is read once for each block of outer relation

Summing up : IO= b(R)+b(R)*b(S) total IO operations

Lets assume |R|>|S| i.e b(R) =10 and b(s) =3

Now, if R is outer relation then, IO= 10+10*3=40

if S is outer relation then IO=3+10*3=33

As it can be observed , that total IO is lesser if the value of outer variable is less and as it is already given that |R|<|S|.Therefore, Relation r(R) should be in the outer loop to have fewer number of disk block accesses.

References:

555. In an Ethernet local area network, which one of the following statements isTRUE?

Ans. (A) A station stops to sense the channel once it starts transmitting a frame. **(B)** The purpose of the jamming signal is to pad the frames that are smaller than the minimum frame size. **(C)** A station continues to transmit the packet even after the collision is detected.

(D) The exponential backoff mechanism reduces the probability of collision on retransmissions

Explanation:
An Ethernet is the most popularly and widely used LAN network for data transmission. It is a protocol of data link layer and it tells how the data can be formatted to transmit and how to place the data on network for transmission.

556. A circularly linked list is used to represent a Queue. A single variable p is used to access the Queue. To which node should p point such that both the operations enQueue and deQueue can be performed in constant time?
Ans (A) rear node **(B)** front node **(C)** not possible with a single pointer **(D)** node next to front

557. In the process state transition diagram, the transition from the READY state to the RUNNING state indicates that:
Ans.
a. A process was pre-empted by another process
b. A process has blocked for a semaphore or other operation
c. A process is done waiting for an I/O operation
d. A process was just created

558. If a sequence of enque(1), enque (2), deque, enque (1), enque (2), deque, deque, deque, enque (2) operations are performed in a queue , the list of elements that would have been processed are
Ans 1,2,1,2

559. Which of the following is not true about segmented memory management?
Ans.
a. Segment length must be a multiple of the page size
b. Segmentation allows multiple linear address space in one process
c. Segmentation can be used with paging to keep segments partially resident in memory
d. A segment can be read-only for one process and read-write for another

560. The stage delays in a 4-stage pipeline are 800, 500, 400 and 300 picoseconds. The first stage (with delay 800 picoseconds) is replaced with a functionally equivalent design involving two stages with respective delays 600 and 350 picoseconds. The throughput increase of the pipeline is percent.
Ans . A) 33 or 34
(B) 30 or 31
(C) 38 or 39
(D) 100

Explanation:

```
Throughput of 1st case T1: 1/max delay =1/800

Throughput of 2nd case T2: 1/max delay= 1/600

%age increase in throughput: (T2-T1)/T2

            = ( (1/600) - (1/800) ) / (1/800)

            = 33.33%
```

564.In a circular list with 5 nodes, let 'temp' point to the 4th node at present.

int i;
for(i=0;i<4;i++)
temp=temp->next;
The above code will make 'temp' point to

Ans. 3rd node

565. IEEE 802.5 is a _____

Ans.Token ring

566. R has n tuples and S has m tuples, then the Cartesian product of R and S will produce _____ tuples.

Ans. m*n

567. Which one of the following fields of an IP header is NOT modified by a typical IP router?

Ans. (A) Checksum
(B) Source address
(C) Time to Live (TTL)
(D) Length

Explanation: Length and checksum can be modified when IP fragmentation happens. Time To Live is reduced by every router on the route to destination.
Only Source Address is what IP address can not change SO B is the answer.

568. When a program tries to access a page that is mapped in address space but not loaded in physical memory, then

Ans. a) segmentation fault occurs b) fatal error occurs **c) page fault occurs** d)no error occurs

569. Minimal super key of a relation is called _____

Ans .Primary Key /candidate key

570. The main advantage of DMA is that it

Ans .
a. Increases system performance by increasing concurrency
b. Allows the CPU to run faster
c. Reduces the traffic on the data bus

d. Removes the requirement that transfers be properly aligned

571. For what value of c1 and c2 , the theta notation of $f(n)=5n^2+3n+2$ is n^2?
Ans

573. A typical hard drive has a peak throughput of about
Ans .
a. 2 x 10^5 bytes per second
b. 2 x 10^6 bytes per second
c. 2 x 10^7 bytes per second
d. 2 x 10^8 bytes per second

574. Consider a dynamic queue with two pointers: front and rear. What is the time needed to insert an element in a queue of length of n?
Ans .O(1)

575. Consider a relation R (A, B, C, D, E) with set of functional dependencies F = {A¿BC, CD¿E, B¿D, E¿A}. Which of the following is one of the candidate keys of R?
Ans A,E,CD,BC

581. Which sorting technique uses a data structure similar to the one used in bucket hashing?
Ans .Radix

582. _____is the description of the database
Ans Schema

583. Which of these would not be a good way for the OS to improve battery lifetime in a laptop?
Ans .a)Shut down the hard drive until it's needed
b)Reduce the processor speed while it's idle
c)Turn off power to the memory
d)Shut down the modem when it's not connected

584. Identify the correct sequence in which the following packets are transmitted on the network by a host when a browser requests a webpage from a remote server, assuming that the host has just been restarted.
Ans . (A) HTTP GET request, DNS query, TCP SYN
(B) DNS query, HTTP GET request, TCP SYN
(C) DNS query, TCP SYN, HTTP GET request
(D) TCP SYN, DNS query, HTTP GET request

Explanation: Step 1 : Whenever the client request for a webpage, the query is made in the form say www.geeksforgeeks.org.
As soon as the query is made the server makes the **DNS query** to identify the Domain Name Space. DNS query is the process to identify the IP address of the DNS such as

www.org. The client's computer will make a DNS query to one of its internet service provider's DNS server.
Step 2 : As soon as DNS server is located a TCP connection is to be established for the further communication. The TCP protocol requests the server to establishing a connection by sending a **TCP SYN** message. Which is further responded by the server using SYN_ ACK from server to client and then ACK back to server from client (3- way hand shaking protocol).
Step 3 : Once the connection has been established the HTTP protocol comes into picture. It requests for the webpage using its GET method and thus, sending an **HTTP GET request**.
Hence, the correct sequence for the transmission of packets is DNS query, TCP SYN, HTTP GET reques

585. On adopting shell sort technique, the output of the array (21,62,14,9,30,77,80,25) after a pass with increment size =3, is
Ans a**) 9 30 14 21 25 77 80 62** b) 9 25 14 21 30 77 80 62

c) 9 14 21 25 30 62 77 80 d) the same array

586. Which of the following is not included in an inode in Linux?
Ans.a)File owner **b)File name** c)File modification date d)Pointer to the first data block

587. The DMA controller has _____ registers
Ans a) 4 b)2 **c)3** d)1

590. An IP router with a Maximum Transmission Unit (MTU) of 1500 bytes has received an IPpacket of size 4404 bytes with an IP header of length 20 bytes. The values of the relevant fields in the header of the third IP fragment generated by the router for this packet are
Ans . A) MF bit: 0, Datagram Length: 1444; Offset: 370
(B) MF bit: 1, Datagram Length: 1424; Offset: 185
(C) MF bit: 1, Datagram Length: 1500; Offset: 37
(D) MF bit: 0, Datagram Length: 1424; Offset: 2960

Explanation:

```
Number of packet fragments = [ (total size of packet)/(MTU) ]
                           = [ 4404/1500 ]
                           = [ 2.936 ]
                           = 3
```

```
So Datagram with data 4404 byte fragmented into 3 fragments.
```

The first frame carries bytes 0 to 1479 (because MTU is 1500 bytes and HLEN is 20 byte so the total bytes in fragments is maximum 1500-20=1480). the offset for this datagram is 0/8 = 0.

The second fragment carries byte 1480 to 2959. The offset for this datagram is 1480/8 = 185.finally the third fragment carries byte 2960 to 4404.the offset is 370.and for all fragments except last one the M bit is 1.so in the third bit M is 0

591. One of the header fields in an IP datagram is the Time to Live (TTL) field. Which of the following statements best explains the need for this field?
Ans . (A) It can be used to priortize packets
(B) It can be used to reduce delays
(C) It can be used to optimize throughput
(D) It can be used to prevent packet looping

Time to Live can be thought as an upper bound on the time that an IP datagram can exist in the network. The purpose of the TTL field is to avoid a situation in which an undeliverable datagram keeps circulating.

592. Time complexity of the program to generate Fibonacci sequence is
Ans .O(n)

593. A Program Counter contains a number 825 and address part of the instruction contains the number 24. The effective address in the relative address mode, when an instruction is read from the memory is
Ans
(A) 849. **(B) 850.**
(C) 801. (D) 802.

595. What is the correct HTML for making a hyperlink?
Ans a) ICT Trends Quiz
b) ICT Trends Quiz
c) <http://mcqsets.com
d) url="http://mcqsets.com">ICT Trends Quiz

597.While applying Quick sort technique for the array 5 4 3 8 12 6 10 1 7 9, if pivot =5, after the first traversal on both sides, 'l' and 'r' will be
Ans

598. The <big> tag makes
Ans .Makes text bigger than normal
Text to be bigger than the surrounding text

599. Which one of the following is NOT a part of the ACID properties of database transactions?
Ans . **Transaction in a database system must maintain Atomicity, Consistency, Isolation, and Durability − commonly known as ACID properties − in order to ensure accuracy, completeness, and data integrity.**
DEADLOCK

600. When process requests for a DMA transfer ,
Ans a) Then the process is temporarily suspended b) The process continues execution
c) Another process gets executed **d) Both a and c**

601. Which of following property returns the window object generated by a frame object the internet?
Ans. **contentWindow property**
1.window
2.contentWindow
3.contentDocument
4.windowFrame

602. A layer -4 firewall (a device that can look at all protocol headers up to the transport layer) CANNOT
Ans block entire HTTP traffic during 9:00PM and 5:00AM

603. What is the unique characteristic of RAID 6 ?
Ans .Double distributed parity

604. Foreign key is a subset of primary key is stated in _____ constraint

Ans 2. Foreign Key Constraint

605. If a[] is the array containing the elements to be sorted using radix sort, during the second iteration in which the second Least Significant Digit is considered, row number in 2D array to which an element has to be stored is given by

Ans a[i]/10%10

608. If a , b , c, d are four nodes connected in sequence in a doubly-linked list

Struct node *temp=a;

Temp=temp->next;

(Temp->next)->prev=temp->prev;

(Temp->prev)->next=temp->next; Which of the following is true?

Ans. a is made predecessor node for c

609. Which component of a database is used for sorting?
Ans. field

610. What is the output of following JavaScript code

```
<script type="text/javascript">
var cst = "PHPKB Knowledge Base Software";
var result =cst.substring(7,8);
document.write(result);</script>
```

Ans n

611. If message in Segmentation and Reassembly (SAR) sub layer of Application Adaptation Layer 3/4 has value of Segment type is 11 then it is called a

A. **Ans .** Initiation of message
B. ending message
C. single-segment message
D. multi-segment message

612. Consider the following relation
Cinema (theater, address, capacity)
Which of the following options will be needed at the end of the SQL query
SELECT P1. address
FROM Cinema P1
Such that it always finds the addresses of theaters with maximum capacity?
Ans. (A) WHERE P1. Capacity> = All (select P2. Capacity from Cinema P2)
(B) WHERE P1. Capacity> = Any (select P2. Capacity from Cinema P2)
(C) WHERE P1. Capacity > All (select max(P2. Capacity) from Cinema P2)
(D) WHERE P1. Capacity > Any (select max (P2. Capacity) from Cinema P2)

Explanation: When the **ALL** condition is followed by a list, the optimizer expands the initial condition to all elements of the list and strings them together with AND operators. When the **ANY** condition is followed by a list, the optimizer expands the initial condition to all elements of the list and strings them together with OR operators, as shown below.

