VERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR
(A.Y. 2021-2022)
Computer Science & Engineering

B182276.

me: Design and analysis of algorithms
e: 24/09/2022
Exam:MT-II

Subject Code : CS2203
Time: 60 Min
Max Marks: 30

SECTION - I

NOTE : All questions need to be answered, each question carries TWO marks.
10 * 2 = 20 M

1. Problems that can be solved in polynomial time are called
   a. Intractable
   B b. Tractable
   c. Decision problems
   d. Complete problems
2. Class of problems that can be solved in Non-Deterministic polynomial time
   a. NP
   A b. NP-Hard
   c. P
   d. NP complete
3. Simplex method of solving linear programming problem uses
   a. All the points in feasible region
   B b. Only the corner points of the feasible region
   c. Intermediate points with in the infeasible points with in the region
   d. None of the above
4. What happens when the backtracking algorithm reaches a complete solution?
   a. It backtracks to the root
   B b. It continues searching for other possible solutions.
   c. It traverses from a different route
   d. Recursively traverses through the same route
5. In what manner is a state-space tree for a backtracking algorithm constructed?
   a. Depth-first search
   A b. Breadth-first search
   c. Twice around the tree
   d. Nearest neighbour first
6. When is a graph said to be bipartite?
   a. If it can be divided into two independent sets A and B such that each edge connects a vertex from to A to B
   A b. If the graph is connected and it has odd number of vertices
   c. If the graph is disconnected
   d. if the graph has at least n/2 vertices whose degree is greater than n/2
7. A graph is found to be 2 colorable. What can be said about that graph?
   a. The given graph is eulerian
   B b. The given graph is bipartite
   c. The given graph is Hamiltonian
   d. The given graph is planar

8. Which of the following analysis known as empirical analysis of an algorithm?
   a. A Posterior Analysis
   b. A Priori Analysis
   c. A Feasibility Analysis
   d. A Independent Analysis

A

9. The time factor when determining the efficiency of algorithm is measured by?
   a. Counting microseconds
   b. Counting the number of key operations
   c. Counting the number of statements
   d. Counting the kilobytes of algorithm

B

10. Which of the following is incorrect? Algorithms can be represented:
   a. As programs
   b. As flow charts
   c. As syntax
   d. As pseudo-codes

A

SECTION- II

NOTE:1. Answer any Two questions, each question carries 5 Marks

2*5=10 Marks

1. Write an algorithm to implement N-queens algorithm using back tracking. for the following, display the output.
2. Explain mathematical analysis of recursion and non recursive algorithm.
3. Explain branch and bound approach with an example.
4. Maximize Z=5x1+3x2 subject to x1+2x2<=10, x1-x2<=8 and x1>0 and x2>0 using simplex method.

B182276

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2021-2022)

Computer Science & Engineering

Subject Code : CS2203

Time: 60 Min

Max Marks: 30

Subject Name: Design and analysis of algorithms

Date: 26-07-2022

Exam:MT-I

SECTION - I

NOTE : All questions need to be answered, each question carries TWO marks. 10 * 2 = 20 M

Instructions:

a . Use only Pseudo code to express the algorithm.

1. which of the following sorting methods sorts a given set of items that are already either in ascendin order or descending order with equal speed ?

a) Heap sort
b) Insertion sort
c) selection sort
d) Quick sort

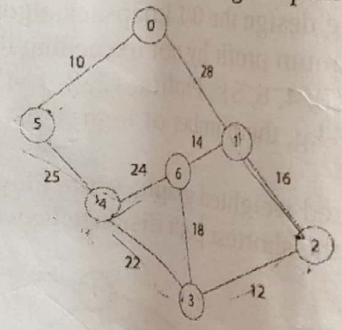
D

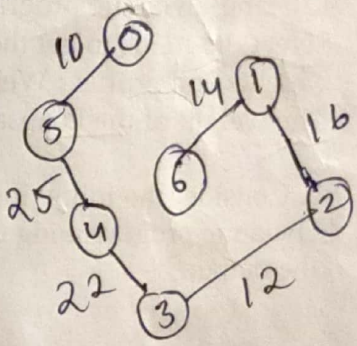
2. The sub problems in the dynamic programming are solved

a) Dependently
b) Independently
c) Parallel
d) Concurrent

D

3. What is the weight of the minimum spanning tree using the prims algorithm, for the following graph: 99.



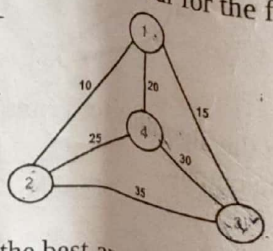


4. if starting vertex is 1, then Travelling sales man Tour for the following graph is : 1-4-2-1.