613. The max-heap for the array (4, 3, 1, 5, 9, 2, 8) is
Ans 9,5,8,4,3,2,1

614. You can refresh the web page in javascript by using ..... method.
Ans.Reload() location.reload()

615. The load instruction is mostly used to designate a transfer from memory to a processor register known as

Ans . **A.Accumulator** B.Instruction Register C.Program counter D.Memory address Register

616. Among the following ,which has the highest time complexity $O(n^2)$ in all the three cases.(Worst,average and best) and cannot be improved?

Ans selection sort

617. Which of the following relational algebra operations do not require the participating tables to be union-compatible?

Ans. A.Union B.Intersection C.Difference **D.Join**

618. Which of the following is the correct way for writing JavaScript array?

Ans .Var text=new array("arr","kim","jim") var salaries = new Array(39438, 39839,83729)

621. In RMI Architecture which layer Intercepts method calls made by the client/redirects these calls to a remote RMI service?

Ans .Stub and skeleton layer

623. Assume transaction A holds a shared lock R. If transaction B also requests for a shared lock on R.

Ans . A. It will result in a deadlock situation

B. It will immediately be rejected

C. It will immediately be granted

D. It will be granted as soon as it is released by A

624. What is the output of following JavaScript code. Chadha software Technologies

var cst=new Array();

cst[0]="web development";

cst[1]="Application Development"

cst[2]="Testing"

cst[3]=”Chadha software Technologies”;

document.write(cst(0,1,2,3)); 625.
Chadha software Technologies
625.For an algorithm whose step-count is $45n^3+34n$, choose the correct statement.

Ans. Complexity is Omega(n)

627. If the associativity of a processor cache is doubled while keeping the capacity and block size unchanged, which one of the following is guaranteed to be NOT affected?
Ans. (A) Width of tag comparator
(B) Width of set index decoder
(C) Width of way selection multiplexor
(D) Width of processor to main memory data bus

Explanation: If associativity is doubled, keeping the capacity and block size constant, then the number of sets gets halved. So, width of set index decoder can surely decrease – (B) is false.
Width of way-selection multiplexer must be increased as we have to double the ways to choose from- (C) is false

As the number of sets gets decreased, the number of possible cache block entries that a set maps to gets increased. So, we need more tag bits to identify the correct entry. So, (A) is also false.

(D) is the correct answer- main memory data bus has nothing to do with cache associativity- this can be answered without even looking at other options.

628. Relations produced from an E-R model will always be
Ans.

A.	1NF
B.	2NF
C.	**3NF**
D.	4NF

629. If the element 12 has to be searched in the array (2,4,8, 9,14,16, 18), using binary search, the result can be obtained within _____ comparisons. 3

Ans 3 is the answer

630. How do you put a message in the browser's status bar?

Ans. window.status = "put your message here

632. Which two files are used during operation of the DBMS? data dictionary and transaction log

Var cst=”Chadha software technologies”;
Var result=cst.lastIndexOf(“a”);
Document.write(result);
12

Ans

634. In the following pairs of OSI protocol layer/sub-layer and its functionality, the INCORRECT pair is

Ans . A) Network layer and Routing
(B) Data Link Layer and Bit synchronization
(C) Transport layer and End-to-end process communication
(D) Medium Access Control sub-layer and Channel sharing
Explanation:

```
1) Yes, Network layer does Rotuing
2) No, Bit synchronization is provided by Physical Layer
3) Yes, Transport layer provides End-to-end process
   communication
4) Yes, Medium Access Control sub-layer of Data Link Layer provides
   Channel sharing.
```

635. For the array , (77 ,62,14,80,9,30,99) , if Quick sort technique is followed,what will be the array status after placing the first pivot element in its appropriate place?

Ans 30 62 14 9 77 80 99

637. Which two RAID types use parity for data protection?

Ans Raid 4 and Raid 5

638. The number of outputs in n-input decoder is

Ans 2^n

639. What is the correct JavaScript syntax to write "Hello World"

Ans document.write("Hello World")

640. Rotation method of hashing is usually combined with other hashing techniques except
Ans .pseudo random hashing

641. The two's complement of 101011 is

Ans 010101

643. Browsers typically render text wrapped in _____ tags as an indented paragraph.
Ans P

644. ----------is a description of the database
Ans schema

645. Among the following sorting techniques ,which has its time complexity as O(n) in the best-case?

Ans insertion sort

646. The number of boolean functions in n-variables is

Ans . (A) n^2
(B) 2^n
(C) 2^{2n}
(D) 2^{n_2}

Explanation:

No of inputs sequences possible for a n variable Boolean function = 2^n

Each input sequence can give either T or F as output (2 possible values)

So, Total no of Boolean functions are -

2X2X2X2X2X2X.............X2X2X2X2X2X2

<-------------------- 2^n Times -------------->

2

647. -------involves finding the best line to fit two attributes so that one attribute is used to predict another attribute.
Ans .Linear regression

648. Java package is a grouping mechanism with the purpose of
Ans . controlling the visibility of classes,interfaces and methods

649.Who invented the JavaScript programming language?
Ans. Brenden Eich

650. UDP uses..... to handle outgoing user datagrams from multiple processes on one host.
Ans.Multiplexing

652. The lifetime of flash memory is ----------
Ans finite

653.What is the output of following JavaScript code?

<script type="text/javascript">

x=4+"4";

document.write(x);

</script>

Ans.44

654. A schema describes

Ans a) Record Relationship b)Data Elements c)Record and files d)All the above

655. The transport layer protocols used for real time multimedia, file transfer, DNS and email, respectively are
Ans. (A) TCP, UDP, UDP and TCP
(B) UDP, TCP, TCP and UDP
(C) UDP, TCP, UDP and TCP
(D) TCP, UDP, TCP and UDP

Explanation: TCP (Transmission Control Protocol) and UDP(User Datagram Protocol) are two main transport layer protocols.
TCP is connection oriented and UDP is connectionless, this makes TCP more reliable than UDP. But UDP is stateless (less overhead), that makes UDP is suitable for purposes where error checking and correction is less important than timely delivery.

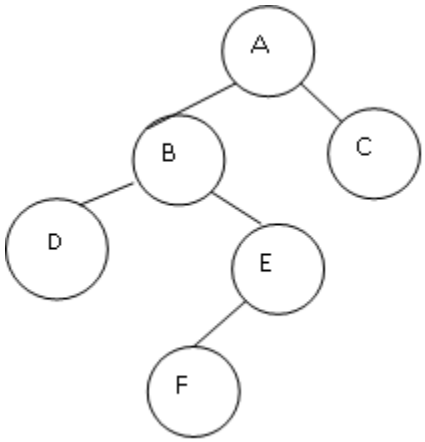
For real time multimedia, timely delivery is more important than correctness. –> UDP

For file transfer, correctness is necessary. –> TCP

DNS, timely delivery is more important –> UDP

Email again same as file transfer –> TCP

656. Which of the following is true for the given tree?



1. a complete binary tree
2. Strict Binary tree
3. Full binary tree
4. none

Ans

657. The ..... protocol defines a set of messages sent over either User Datagram Protocol (UDP) port53 or Transmission Control Protocol(TCP) port53.

Ans. A. Name space **B.DNS** C.Domain space D.Zone transfer

658.What is the multiplexer used for? To implement many to one function

Ans A Multiplexer is a device that allows one of several analog or digital input signals which are to be selected and transmits the input that is selected into a single medium. ... A multiplexer of 2n inputs has n select lines that will beused to select input line to send to the output. Multiplexeris abbreviated as Mux.

660.Trigger is a Statement that is executed automatically by the system as a side effect of a modification to

Ans. **In a DBMS, a *trigger* is a SQL procedure that initiates an action (i.e., *fires* an action) when an event (INSERT, DELETE or UPDATE) occurs**

662.What will be printed as the output of the following program?

```
public class testincr
{
public static void main(String args[])
{
int i = 0;
i = i++ + i;
System.out.println(" I = " +i);
}
}
```

1

663.What is the output of following JavaScript code

```
<script type="text/javascript">
var cst = "PHPKB Knowledge Base Software";
var result =cst.substring(7,8);
document.write(result);</script>
```

Ans n

664.R left outer join S on a=b gives

sAns . All rows from R and joined rows from S

665.Identify the addressing mode of the following instruction
Add R1, R2, R3 where R1, R2 are operands and R3 destination

Ans register addressing mode

666.When a network interface has a failure in its circuitry, it sends a continuous stream of frames causing the Ethernet LAN to enter a Collapse state. This condition is known as _____.

Ans. Jabbering

667.What is the output of following JavaScript code

```
<script type="text/javascript">
function x(){
var cst = "Chadha Software Technologies";
var pattern = /"SOFTWARE"/i;
document.write(cst.match(pattern));}</script>
```

null

668.Which of the following addressing modes has minimum number of memory access to access the operands?

A. Indirect

B. Direct

C. Indexed

D. Immediate

Ans.

671.The ways to accessing html elements in java script

document.getElementById("fname").value

- **Ans . Finding HTML elements by id**
- **Finding HTML elements by tag name**
- **Finding HTML elements by class name**
- **Finding HTML elements by CSS selectors**
- **Finding HTML elements by HTML object collections**

672.temp=root->left;
while(temp->right!=NULL)

temp=temp->right;

return temp;

The above code snippet for a BST with the address of the root node in pointer 'root'

returns

Ans. Inorder predecessor of the root

674.How many flip-flops are present in register of sixteen bits?

Ans 16

675.In one of the pairs of protocols given below, both the protocols can use multiple TCP connections between the same client and the server. Which one is that?
Ans. (A) HTTP, FTP
(B) HTTP, TELNET
(C) FTP, SMTP
(D) HTTP, SMTP

Explanation: HTTP may use different TCP connection for different objects of a webpage if non-persistent connections are used.
FTP uses two TCP connections, one for data and another control.

TELNET and FTP can only use **ONE connection** at a time.

676.A subnet has been assigned a subnet mask of 255.255.255.192. What is the maximum number of hosts that can belong to this subnet?
Ans. (A) 14
(B) 30
(C) 62
(D) 126

678.In a relational schema, each tuple is divided into fields called
Ans .Domains

679.If a pipeline has five stages, assuming each stage is one cycle, the earliest time to receive an output from an instruction without any forwarding (not nop) is after which cycle?
Ans

680.What is the correct syntax for referring to an external script called " abc.js"

Ans.
<script href=" abc.js">
<script name=" abc.js">
<script src=" abc.js">
None of the above

681.A system of interlinked hypertext documents accessed via the Internet is known as
Ans.World Wide Web

682.How many phases are present in the simplest pipeline system?
Ans 4 or 5

686.A _____ is often used if you want the user to verify or accept
Ans . A confirm box is often used if you want the user to verify or accept something.
`window.confirm("sometext")`

687.The language used in application programs to request data from the DBMS is referred to as the
Ans.DML

688.In Circuit Switching, resources need to be reserved during the
Ans the resources need to be reserved during the setup phase; the resources remain dedicated for the entire duration of data transfer phase until the teardown phase
setup phase

689.Can any unsigned number be represented using one register in 64-bit processor
Ans. 14

690.Inorder and postorder traversal sequences of a binary tree are 45 50 55 65 70 75 80 85 90 and 45 55 65 50 75 90 85 80 70. What are its leaf nodes?
Ans 75 55 45 90

692.If the page size is 1024 bytes, what is the page number in decimal of the following virtual address 1110 1010010101
Ans 14

693.Which normal form is considered adequate for relational database design?
Ans 3NF

694.In Javascript, which of the following method is used to find out the character at a position in a string?
Ans
a) charAt()

b) CharacterAt()

c) CharPos()

d) characAt()

695.The preorder traversal of the AVL tree obtained by inserting 17,7,20,10,8 is
Ans 17 8 7 10 20

696.The concept of locking can be used to solve the problem of
Ans.Deadlock

697.What is the JavaScript syntax to insert a comment that has more than one line?
/* comment */
Ans Single line comments start with //.

Any text between // and the end of the line will be ignored by JavaScript (will not be executed).

This example uses a single-line comment before each code line:

Example

```
// Change heading:
document.getElementById("myH").innerHTML = "My First Page";
// Change paragraph:
document.getElementById("myP").innerHTML = "My first paragraph.";
```

700.Given four frames in main memory, the following is the content of the page table. Assuming the frames are fetched at time instant 3, 4, 1, 2 which frame will be replaced to place the page 46 using first in first out replacement algorithm?
23

34

10

4

last frame starting from first

701…… is very useful in situation when data have to stored and then retrieved in reverse order.
Ans.Stack

702.Consider the following message M = 1010001101. The cyclic redundancy check (CRC) for this message using the divisor polynomial $x^5 + x^4 + x^2 + 1$ is :
Ans . Consider the following message M = 1010001101. The cyclic redundancy check (CRC) for this message using the divisor polynomial $x^5 + x^4 + x^2 + 1$ is :

(A) 01110
(B) 01011
(C) 10101
(D) 10110

Explanation:

```
M = 1010001101

Divisor polynomial: 1.x5 +1.x4+0.x3+1.x2+0.x2+1.x0

Divisor polynomial bit= 110101

Bits to be appended to message= (divisor polynomial bits – 1) = 5

Append 5 zeros to message bits, modified message: 101000110100000
```

703.The daisy chaining prioirty gives least priority to which device?
Ans The device accessed last in the chain

704.What does isNaN function do in JavaScript? Return true if the argument is not a number.
Ans. The isNaN() function determines whether a value is an illegal number (Not-a-Number). This function returns true if the value equates to NaN. Otherwise it returns false

705.In a E-R diagram, ellipses represent a
Ans .Attributes

706.Which of the following desired features are beyond the capability of relational algebra?

- **Ans Commands for insertion, deletion or modification of data.**
  1.finding transitive closure
- **Arithmetic capability: In SQL it is possible to involve arithmetic operations as well as comparisons, e.g. A < B + 3. Note that + or other arithmetic operators appear neither in relational algebra nor in relational calculus.**
- **Assignment and Print Commands: It is possible to print a relation constructed by a query and to assign a computed relation to a relation name.**
- **Aggregate Functions: Operations such as *average*, *sum*, *max*, etc. can be applied to columns of a relation to obtain a single quantity**.

707.A binary search tree whose left subtree and right subtree differ in hight by at most 1 unit is called ……

Ans.AVL TREE

708.How do you create a new object in JavaScript? var obj=new object( );

1. **Ans . Define and create a single object, using an object literal.**
2. **Define and create a single object, with the keyword new.**
3. **Define an object constructor, and then create objects of the constructed type.**

709.Which method is implemented in RAID 1?

Ans Mirroring without striping or pariity

711.What are the potential problems when a DBMS executes multiple transaction concurrently

- **Ans. The Lost Update Problem**
- **The uncommitted dependency problem/The Temporary Update (or Dirty Read) Problem**
- **The inconsistent analysis problem/The Incorrect Summary Problem**
- **The Unrepeatable Read Problem**

713.A processor can support a maximum memory of 4 GB, where the memory is word-addressable (a word consists of two bytes). The size of the address bus of the processor is at least _____ bits

Ans. (A) 16
(B) 31
(C) 32
(D) None

Explanation: Maximum Memory = 4GB = 2^{32} bytes
Size of a word = 2 bytes
Therefore, Number of words = 2^{32} / 2 = 2^{31}
So, we require 31 bits for the address bus of the processor.

Thus, B is the correct choice.

714.*When determining the efficiency of algorithm the time factor is measured by*

Ans.Counting the number of key operations

715.What is the output of following JavaScript code?

```
<script type="text/javascript">
function x(){
var s = "Quality 100%!{[!!";
var pattern = /\w/g;
document.write(s.match(pattern));
}</script>
```

Ans QUALITY100

716.*Linked lists are best suited*

Ans For size and structure of data that is permanently changing

717.Let R be a relation. Which of the following comments about the relation R are correct?

Ans 3.If R is in 3 NF, and every key of R is simple, then R is in BCN

719.Which of the following object is the highest-level object in the browser object hierarchy?

Ans.Window object

720.RAM type is justified as

Ans SRAM is faster than DRAM

721.The size of the data count register of a DMA controller is 16 bits. The processor needs to transfer a file of 29,154 kilobytes from disk to main memory. The memory is byte addressable. The minimum number of times the DMA controller needs to get the control of the system bus from the processor to transfer the file from the disk to main memory is

Ans. (A) 3644

(B) 3645

(C) 456

(D) 1823

Explanation: Size of data count register of the DMA controller = 16 bits

Data that can be transferred in one go = 2^{16} bytes = 64 kilobytes

File size to be transferred = 29154 kilobytes

So, number of times the DMA controller needs to get the control of the system bus from the processor to transfer the file from the disk to main memory = ceil(29154/64) = 456

723.The resources needed for communication between end systems are reserved for the duration of session between end systems in

Ans .Circuit switching

724.What is the output of following JavaScript code?

```
<script type="text/javascript">
function x(z,t){
alert(x.length);}</script>
```

Ans 2

725.Linked list are not suitable data structure of which one of the following problems ?

Ans.Binary Search

726.What is the output of following JavaScript code?

```
<script type="text/javascript">
var cst="Chadha Software Technologies";
var result= cst.split(" ");
document.write(result); </script>
```

Ans CHADHA,SOFTWARE,TECHNOLOGIES

731.What are the states of the Auxiliary Carry (AC) and Carry Flag (CF) after executing the following 8085 program? MVI H, 5DH; MIV L, 6BH; MOV A, H; ADD L

```
Ans. MVI L, 5DH
   MVI L, 6BH
   MOV A, H
   ADD L
```

(A) AC = 0 and CY = 0
(B) AC = 1 and CY = 1
(C) AC = 1 and CY = 0
(D) AC = 0 and CY = 0

Explanation:
First we load 5D in L register But we have not stored it to the accumulator So, when we load 6B in L register, it overwrites 5D in L register and the same value 6BH is copied to accumulator
Now A = 6BH
L = 6BH
ADD L i.e. A = A + L
It will generate internal carry i.e. B + B = 22 i.e. 22 – 16 = 6
adding 2 to 6 + 6 => we get 14 => D

Hence answer is D6
Since there is internal carry only, no final carry as 14 < 16
So, Auxillary carry flag(AC) = 1
Carry Flag(CY) = 0

732.Truncate is _____ command
Ans DDL

727.Which of the following is useful in implementing quick sort?

Ans Stacks

728.Which of the following raid levels provides maximum usable disk space?
Ans .Raid 0

730._____ extracts the DML statements from a host language and passes to DML Compiler
Ans SUB LANGUAGE COMPILER

733.These networking classes encapsulate the "socket" paradigm pioneered in the (BSD) Give the abbreviation of BSD?
Ans .Berkeley Software Distribution

734.Which of the following object represents the HTML document loaded into a browser window?
Ans Window Object

735.What is the result of the following operation Top (Push (S, X))
Ans.X

737.What is the output of following JavaScript code?

```
<script type="text/javascript">
var cst = "Chadha Software Technologies";
var result = cst.indexOf("Tech");
document.write(result);
</script>
```

Ans 16

738.A transaction is permanently saved in the hard disk only after giving
.Savepoint followed by Commit

Ans

739.In a priority queue insertion and deletion takes place at
Ans Any Position

741.Digital signature envelope is decrypted by using _____.
Ans PAYEMENTS PRIVATE KEY

742.When does the top value of stack changes?
Ans . A. Before insertion

B. After insertion

C. At the time of insertion

D. While checking overflow

1.Refers to data using physical addresses
2.Cannot interfere with high-level programming language
3.None of these
4.Is used to define the physical characteristics of each record

744.The data manipulation language (DML)
Ans A data manipulation language (DML) is a family of syntax elements similar to a computer programming language used for selecting, inserting, deleting and updating data in a database. Performing read-only queries of data is sometimes also considered a component of DML.

745.What is mean by "this" keyword in javascript?
Ans . n JavaScript, the thing called this, is the object that "owns" the JavaScript code. The value of this, when used in a function, is the object that "owns" the function. The value of this, when used in an object, is the object itself. The this keyword in an object constructor does not have a value.

746.int unknown(int n)
{

```
int i, j, k = 0;
for (i  = n/2; i <= n; i++)
for (j = 2; j <= n; j = j * 2)
k = k + n/2;
return k;
}
```

Ans.a)O(n^2) b)O(n^2logn) c)O(n^3) d)O(n^3logn)

747.Math. round(-20.5)=?
Ans -20

748.An advantage of the database approach is All of these

Ans The advantages in the database approach are as follows:

- **All the three managers are using the same database; hence, any report using the information will not be inconsistent.**
- **All the three managers can view the database as per their needs.**
- **The application systems can be developed independent of the database.**
- **The data validation and updating will be once and same for all.**
- **The data is shared by all users.**
- **The data security and privacy can be managed and ensured because the data entry in the database occurs once only and is protected by the security measures.**
- **Since the database is storage of the structured information, the queries can be answered fast by using the logic of the data structures.**

750.Computers use addressing mode techniques for _____.
Ans. A.giving programming versatility to the user by providing facilities as pointers to memory counters for loop control

B. to reduce no. of bits in the field of instruction
C. specifying rules for modifying or interpreting address field of the instruction
D. All the above

751.Which built-in method sorts the elements of an array
Ans .sort()

752.In ----------Mode, the authentication header is inserted immediately after the IP header.
Ans Tunnel

753.Which of the following is not characteristics of a relational database model
Ans TreeLike structure

754.The maximum number of binary trees that can be formed with three unlabeled nodes is:
Ans (A) 1 **(B)5** (C)4 (D)3

755.A computer has a 256 KByte, 4-way set associative, write back data cache with block size of 32 Bytes. The processor sends 32 bit addresses to the cache controller. Each cache tag directory

entry contains, in addition to address tag, 2 valid bits, 1 modified bit and 1 replacement bit. The size of the cache tag directory is

Ans . (A) 11
(B) 14
(C) 16
(D) 27

Explanation: A set-associative scheme is a hybrid between a fully associative cache, and direct mapped cache. It's considered a reasonable compromise between the complex hardware needed for fully associative caches (which requires parallel searches of all slots), and the simplistic direct-mapped scheme, which may cause collisions of addresses to the same slot (similar to collisions in a hash table).

756.Trace the output of the following code?

```
#include
using namespace std;
int main()
{
int x=15,y=27;
x = y++ + x++;
y = ++y + ++x;
cout<<x+y++<<++x+y;
 return 0;
}</x+y++<<++x+y;
```

Ans 116116

757.Microsoft SQL Server is an example for which OLAP Server?

Ans MULTIDIMENSIONAL OLAP

758.Which built-in method returns the length of the string?

Ans .length

759.The minimum duration of the active low interrupt pulse for being sensed without being lost must be

Ans. a) greater than one machine cycle

b) equal to one machine cycle

c) greater than 2 machine cycles

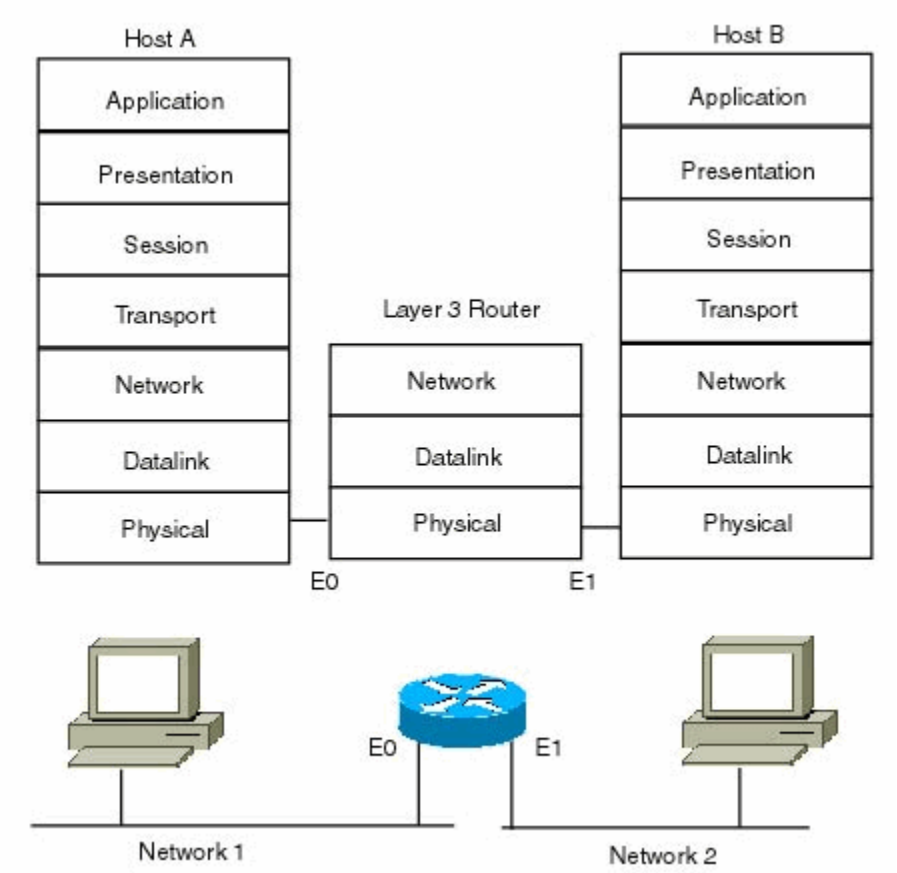
d) equal to 2 machine cycles

View Answer

Answer: b
Explanation: The minimum duration of the active low interrupt pulse should be equal to the duration of one machine cycle for being sensed, else it will be lost.

760.Assume that source S and destination D are connected through two intermediate routers labeled R. Determine how many times each packet hasto visit the network layer and the data link layer during a transmission from S to D.
Ans. (A) Network layer – 4 times and Data link layer – 4 times
(B) Network layer – 4 times and Data link layer – 3 times
(C) Network layer – 4 times and Data link layer – 6 times
(D) Network layer – 2 times and Data link layer – 6 times

Router is a network layer device. See the following diagram from



Number of blocks = Cache-Size/Block-Size = 256 KB / 32 Bytes = 2^{13}
Number of Sets = 2^{13} / 4 = 2^{11}
Tag + Set offset + Byte offset = 32
Tag + 11 + 5 = 32
Tag = 16

761.Which of the following function of Array object calls a function for each element in the array?

Ans A – concat B – every C – filter **D - forEach**

762.Which of the following statements is FALSE regarding a bridge

Ans . A) Bridge is a layer 2 device

(B) Bridge reduces collision domain

(C) Bridge is used to connect two or more LAN segments

(D) Bridge reduces broadcast domain

Explanation:

- Bridge is a layer 2 device -TRUE //A device used to connect two separate Ethernet **networks** into one extended Ethernet and Ethernet works on DATA LINK Layer
- Bridge reduces collision domain-TRUE//A bridge is a two interfaces device that creates 2 collision domains, since it forwards the traffic it receives from one interface only to the interface where the destination layer 2 device (based on his mac address) is connected to.
- Bridge is used to connect two or more LAN segments -TRUE // It is its sole purpose
- Bridge reduces broadcast domain- FALSE //Bridge can reduce collision domain but can NOT reduce broadcast domain

763.Which of the following is not a stored procedure?

Ans 1. procedure 2. Date 3. function 4. trigger

765.Determine the output of the following code?

```
#include
using namespace std;
class one
{
int a;
static int b;
public:
void initialize();
void print();
static void print_S();
};
int one::b = 0;

void one::initialize()
{
a = 10;
b ++;

}
void one::print()
{
cout<<a;
 cout<<b;
 }
void one::print_S()
```

```
{

cout<<b;
 }


int main()
{
one o;
o.initialize();
o.print();
o.print_S();
return 0;
}</b;
</b;
</a;
```

Ans 1011

767.A file system with 300 GByte disk uses a file descriptor with 8 direct block addresses, 1 indirect block address and 1 doubly indirect block address. The size of each disk block is 128 Bytes and the size of each disk block address is 8 Bytes. The maximum possible file size in this file system in KBytes is

Ans. (A) 3 Kbytes
(B) 35 Kbytes
(C) 280 Bytes
(D) Dependent on the size of the disk

Total number of possible addresses stored in a disk block = 128/8 = 16

Maximum number of addressable bytes due to direct address block = 8*128
Maximum number of addressable bytes due to 1 single indirect address block = 16*128
Maximum number of addressable bytes due to 1 double indirect address block = 16*16*128

The maximum possible file size = 8*128 + 16*128 + 16*16*128 = 35KB

768.Which one of these is characteristic of RAID 5?
Ans.Distributed Parity

769.Dynamic web page

generates on demand by a program or a request from browser

Ans. **A dynamic web page is a web page that displays different content each time it's viewed. For example, the page may change with the time of day, the user that accesses the webpage, or the type of user interaction. There are two types of dynamic web pages**

770.Consider the following pseudo code fragment:
printf (“Hello”);
if(!fork( ))
printf(“World”);
Which of the following is the output of the code fragment?

Ans HELLO HELLO WORLD WORLD

772.Generally Dynamic RAM is used as main memory in a computer system as it_____.
Ans. A.Consumes less power **B.has higher speed**

C.has lower cell density D.needs refreshing circuitry

775.Consider a relation R (A, B). If A ¿ B is a trivial functional dependency and A is the super key for R, then what is the maximum normal form R can be in? **Ans** BCNF

776.Which one of the following is a cryptographic protocol used to secure HTTP connection?
Ans . Transport Layer Security (TLS) is a cryptographic protocol that is used to secureweb (HTTP/HTTPS) connections.

777.What is the return value of f(p,p) if the value of p is initialized to 5 before the call? Note that the first parameter is passed by reference, whereas the second parameter is passed by value.
int f (int &x, int c) {
c=c-1;
if (c-0) return 1;
x=x+1;
return f (x,c)*x;}

Ans .
```
int f(int &x, int c) {
   c  = c - 1;
   if (c == 0) return 1;
   x = x + 1;
   return f(x, c) * x;
}
```

(A) 3024
(B) 6561

(C) 55440
(D) 161051

Since c is passed by value and x is passed by reference, all functions will have same copy of x, but different copies of c.

f(5, 5) = f(x, 4)*x = f(x, 3)*x*x = f(x, 2)*x*x*x = f(x, 1)*x*x*x*x = 1*x*x*x*x = x^4

Since x is incremented in every function call, it becomes 9 after f(x, 2) call. So the value of expression x^4 becomes 9^4 which is 6561.

```
#include <stdio.h>

int f(int &x, int c)
{
    c  = c - 1;
    if (c == 0) return 1;
    x = x + 1;
    return f(x, c) * x;
}
int main()
{
    int p = 5;
    printf("%d", f(p, p));
}
```

778.Uniform Resource Locator (URL), is a standard for specifying any kind of information on the

Ans.Internet

779.If a virtual memory system has 4 pages in real memory and the rest must be swapped to disk. Which of the following is the hit ratio for the following page address stream. Assume memory starts empty, use the FIFO algorithm

Ans.

A.10%

B.15%

C.25%

D.31%

781.What will be the values of x, m and n after the execution of the following statements?
int x, m, n;
m = 10;
n = 15;
x = ++m + n++;

Ans. x=26 m=11 n=16

783.What is the unique characteristic of RAID 6 (Choose one)?
Ans.Two independent distributed parity

784.What is the code to be used to trim whitespaces ?

```
Ans . a. let trimmed = (l.trim() for (l in lines));
b. let trimmed = (trim(l));
c. let trimmed = l.trim();
d. let trimmed = for(l in lines));
```

785.RAID is a way to: incrrease hardrive reliability and performance

Ans RAID (redundant array of independent disks; originally redundant array of inexpensive disks) is a way of storing the same data in different places on multiple hard disks to protect data in the case of a drive failure. However, not all RAID levels provide redundancy.

786.If the offset of the operand is stored in one of the index registers, then it is

Ans . a) based indexed addressing mode

b) relative based indexed addressing mode

c) indexed addressing mode

d) none of the mentioned

Explanation: in indexed addressing mode, the offset of operand is stored and in the rest of them, address is stored.

787.What's the output of the following code?

```
var city = new Array("delhi", "agra", "akot", "aligarh");

city.push('palampur');

document.write(city);
```

Ans delhi agra akot aligarh palampur

788.What happens when a pointer is deleted twice?
Ans. I know that a "deleting the same memory **twice**" error **can happen** when two**pointers** address the same dynamically allocated object. If **delete** is applied to one of the **pointers**, then the object's memory is returned to the free store. If we subsequently **delete** the second **pointer**, then the free store may be corrupted.

789.The local host and the remote host are defined using IP addresses. To define the processes, we need second identifiers called
Ans.Port adddress

790.Assume that a table R with 1000 records is to be joined with another table S with 10000 records. What is the maximum number of records that would result in if we join R with S and the equi-join attribute of S is the primary key?

Ans 1000

793.Which of the following type casts will convert an Integer variable named amount to a Double type?

Ans A. (double) amount
B. (int to double) amount
C. int to double(amount)
D. int (amount) to double

794.Consider the following relation
Cinema (theater, address, capacity)
Which of the following options will be needed at the end of the SQL query
SELECT P1. address
FROM Cinema P1
Such that it always finds the addresses of theaters with maximum capacity?

Ans (A) WHERE P1. Capacity> = All (select P2. Capacity from Cinema P2)
(B) WHERE P1. Capacity> = Any (select P2. Capacity from Cinema P2)
(C) WHERE P1. Capacity > All (select max(P2. Capacity) from Cinema P2)
(D) WHERE P1. Capacity > Any (select max (P2. Capacity) from Cinema P2)

795.The '$' present in the RegExp object is called a

Ans . a. character

b. matcher

c. metacharacter

d. metadata

Answer : c

Explanation : The 'S' is a special metacharacter that matches the end of a string.

799.What should be used to point to a static class member?
Ans . a) Smart pointer
b) Dynamic pointer
c) Normal pointer
d) None of the mentioned

800.Which cause a compiler error?
Ans.

```
float[ ] f = new float(3);

float f2[ ] = new float[ ];
```

float[ ]f1 = new float[3];

float f3[ ] = new float[3];

float f5[ ] = {1.0f, 2.0f, 2.0f};

A. 2, 4

B. 3, 5

C. 4, 5

D. **1, 2**

Explanation:
(1) causes two compiler errors ('[' expected and illegal start of expression) because the wrong type of bracket is used, `( )` instead of `[ ]`. The following is the correct syntax: `float[ ] f = new float[3];`
(2) causes a compiler error ('{' expected) because the array constructor does not specify the number of elements in the array. The following is the correct syntax: `float f2[ ] = new float[3];`

(3), (4), and (5) compile without error.

802.The ..... protocol defines a set of messages sent over either User Datagram Protocol (UDP) port53 or Transmission Control Protocol(TCP) port53.

Ans DNS

803.Consider the following statement containing regular expressions
var text = "testing: 1, 2, 3";

var pattern = /\d+/g;

In order to check if the pattern matches, the statement is

Ans PATTERN.TEST(TEXT)

805.The regular expression to match any one character, not between the brackets is
Ans . a. […] b. [^] c. [^…] d**. [\D]** [?] [^] [^?] [\D]

807.Which of the following scan() statements is true?
Ans

809.Using public key cryptography, X adds a digital signature σ to message M, encrypts <M, σ >, and sends it to Y, where it is d ecrypted. Which one of the following sequences of keys is used for the operations?

Ans. (A) Encryption: X's private key followed by Y's private key; Decryption: X's public key followed by Y's public key

(B) Encryption: X's private key followed by Y's public key; Decryption: X's public key followed by Y's private key

(C) Encryption: X's public key followed by Y's private key; Decryption: Y's public key followed by X's private key

(D) Encryption: X's private key followed by Y's public key; Decryption: Y's private key followed by X's public key

812.What does /[^(]* regular expression indicate ?

Ans. a. Match one or more characters that are not open paranthesis

b. Match zero or more characters that are open paranthesis

c. Match zero or more characters that are not open paranthesis

d. Match one or more characters that are open paranthesis

Explanation : We should always be careful while using * and ? as repetition characters as they may match zero instances of whatever precedes them, they are allowed to match nothing.

813.A variable P is called pointer if

Ans .P conatains the address of the element of the data

814.Which of the following statement on the view concept in SQL is invalid?

Ans .The definition of a group should not have a groupby clause in it

815.The function scanf() reads

Ans. A) double character

B) single character

C) multiple characters

D) no character

816.In SQL, testing whether a subquery is empty is done using

Ans .Exists

819.What will be the result when non greedy repetition is used on the pattern /a+?b/ ?

Ans. a. Matches the letter b preceded by the fewest number of a's possible

b. Matches the letter b preceded by any number of a

c. Matches letter a preceded by letter b, in the stack order

d. None of the mentioned

Explanation : Using non greedy repetition may not always produce the results you expect. /a+?b/ matches the letter b preceded by the fewest number of a's possible

820.main() is an example of

Ans user defined function

822.What does the subexpression /java(script)?/ result in ?

Ans . a. It matches "java" followed by the optional "script"

b. It matches "java" followed by any number of "script"

c. It matches "java" followed by a minimum of one "script"

d. None of the mentioned

View Answer

Explanation : The subexpression /java(script)?/ matches "java" followed by the optional "script".

823.Which type of error detection uses binary division?

Ans .CRC

824.Which of the following is not a characteristic of a relational database model?

Ans .Treelike strructure

826.A RAM chip has a capacity of 1024 words of 8 bits each (1K*8). The number of 2*4 decoders with enable line needed to construct a 16K*6 RAM from 1K*8 RAM is

Ans . (A) 4

(B) 5

(C) 6

(D) 7

Explanation:

```
RAM chip size = 1k ×8[1024 words of 8 bits each]

RAM to construct =16k ×16

Number of chips required = (16k x 16)/ ( 1k x 8)

                         = (16k x 2)

[16 chips vertically with each having 2 chips

horizontally]

So to select one chip out of 16 vertical chips,
```

```
we need 4 x 16 decoder.


Available decoder is  2 x 4 decoder
To be constructed is 4 x 16 decoder


Hence 4 + 1 = 5 decoders are required.
```

827.What is the most essential purpose of parantheses in regular expressions ?

Ans. Define pattern matching techniques

b. Define subpatterns within the complete pattern

c. Define portion of strings in the regular expression

d. All of the mentioned

Explanation : When a regular expression is successfullyy matched against a target string, it is possible to extract the portions of the target string that matched any particular paranthesized subpattern. The essential purpose of parantheses in regular expressions is to define subpatterns within the complete pattern

829.An identifier in C all of these

Ans An identifier is a string of alphanumeric characters that begins with an alphabeticcharacter or an underscore character that are used to represent variousprogramming elements such as variables, functions, arrays, structures, unions and so on. Actually, an identifier is a user-defined word.

831.Value of checksum must be recalculated regardless of

Ans .Fragmentation

833.The method that performs the search-and-replace operation to strings for pattern matching is

Ans. a. searchandreplace()

b. add()

c. edit()

d. replace()

Explanation : The replace() method performs a search-and-replace operation. It takes a regular expression as its first argument and a replacement string as its second argument.

834.A variable whose size is determined at compile time and cannot be changed at run time is

Ans static variable

1.stores the display data as individual bits
2.uses ordinary memory to store the display data in character form
3.are utilised for high resolution graphics such as maps
835.Memory mapped displays 4.are associated with electromechanical teleprinters

Ans . Memory-mapped I/O. ... So when an address is accessed by the CPU, it may refer to a portion of physical RAM, but it can also refer to memory of the I/O device. Thus, the CPU instructions used to access the memory can also be used for accessing devices

836.Dotted-decimal notation of 10000001 00001011 00001011 11101111 would be

Ans 129.11.11.239

838.A union that has no constructor can be initialized with another union of _____ type

Ans.

A. different

B. **same**

C. virtual

D. class

839.What would be the result of the following statement in JavaScript using regular expression methods ?

Ans. a. Returns [“123‟”456‟”789”] **b. Returns [“123”,”456”,”789”]** c. Returns [1,2,3,4,5,6,7,8,9] d. Throws an exception

Explanation : The split() method can take regular expressions as its arguments. The split() method generally breaks the string on which it is called into an array of substrings, using the argument as a separator.

840.Which one of the following allows a user at one site to establish a connection to another site and then pass keystrokes from local host to remote host?

Ans. a) HTTP
b) FTP
c) Telnet
d) None of the mentioned

841.Let E1 and E2 be two entities in an E/R diagram with simple single-valued attributes. R1 and R2 are two relationships between E1 and E2, where R1 is one-to-many and R2 is many-to-

many. R1 and R2 do not have any attributes of their own. What is the minimum number of tables required to represent this situation in the relational model?

Ans. (a) s is subset of r
(b) r U s = r
(c) r is a subset of s
(d) r * s = s

Consider the following example with lossy decomposition of r into r1 and r2. We can see that r is a subset of s.

```
Table r
 A      B      C      D
----------------------------
 1     10     100    1000
 1     20     200    1000
 1     20     200    1001


Table r1
 A      B      C
------------------
 1     10     100
 1     20     200


Table r2
 A     D
-----------
 1    1000
 1    1001


Table s (natural join of r1 and r2)
 A      B      C      D
----------------------------
 1     10     100    1000
 1     20     200    1000
 1     10     100    1001
 1     20     200    1001
```

842.Structured programming involves
Ans.

A. decentralisation of program activity

B. **functional modularisation**

C. localisation of errors

D. All of the above

E. None of the above

843.Consider a computer system with 40-bit virtual addressing and page size of sixteen kilobytes. If the computer system has a one-level page table per process and each page table entry requires 48 bits, then the size of the per-process page table is _____ megabytes.

Ans. **(A) 384**
(B) 48
(C) 192
(D) 96

Explanation: Size of memory = 2^{40}
Page size = 16KB = 2^{14}

No of pages= size of Memory/ page size = 2^{40} / 2^{14} = 2^{26}
Size of page table = 2^{26} * 48/8 bytes = 2^{6}*6 MB =384 MB

Thus, A is the correct choice.

844.Consider the following code snippet. What purpose does exec() solve in the above code ?

```
var pattern = /Java/g;
var text = "JavaScript is more fun than Java!";
var result;
while ((result = pattern.exec(text)) != null)
{
alert("Matched '" + result[0] + "' +" at position " + result.index +"; next search begins at " + patt
ern.lastIndex);
}
```

Ans. **a. Returns the same kind of array whether or not the regular expression has the global g flag.**

b. Returns different arrays in the different turns of iterations

c. Both a and b

d. None of the mentioned

Explanation : exec() returns the same kind of array whether or not the regular expression has the global g flag. Recall that match() returns an array of matches when passed a global regular expression. exec(), by contrast, always returns a single match and provides complete information about that match. When exec() is called on a regular expression that has the g flag, it sets the lastIndex property of the regular expression object to the character position immediately following the matched substring. When exec() is invoked a second time for the same regular expression, it begins its search at the character position indicated by the lastIndex property. If exec() does not find a match, it resets lastIndex to 0.

845.Select operation in SQL is equivalent to

Ans. A) the selection operation in relational algebra.

(B) the selection operation in relational algebra, except that SELECT in SQL retains duplicates.

(C) the projection operation in relational algebra.

(D) the projection operation in relational algebra, except that SELECT in SQL retains duplicates.

- Explanation

  SELECT operation in SQL performs vertical partitioning, while the same is performed by projection operation in relational calculus. However, SELECT results in multiset (set containing duplicate elements) unless you specify DISTINCT keyword, on the other hand projection operation in relational calculus will always results in proper sets (without any element repetition).

  Hence the correct answer is Option (D) the projection operation in relational algebra, except that SELECT in SQL retains duplicates.

847.Which function among the following lets to register a function to be invoked once?

Ans. a. setTimeout()

b. setTotaltime()

c. setInterval()

d. None of the mentioned

Explanation : setTimeout() and setInterval() allow you to register a function to be invoked once or repeatedly after a specified amount of time has elapsed.

848.By default, any real number in C is treated as

Ans.

A. float

B. **double**

C. long double

D. far double

Explanation:

In computing, 'real number' often refers to non-complex floating-point numbers. It include both rational numbers, such as 42 and 3/4, and irrational numbers such as pi = 3.14159265...

When the accuracy of the floating point number is insufficient, we can use the `double` to define the number. The `double` is same as `float` but with longer precision and takes double space (8 bytes) than `float`.
To extend the precision further we can use `long double` which occupies 10 bytes of memory space.

851.Grant and revoke are ..... statements
Ans.DCL commands

852.Which function among the following lets to register a function to be invoked repeatedly after a certain time?

Ans. a. setTimeout()

b. setTotaltime()

c. setInterval()

d. None of the mentioned

Explanation : setTimeout() and setInterval() allow you to register a function to be invoked once or repeatedly after a specified amount of time has elapsed.

853.Integer division in a C program results in

Ans integer truncation

854..... command can be used to modify a column in a table
Ans .Alter table

855.The processed S/MIME along with security related data is called as _____.
Ans. a. public key cryptography standard.

b. private key cryptography standard.

c. S/MIME.

d. MIME.

Answer: A.

856.Which is the handler method used to invoke when uncaught JavaScript exceptions occur?

Ans. a. onhalt

b. onerror

c. Both a and b

d. None of the mentioned

Explanation : The **onerror** handler method can be registered to be invoked when uncaught JavaScript exceptions occur.

857.The function f(x) = ab + a can be simplified as

Ans a

859._____ Substitution is a process that accepts 48 bits from the XOR operation.

Ans. a. S-box.

b. P-box.

c. Expansion permutations.

d. Key transformation.

Answer: A.

860.Which property is used to obtain browser vendor and version information?

Ans. a. modal

b. version

c. browser

d. navigator

Explanation : The **navigator** property is used to obtain browser vendor and version information.

861.The number of squares in K-map of n-variables is

Ans 2^n

862.Consider the C function given below.

```
int f(int j)
{
static int i = 50;
int k;
if (i == j)
{
printf(?something?);
k = f(i);
return 0;
}
else return 0;
}
```

Which one of the following is TRUE?

Ans. (A) The function returns 0 for all values of j.
(B) The function prints the string something for all values of j.
(C) The function returns 0 when j = 50.
(D) The function will exhaust the runtime stack or run into an infinite loop when j = 50

Explanation: When j is 50, the function would call itself again and again as neither i nor j is changed inside the recursion.

863.Data independence means programs are not dependent on both physical and logical attributes of data
Ans It means we change the physical storage/level without affecting the conceptual or external view of the data. The new changes are absorbed by mapping techniques. Logical data independence is the ability to modify the logical schema without causing application program to be rewritten.

864.The output of combinational circuit depends on
Ans Depends on the combination of the inputs inputs and previous states

865.Which method receives the return value of setInterval() to cancel future invocations?

Ans. a. clearInvocation()

b. cancelInvocation()

c. clearInterval()

d. None of the mentioned

Explanation : Like setTimeout(), setInterval() returns a value that can be passed to clearInterval() to cancel any future invocations of the scheduled function

867. Consider the below code fragment:

```
if(fork k( ) = = 0)
{
a= a+5; printf(?%d, %d \n?, a, &a);
}
else
{
a= a ? 5;
printf(?%d %d \n?, 0, &a);
}
```

Let u, v be the values printed by parent process and x, y be the values printed by child process. Which one of the following is true?

Ans. (A) u = x + 10 and v = y
(B) u = x + 10 and v != y
(C) u + 10 = x and v = y
(D) u + 10 = x and v != y

Explanation:

When a fork() system call is issued, a copy of all the pages corresponding to the parent process is created, loaded into a separate memory location by the OS for the child process. But this is not needed in certain cases. When the child is needed just to execute a command for the parent process, there is no need for copying the parent process' pages, since exec replaces the address space of the process which invoked it with the command to be executed. In such cases, a technique called copy-on-write (COW) is used. With this technique, when a fork occurs, the parent process's pages are not copied for the child process. Instead, the pages are shared between the child and the parent process. Whenever a process (parent or child) modifies a page, a separate copy of that particular page alone is made for that process (parent or child) which performed the modification. This process will then use the newly copied page rather than the shared one in all future references.

fork() returns 0 in child process and process ID of child process in parent process.
In Child (x), a = a + 5
In Parent (u), a = a – 5;

Child process will execute the if part and parent process will execute the else part. Assume that the initial value of a = 6. Then the value of a printed by the child process will be 11, and the value of a printed by the parent process in 1. Therefore u+10=x Now the second part. The answer is v = y.

We know that, the fork operation creates a separate address space for the child. But the child process has an exact copy of all the memory segments of the parent process. Hence the virtual addresses and the mapping (initially) will be the same for both parent process as well as child process.
PS: the virtual address is same but virtual addresses exist in different processes' virtual

address space and when we print &a, it's actually printing the virtual address. Hence the answer is v = y

868.DCL stands for
Ans.Data control lanaguage

869._____ uniquely identifies the MIME entities uniquely with reference to multiple contexts.
Ans. a. Content description.

b. Content -id.

c. Content type.

d. Content transfer encoding.

Answer: B.

870.Which of the folloiwng is fully functional ?

Ans and, or

871.Find the output of the following program?

```
#include
using namespace std;
typedef int * IntPtr;
int main()
{
IntPtr A, B, C;
int D,E;
A = new int(3);
B = new int(6);
C = new int(9);
D = 10;
E = 20;
*A = *B;
B = &E;
D = (*B)++;
*C= (*A)++ * (*B)--;
E= *C++ - *B--;
cout<<*A<<*B<<*C<<d<<e;
```

return 0;
}</d<<e;

Ans d and e are not initialized
74196182020106

872.…… is preferred method for enforcing data integrity

Ans. **A) Constraints**

B) Stored procedure

C) Triggers

D) Cursors

873.The setTimeout() belongs to which object?

Ans . a. Element

b. Window

c. Location

d. None of the mentioned

Explanation : The setTimeout() method of the Window object schedules a function to run after a specified number of milliseconds elapses.

875.The library function exit() causes an exit from

Ans . (A) the loop in which it occurs (B) the block in which it occurs
(C) the function in which it occurs **(D) the program in which it occurs**

Ans:D

876.The alpahbet are represented in which format inside the computer?

Ans .Binary form

877.Which of the following is not a binary operator in relational algebra?

Ans. A) Join

B) Semi-Join

C) Assignment

D) Project

878.Which method receives the return value of setTimeout() to cancel future invocations?

Ans. a. clearTimeout()

b. clearInterval()

c. clearSchedule()

d. None of the mentioned

View Answer

Explanation : setTimeout() returns a value that can be passed to clearTimeout() to cancel the execution of the scheduled function.

879.What will happen if we call setTimeout() with a time of 0 ms?

Ans placed in queues

880.---------- is a mode of operation for a block cipher, with the characteristic that each possible block of plaintext has a defined corresponding ciphertext value and vice versa.
Ans.Electronic code book

881.The number of bits to represent 128 sets in direct mapped cache is

Ans 7

882.Which of the following is/are not a DDL statements?

Ans delete

883.Which of the following statement is correct about destructors?

Ans a destructor has no return type

884.To which object does the location property belong?

Ans. a. Window

b. Position

c. Element

d. Location

Explanation : The location property of the Window object refers to a Location object, which represents the current URL of the document displayed in the window, and which also defines methods for making the window load a new document.

885.The interrupts are serviced using which of the folloiwng

Ans interrupt service routine

886.Which database level is closest to the users?

Ans .

A.External

B.Internal

C.Physical

D.Conceptual

888.A network with CSMA/CD protocol in the MAC layer is running at 1 Gbps over a 1 km cable with no repeaters. The signal speed in the cable is 2 x 10^8 m/sec. The minimum frame size for this network should be

Ans . (A) 10000 bits

(B) 10000 bytes

(C) 5000 bits

(D) 5000 bytes

Explanation:

```
Frame Size S >= 2BL/P


Where,


Cable Length L = 1KM = 1000M

Propogation Speed P = 2 x 10^8 m/sec

Bandwidth = 1 Gbps = 10^9 bps


See this for details of above formula.

S >= (2 *  10^9 * 1000) / (2 x 10^8)
  >= 10000 bits
```

889..... data type can store unstructured data

Ans. A. RAW

B. CHAR

C. NUMERIC
D. VARCHAR

890.What will be printed as the output of the following program?

```
public class testincr
{
public static void main(String args[])
{
int i = 0;
i = i++ + i;
System.out.println(" I = " +i);
}
}
```

Ans. (a) I = 0 **(b) I = 1** (c) I = 2 (d) I = 3

The execution goes on like this:

```
int i = 0;    //  i becomes 0
i = 0 + i;  //    now, i becomes 1
i = 0 + 1;  //    perform addition and assign 1 to i
```

891.What is the data structure used for executing interrupt service subroutine ?

Ans stack

892.What is the access point (AP) in wireless LAN?

Ans a) device that allows wireless devices to connect to a wired network

b) wireless devices itself
c) both (a) and (b)
d) none of the mentioned

893.What is the result of the following code snippet?

```
window.location === document.location
```

Ans. a. False
b. True
c. 0
d. 1

894.Which multiple access technique is used by IEEE 802.11 standard for wireless LAN?

Ans a) CDMA
b) CSMA/CA
c) ALOHA
d) None of the mentioned

895.In which part does the form validation should occur?

Ans . a. Client

b. Server

c. Both a and b

d. None of the mentioned

Answer : b

Explanation : Form validation used to occur at the server, after the client had entered all necessary data and then pressed the Submit button.

896.The output in sequential circuit depends on which of the folloiwng?

A. **Ans** Present input only
B. Past input only
C. Both present and past input
D. Past output only

898.A table can have only one

Ans .Primary Key

899.The power consumed by full adder can be reduced by using which of the following?

Ans

900.A 20 Kbps satellite link has a propagation delay of 400 ms. The transmitter employs the "go back n ARQ" scheme with n set to 10. Assuming that each frame is 100 bytes long, what is the maximum data rate possible?

Ans. A) 5Kbps
(B) 10Kbps
(C) 15Kbps
(D) 20Kbps

```
It uses the sliding window protocol for transmission of data.
The question takes into consideration the variant of sliding window protocol
namely GO BACK N ARQ. In this protocol the sender can have up to N packets
unacknowledged that are still remaining in the pipeline. The receiver only
sends cumulative acknowledgements. In case of encountering an error the sender
has to resend all the data frames following the error.
```

```
According to the question:
The data rate of the link is 20 Kbps and the propagation delay = 400 ms
So, the time required to transmit 100 bytes long data will be given by

Transmission Time t = Number of bits to be transmitted / data rate of the link
                    = (100* 8 bits) /20 Kbps =  40 ms

Now, the propagation delay is given as d = 400 ms

So the efficiency of the link is given by:

Efficiency E = N * t / ( t+ 2 * d )

Where N = window size

E = 10 * 40 / (40+2*400) = 0.476

So, the maximum data rate attainable = 0.476 * 20 Kbps = 9.52 Kbps

This is close to 10.
So, the answer will be 10Kbps.
```

901.What is the output of the following program:

```
public class testmeth
{
static int i = 1;
public static void main(String args[])
{
System.out.println(i+" , ");
m(i);
System.out.println(i);
}
public void m(int i)
{
i += 2;
}
}
```

Ans compile time error

902.----------module of the DBMS controls access to DBMS information that is stored on disk, whether it is part of the database or the catalog

Ans . A higher-level stored data manager

903.How to find the index of a particular string?
Ans . a. position()
b. index()
c. indexOf()
d. None of the mentioned

904.Which of the following is the child object of the JavaScript navigator?

Ans. a. Navicat

b. Plugins

c. NetRight

d. None of the mentioned

Explanation : The JavaScript **navigator** object includes a child object called ***plugins***

905.The number of distinct symbols in radix-r is
Ans R

906.---------- component of DBMS extracts DML commands from an application program written in a host programming language
Ans.Precompiler

907.A wireless network interface controller can work in

Ans . a) infrastructure mode

b) ad-hoc mode

c) both (a) and (b)

d) none of the mentioned

Explanation: In infrastructure mode WNIC needs access point but in ad-hoc mode access point is not required.

908.Given the code

String s1 = " VIT" ;

String s2 = " VIT " ;
String s3 = new String (s1);

Which of the following would equate to true?
Ans s1==s2

909.Can a system have multiple DMA controllers?

Ans yes

910.Which one of the following event is not possible in wireless LAN.
Ans. a) collision detection
b) acknowledgement of data frames
c) multi-mode data transmission
d) none of the mentioned

911.Which of the following are the properties of a plug-in entry?

Ans. a. name
b. filename
c. mimeTypes
d. All of the mentioned

name – is the name of the plug-in.

- filename – is the executable file that was loaded to install the plug-in.
- description – is a description of the plug-in, supplied by the developer.
- mimeTypes – is an array with one entry for each MIME type supported by the plug-in.

912.The runtime database processor of DBMS executes----------

Ans query statement only

913.What is the sequence of major events in the life of an applet?

Ans init start stop destroy

914.What is the purpose of the mimeTypes property of a plug-in entry?

Ans. a. Contains MIME properties
b. Contains MIME sizes
c. Contains MIME types

d. None of the mentioned

Explanation : **mimeTypes** is an array with one entry for each MIME type supported by the plug-in.

915.What is the number of maxterms in a function of n variables?

Ans 2^n

916.A relation R(A,B,C,D,E,H) has the following functional dependencies
F= {{A→BC},{CD→E},{E→C}, {D→AEH}, {ABH→BD}, {DH→BC}}.

Find the Normal form of the relation

Ans 3nf

917.What is Wired Equivalent Privacy (WEP) ? security algorithm for wireless networks

Ans. Wired Equivalent Privacy (WEP) is a security protocol, specified in the IEEE Wireless Fidelity (Wi-Fi) standard, 802.11b, that is designed to provide a wireless local area network (WLAN) with a level of security and privacy comparable to what is usually expected of a wired LAN

918.Which of the following events will cause a thread to die?

Ans execution of the run method ends

919.A subset of a network that includes all the routers but contains no loops is called:

Ans. a) spanning tree

b) spider structure

c) spider tree

d) none of the mentioned

920.A method within a class is only accessible by classes that are defined within the same package as the class of the method. Which one of the following is used to enforce such restriction?

Ans. A. Declare the method with the keyword public.
B. Declare the method with the keyword private.
C. Declare the method with the keyword protected.
D. Do not declare the method with any accessibility modifiers.
E. Declare the method with the keyword public and private.

921.How many output lines are present in an encoder with 2^n input lines? n

Ans n

922.AJAX has become very commonly used because

Ans. it allows page content to be updated without requiring a full page reload.

923.----------index has an entry for every search key value (and hence every

record) in the data file

Ans dense

924.If link transmits 4000 frames per second, and each slot has 8 bits,the transmission rate of circuit this TDM is

Ans. a) 32kbps

b) 500bps

c) 500kbps

d) None of the mentioned

View Answer

Explanation: Transmission rate= frame rate * number os bits in a slot.

925.Consider the following code.

```
static void nPrint(String message, int n) {
while (n > 0) {
System.out.print(message);
n--;
}
}
```

What is the printout of the call nPrint('a', 4)?

Ans. What is the printout of the call Print('a', 4)?

(a) aaaaa
(b) aaaa
(c) aaa
(d) aa
(e) invalid call.

Reason : I nvalid call because char 'a' cannot be passed to string message

926.More than one transaction can apply this lock on X for reading its value but no write lock can be applied on X by any other transaction. What is that lock?

Ans shared

927.Which of the following is not a reason XML gained popularity as a data interchange format for AJAX?

1. **Ans .** It has been around a while and libraries exist for many languages to work with it
2. It can be navigated using JavaScript DOM methods.
3. It is extensible, allowing it to be adapted to virtually any application.
4. **It is concise and simple to use.**

928.Which flip flop has the characterstic function Q(next) = input
Ans jk

929.Which method must be defined by a class implementing the *java.lang.Runnable* interface?
Ans.

A. void run()

B. **public void run()**

C. public void start()

D. void run(int priority)

Answer: Option **B**
Explanation:
Option B is correct because in an interface all methods are abstract by default therefore they must be overridden by the implementing class. The `Runnable` interface only contains 1 method, the `void run()` method therefore it must be implemented.

Option A and D are incorrect because they are narrowing the access privileges i.e. package(default) access is narrower than public access.

Option C is not method in the `Runnable` interface therefore it is incorrect.

931.The jQuery AJAX methods .get(), .post(), and .ajax() all require which parameter to be supplied?

Ans url

932.The performance of cache memories is measured by

Ans.Hit ratio

933.Lock manager uses ---------- to store the identify of transaction locking a data item, the data item, lock mode and pointer to the next data item locked.

Ans.Lock table

934.The probability that a single bit will be in error on a typical public telephone line using 4800 bps modem is 10 to the power -3. If no error detection mechanism is used, the residual error rate for a communication line using 9-bit frames is approximately equal to

Ans 0.009

935.If an AJAX request made using jQuery fails,

Ans programmer should arrange for it to be reported using the jquery .fail method

936.----------is used to summarize information from multiple tuples into a single-tuple summary

Ans .aggregate functions

937.In negative edge triggered flip flop, the transitions happen at

Ans falling clock edge

938.Which of the following line of code is suitable to start a thread ?

Ans

A. Thread t = new Thread(X);

B. Thread t = new Thread(X); t.start();

C. X run = new X(); Thread t = new Thread(run); t.start();

D. Thread t = new Thread(); x.run();

939.Which method is used to call the base class methods from the subclass?

Ans super

940.Nested documents in the HTML can be done using

Ans iframe

942.In ER- Relational Mapping, Binary 1:1 Relationship types are mapped to ----------

Ans

943.The race condition in RS flip flop is rectified in which flip flop

Ans master slave flip flop

944.What does the command XCHG in 8085 do?
Ans. Exchange H and L with D and E. The contents of register H are exchanged with the contents of register D, and the contents of register L are exchanged with the contents of register E.

945.A new web browser window can be opened using which method of the Window object ?
Ans .open().

946.----------contains information such as the structure of each file, the type and storage format of each data item, and various constraints on the data
Ans database catalouge

947.You are working with a network that is 172.16.0.0 and would like to support 600 hosts per subnet. What subnet mask should you use?
Ans.

A. 255.255.192.0

B. 255.255.224.0

C. 255.255.240.0

D. 255.255.248.0

E. 255.255.252.0

948.Answer the following question based on the given table.

Package Name	Class Name

Lab.project.util	Date, Time
Lab.project.game	Car, Puzzle

protected

What will be the access modifier if a method in Date class is inherited in the Puzzle class?

949.Which of the following digits are known as the sub-address digits (for use by the user) of the Network User Address (NUA)?

Ans.13-14

950.What statement is used to execute stored procedure in Java JDBC

Ans call method execute on a callable statement object

951.Who is responsible for correlating the different perspectives of distinct users?

Ans database designers

952.Which object serves as the global object at the top of the scope chain?

Ans. a. Hash

b. Property

c. Element

d. Window

Explanation : The Window object serves as the global object at the top of the scope chain in client-side JavaScript.

953.If the opearand of stack operation is register, the stack contents in 8085 store which of the following?

Ans

954.What does the location property represent?

Ans a. Current DOM object

b. Current URL

c. Both a and b

d. None of the mentioned

View Answer

Explanation : The **location** property of a window is a reference to a Location object; it represents the current URL of the document being displayed in that window.

955.In 8085 subtraction is performed using which method?

Ans 1's complement method

956.Data Model that provides ad-hoc queries is ----------

Ans relational

957.Consider following code.

```
public class Test {
public static void main(String[] args) {
System.out.println(m(2));
}
public static int m(int num) {
return num;
}
public static void m(int num) {
System.out.println(num);
}
}
```

Ans.

a) The program has a syntax error because the two methods m have the same signature

(b) The program has a syntax error because the second m method is defined, but not invoked in the main method

(c) The program runs and prints 2 once

(d) The program runs and prints 2 twice

(e) The program runs and prints 2 thrice.

Answer : (a)

Reason : You cannot override the methods based on the type returned.

958.A modulator converts a _____ signal to a(n) _____ signal.

B. PSK; FSKC. analog; digitalD. digital; analog

Ans.Digital to analog

959.Consider the following code:

```
public class Test {
public static void main(String[] args) {
int[] x = new int[5];
int i;
for (i = 0; i < x.length; i++)
x[i] = i;
System.out.println(x[i]);
}
}
```

Ans The program has a runtime error because the last statement in the main method causes ArrayIndexOutOfBoundsException.

960.What is the number of distinct symbols in base-16 ?

~~**Ans .6**~~ 16

961.What is the loopback address?

Ans. Loopback address is a special IP number (127.0.0.1) that is designated for the software loopback interface of a machine. ... The loopback interface allows IT professionals to test IP software without worrying about broken or corrupted drivers or hardware

962.Which among the following is not a property of the Location object?

Ans. a. protocol

b. host

c. hostee

d. hostname

View Answer

Explanation : The various properties of the location object are the **protocol, host, hostname, port, search,** and **hash**.

963.A state that refers to the database when it is loaded is---------

Ans .Intitial database stages

964.A 4 KHz noise less channel with one sample ever 125 per sec is used to transmit digital signals. Differential PCM with 4 bit relative signal value is used. Then how many bits per second are actually sent?

Ans.

A. 32 Kbps

B. 64 Kbps

C. 8 Kbps

D. 128 Kbps.

965.---------- is used to describe the structure and constraints for the whole database for a community of users hides the details of physical storage structures in three -schema architecture

Ans conceptual schema

966.How many bits are present in registers A, B, C together in 8085?

Ans 24

967.What will be the value of c at the end of execution?

```
public static void main(String args[])
{ int a = 10, b = 2,c=0,d=0;
int[] A = {1,2,3};
try   {    c=a/b;
try   {    d  = a/(a-a);   d= A[1]+1; }
catch(ArrayIndexOutOfBoundsException e)
{    System.out.println("Array - unreachable element "+e);   }
Finally { System.out.println("Finally block inside "); }  }
catch(Exception e)
{ System.out.println("Some Problem:"+e);  b  = 1; c = a/b; }
finally            { System.out.println("Finally block  outside“) }
System.out.println("after try/catch blocks");
System.out.println("Ans = " +c); }
```

10

968.What is the return type of the hash property? string

Ans. The hash property sets or returns the anchor part of a URL, including the hash sign (#).

969.What does the instruction INX H perform in 8085 microprocessor?

increment register pair HL by one storing the result in same place

Ans (It means the location pointed by the HL pair is incremented by 1)

970.Which is the method that removes the current document from the browsing history before loading the new document?

Ans .Replace

The replace() method is similar, but it removes the current document from the browsing history before loading the new document. When a script unconditionally loads a new document, the replace() method is often a better choice than assign().

971.What is the minimum number of wires required for sending data over a serial communications links?

Ans.2

972.----------describes the the part of the database that a particular user group is interested in and hides the rest.

Ans.External schema

973.Which method is used for loading the driver in Java JDBC.

Ans. Class.forName("org.postgresql.Driver"); This will load the driver, and whileloading, the driver will automatically register itself with JDBC

974.Why is the replace() method better than the assign() method?

handles uncondiltional loading

Ans. he replace() method replaces the current document with a new one.

The difference between this method and assign(), is that replace() removes the URL of the current document from the document history, meaning that it is not possible to use the "back" button to navigate back to the original document.

975.Which one is the first high level programming language fortran

Ans. Plankalkül, created by Konrad Zuse.

976.In cyclic redundancy checking, the divisor is _____ the CRC.

Ans.One bit more than the CRC

977.The 8255 chip is an example of programmavle peripheral interface

Ans I/O chip

978.---------- is used to define internal schema

Ans DML

979.What is the purpose of the assign() method?

only loading

Ans. The assign() method loads a new document.

980.An error-detecting code inserted as a field in a block of data to be transmitted is known as

Ans.

An error-detecting code inserted as a field in a block of data to be transmitted is known as

A. Frame check sequence

B. Error detecting code

C. Checksum

D. flow control

E. None of the above

981.When a class extends the Thread class ,it should override ..... method of Thread class to start that thread.

Ans A. start()
B. run()
C. init()
D. go()

982.Centralized DBMS has----------

Ans DBMS software, Application programs and user interface processing software.

983.What is 8254 used for?

Ans. 8254 Programmable Timer is **used** for timing control applications in microcomputer system

984.Which two are valid constructors for Thread?

a.) Thread(Runnable r, String name)
b.) Thread()
c.) Thread(int priority)
d.) Thread(Runnable r, ThreadGroup g)
e.) Thread(Runnable r, int priority)

Ans.

A. 1 and 3

B. 2 and 4

C. **1 and 2**

D. 2 and 5

Explanation:
(1) and (2) are both valid constructors for `Thread`.
(3), (4), and (5) are not legal `Thread` constructors, although (4) is close. If you reverse the arguments in (4), you'd have a valid constructor.

985.Working of the WAN generally involves
Ans.

A. telephone lines

B. microwaves

C. satellites

D. **All of the above**

986.The history property belongs to which object?

Ans. a. Element

b. Window

c. History

d. Location

Explanation : The **history** property of the Window object refers to the History object for the window.

987.How many modes are present in 8255 and what are they?
Ans.Two basic modes ie Bit reset mode(BSR) and input/output mode(I/O)

988.An Employee entity of a company database can be a SECRETARY, TECHNICIAN or MANAGER.
What kind of participation constraint can be used for Employee and its job types?

Ans

989.If you configure the TCP/IP address and other TCP/IP parameters manually, you can always verify the configuration through which of the following? Select the best answer

Ans.

A. Network Properties dialog box

B. Server Services dialog box

C. DHCPINFO command-line utility

D. Advanced Properties tab of TCP/ IP Info.

E. None of the above

990.If we can determine exactly those entities that will become members of each subclass by a condition then such subclasses are called----------

Ans.Prediacate defined or condition defined

991.Which of the following is one of the fundamental features of JavaScript?

Ans. a. Single-threaded

b. Multi-threaded

c. Both a and b

d. None of the mentioned

View Answer

Explanation : One of the fundamental features of client-side JavaScript is that it is single-threaded: a browser will never run two event handlers at the same time, and it will never trigger a timer while an event handler is running, for example.

992.Which of the following is DMA controller?

Ans 8257

993.public class MyRunnable implements Runnable

{

public void run()

{

// some code here

}

}

Ans.
which of these will create and start this thread?

[A]. new Runnable(MyRunnable).start();

[B]. new Thread(MyRunnable).run();

[C]. new Thread(new MyRunnable()).start();

[D]. new MyRunnable().start();

Answer: Option **C**
Explanation:
Because the class implements `Runnable`, an instance of it has to be passed to the `Thread` constructor, and then the instance of the `Thread` has to be started.
A is incorrect. There is no constructor like this for `Runnable` because `Runnable` is an interface, and it is illegal to pass a class or interface name to any constructor.

B is incorrect for the same reason; you can't pass a class or interface name to any constructor.

D is incorrect because `MyRunnable` doesn't have a `start()` method, and the only `start()` method that can start a thread of execution is the `start()` in the `Thread` class.

994.OOPs
Find the output of the following program?

```
#include
#define pow(x) (x)*(x)*(x)
using namespace std;

int main()
{
int a=3,b=3;
a=pow(b++)/b++;
cout<<a<<b;
 return 0;
}</a<<b;
```

Ans 107

995.The expected size of the join result divided by the maximum size is called _____.
Ans .Join Selectivity

996.How many gate delays are present in efficient implementation of XOR gate ?

Ans

997.Four bits are used for packet sequence numbering in a sliding window protocol used in a computer network. What is the maximum window size?

Ans. A. 4
B. 8
C. 15
D. 16

999.What is the output of the following program?

```
#include
using namespace std;
int main()
{
int x=20;
if(!(!x)&&x)
cout<<x;
 else
{
x=10;
cout<<x;
 return 0;
}}</x;
</x;
```

Ans 20

1000.How many possible outcome values are present in boolean algebra?

Ans 2

1001.The attributes in foreign key and primary key have the same _____.

Ans NUMBER OF TUPLES

1002.Error control is needed at the transport layer because of potential errors occurring _____.

Ans. A. from transmission line noise
B. in routers
C. from out-of-sequence delivery
D. from packet losses.

1003.What is the correct HTML for making a hyperlink?
Ans.
1) ICT Trends Quiz
2) ICT Trends Quiz
3) <http://mcqsets.com
4) url="http://mcqsets.com">ICT Trends Quiz

1004._____ users work on canned transactions
Ans NAIVE

1005.Determine the output of the following code?

```
#include
using namespace std;

void func_a(int *k)
{
*k += 20;
}
```

5555

```
void func_b(int *x)
{
int m=*x,*n = &m;
*n+=10;
}

int main()
{
int var = 25,*varp=&var;
func_a(varp);
*varp += 10;
func_b(varp);
cout<<var<<*varp;
 return 0;
}</var<<*varp;
```

1006.Data link layer retransmits the damaged frames in most networks. If the probability of a frame's being damaged is p, what is the mean number of transmissions required to send a frame if acknowledgements are never lost.

Ans A. P I (K + 1)
B. KIK (1 + F)
C. 1/ (1 - F)
D. K I (K - P)
E. None of the above

1007.Which of the following input controls that cannot be placed using  tag?

Ans TEXTAREA

1011.Find the output of the following program?

```
#include
using namespace std;

void myFunction(int& x, int* y, int* z) {
static int temp=1;
temp += (temp + temp) - 1;
x += *(y++ + *z)+ temp - ++temp;
*y=x;
x=temp;
*z= x;
cout<<x<<*y<<*z<<temp;

}

int main() {
int i = 0;
int j[] = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9};
i=i++ - ++i;
myFunction(i, j, &i);
return 0;
}</x<<*y<<*z<<temp;
```

Ans 31333/32333

1012.The SQL statement SELECT SUBSTR('123456789', INSTR('abcabcabc','b'), 4) FROM EMP; prints

Ans. A. 6789
B. 2345
C. 1234
D. 456789

INSTR Function:- The **INSTR** function in SQL is used to find the starting location of a pattern in a string. The syntax for the **INSTR** function is as follows:
INSTR (*str*, *pattern*): Find the starting location of *pattern* in string *str*.

SUBSTR Function:- The Substring function in SQL is used to grab a portion of the stored data. The syntax for the **SUBSTR** function is as follows:
SUBSTR(*str*,*pos*,*len*): Starting with the position *pos* in string *str* select the characters upto the length *len*.

In the above query,
INSTR('abcabcabc', 'b') outputs 2 as the starting location of pattern

1013._____ is used to define a special CSS style for a group of HTML elements
Ans CLASS

1015.In HTTP, which method gets the resource as specified in the URI
Ans.Get

1016.In SQL, which command is used to issue multiple CREATE TABLE, CREATE VIEW and GRANT statements in a single transaction?
Ans
a) CREATE PACKAGE
b) CREATE SCHEMA
c) CREATE CLUSTER
d) All of the mentioned

1017.Which one of these lists contains only Java programming language keywords?

Ans CLASS IF VOID LONG INT CONTINUE

1018.Which of the following is the right syntax for assertion?

Ans a) Create assertion 'assertion-name' check 'predicate';
b) Create assertion check 'predicate' 'assertion-name';
c) Create assertions 'predicates';
d) All of the mentioned

1019.Which of these is Server side technology?
Ans CGI

1020.Which of these interface abstractes the output of messages from httpd?
Ans a) LogMessage
b) LogResponse
c) Httpdserver
d) httpdResponse

1021.The C++ language is
Ans An object oriented language

1022.. _____ is increasingly being used in server systems to improve performance by caching frequently used data, since it provides faster access than disk, with larger storage capacity than main memory.

Ans.) **Flash memory**

b) Disk

c) Main memory

d) Secondary memor

1023.Passing the request from one schema to another in DBMS architecture is called as _____

Ans MAPPING

1024.Where in an HTML document is the correct place to refer to an external style sheet?

Ans .In the head section

1025.Which method is used to remove the first element of an Array object?

Ans .Shift

1027.What does the following bit of JavaScript print out?

var a = [1,,3,4,5];

console.log([a[4], a[1], a[5]]);

Ans. 5,UNDEFINED,UNDEFINED

1028.Creating a B Tree index for your database has to specify in _____.

Ans . a. DDL b. SDL c. VDL d. TCL

1029.Which one of the following statements is NOT correct about HTTP cookies?

Ans. (A) A cookies is a piece of code that has the potential to compromise the security of an Internet user

(B) A cookie gains entry to the user's work area through an HTTP header

(C) A cookie has an expiry date and time

(D) Cookies can be used to track the browsing pattern of a user at a particular site

Explanation: Cookies are not piece of code, they are just strings typically in the form of key value pairs.

1030.The following HTML attribute is used to specify the URL of the html document to be opened when a hyperlink is clicked.

Ans HREF

1031.HTTP is implemented over TCP

Ans .~~Application layer protocol~~

1032.If the directive session.cookie_lifetime is set to 3600, the cookie will live until..

Ans . a) 3600 sec
b) 3600 min
c) 3600 hrs
d) the browser is restarted

1033.AJAX made popular by
Ans.Google

1034.How to create a Date object in JavaScript?
Ans Date objects are created with the new Date() constructor

1036.Choose the correct HTML tag to make a text italic
Ans <i>

1037.table {color: blue;}
With the above code snippet in use, what happens to a table?

Ans The color property of any selector that accepts text refers to the text color, so the text inside the table would be colored blue.

1038.What sever support AJAX ?
Ans HTTP

1039.What does the XMLHttpRequest object accomplish in Ajax?
Ans A.

It's the programming language used to develop Ajax applications

B.
It provides a means of exchanging structured data between the Web server and client.

C.
It provides the ability to asynchronously exchange data between Web browsers and a Web server.

D.
It provides the ability to mark up and style the display of Web-page text.

1040.Which Web browser is the least optimized for Microsoft's version of AJAX?
Ans. A. Firefox
B. Opera
C. Safari
D. Internet Explorer

1041.Which one of these technologies is NOT used in AJAX?

Ans .Flash

1042.When a user views a page containing a JavaScript program, which machine actually executes the script?

Ans A. The User's machine running a Web browser

B. The Web server C. A central machine deep within Netscape's corporate officesD. None of the above

1043.A graphical HTML browser resident at a network client machine Q accesses a static HTML webpage from a HTTP server S. The static HTML page has exactly
one static embedded image which is also at S. Assuming no caching, which one of the following is correct about the HTML webpage loading (including the embedded image)?

Ans. A) Q needs to send at least 2 HTTP requests to S, each necessarily in a separate TCP connection to server S

(B) Q needs to send at least 2 HTTP requests to S, but a single TCP connection to server S is sufficient

(C) A single HTTP request from Q to S is sufficient, and a single TCP connection between Q and S is necessary for this

(D) A single HTTP request from Q to S is sufficient, and this is possible without any TCP connection between Q and S

Answer: (B)

Explanation: Whenever a browser opens a webpage, it makes a separate request for each object of page like image, css, javascript, etc. However if multiple resources are served from same server, then one TCP connect is sufficient.

1044.How does servlet differ from CGI?

Ans . a) Light weight Process b)Open source c)Simple d)Easy to remember

1045.What does JSP stand for?

Ans.Java serevlet pages

1046.Which of these is a stand alone tag?

Ans .Some standalone tags are

1)br

2)hr

3)meta

4)img

1047.If you don't want the frame windows to be resizeable, simply add what to the lines ?

Ans .

a) save

b) dontresize

c) noresize

1048<a>.and are the tags used for ?

a) Audio-voiced text

b) Adding links to your page

c) Aligning text