1-4-3-1 ⇒ 65

min ⇒ 1-4-2-1 ⇒ 55

1-3-4-2-1 ⇒ 80



5. Which of the following algorithms is the best approach for solving Huffman codes?

a) exhaustive search
b) greedy algorithm
c) brute force algorithm
d) divide and conquer algorithm

B

6. Choose the most appropriate answer

A) Floyd Warshall's Algorithm is used for solving All pair shortest path problems
B) Floyd Warshall's Algorithm can be applied on Undirected graphs

A. RAM
Cache
... of the following is corre

a) Only A is valid
b) Only B is valid
c) Both A and B are valid
d) Both A and B are invalid

7.Time complexity of 0/1 knapsack using exhaustive search 2^n

8. The number of binary search trees possible with n number of nodes are $\frac{2^n C_n}{n+1}$

9. Identify the correct recurrence relation for Merge sort
a) T(N)=2T(N-1)+N
b) T(N)=2T(N/2)+N
c) T(N)=2T(N-1)+1
d) T(N)=T(N/2)+N

10. which of the following algorithm design technique is used in the Quick sort algorithm ?
a) Dynamic programming
b) Backtracking
c) Divide and Conquer
d) Greedy method

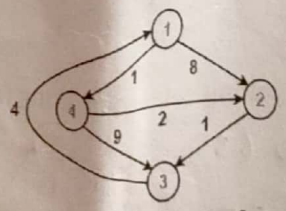
SECTION- II

NOTE:1. Answer any Two questions, each question carries 5 Marks

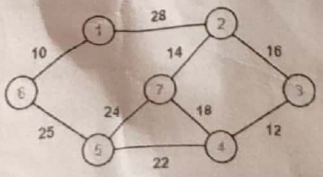
5*2=10 Marks

1. Using Dynamic programming design the 0/1 knapsack algorithm that solves the following problem. Select the items to get the maximum profit by not exceeding the size of knapsack.
weights and profits : Weights: {3, 4, 6, 5} , Profits: {2, 3, 1, 4}
The weight of the knapsack is 8 kg, the number of items are 4.

2. Consider the following directed weighted graph, Write Floyd Warshall Algorithm that uses Dynamic programming to find the shortest path distance between every pair of vertices, and display the output.



3. Using greedy approach, design the algorithm for prims's that generates minimum cost spanning Tree for the following, display the output.



4. Write an algorithm for heap sort.

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR
(A.Y. 2021-2022)
Computer Science & Engineering

BB2276

Subject Name: Design and analysis of algorithms
Date:17-10-2022
Exam:EST

Subject Code : CS2203
Time: 120 Min
Max Marks: 60

SECTION - I

NOTE : All questions need to be answered, each question carries TWO marks.
15 * 2 = 30 M

1. The main measures of the efficiency of an algorithm are?
   a. Time and space complexity.
   b. Data and space
   c. Processor and memory
   d. Complexity and capacity
2. Problems that can be solved in polynomial time are called
   a. Intractable
   b. Tractable.
   c. Decision problems
   d. Complete problems
3. Which of the following sorting algorithms provide the best time complexity in the worst-case scenario?
   a. Merge Sort
   b. Quick Sort
   c. Bubble Sort
   d. Selection Sort
4. Which of the following algorithm can be used to solve the Hamiltonian path problem efficiently?
   a. iterative improvement
   b. branch and bound
   c. divide and conquer
   d. greedy algorithm.
5. What happens when the backtracking algorithm reaches a complete solution?
   a. It backtracks to the root
   b. It continues searching for other possible solutions.
   c. It traverses from a different route
   d. Recursively traverses through the same route
6. In what manner is a state-space tree for a backtracking algorithm constructed?
   a. Depth-first search.
   b. Breadth-first search
   c. Twice around the tree
   d. Nearest neighbour first
7. Which of the following functions provides the maximum asymptotic complexity?
   a. f1(n) = n^(3/2)
   b. f2(n) = n^(logn)
   c. f3(n) = nlogn

d. f4(n) = 2^n.

8. What is the technique called in which it does not require extra memory for carrying out the sorting procedure?
   a. Stable
   b. Unstable
   c. In-place
   d. In-partition
9. Select the correct recurrence relation for Tower of Hanoi?
   a. T(N) = 2T(N-1)+1
   b. T(N) = 2T(N/2)+1
   c. T(N) = 2T(N-1)+N
   d. T(N) = 2T(N-2)+2
10. Consider the following ranking matrix. Assume that M1 and W2 are married. Now, M2 approaches W2. Which of the following happens?

	W1	W2	W3
M1	1, 2	3, 3	2, 1
M2	3, 1	2, 1	1, 2
M3	2, 3	3, 2	1, 3

   a. W2 replaces M1 with M2
   b. W2 rejects M2
   c. W2 accepts both M1 and M2
   d. W2 rejects both M1 and M2
11. Which of the following algorithms are used for string and pattern matching problems??
   a. Z Algorithm
   b. Rabin Karp Algorithm.
   c. KMP Algorithm
   d. All of the above
12. Kruskal's Algorithm for finding the Minimum Spanning Tree of a graph is a kind of a?
   a. DP Problem
   b. Greedy Algorithm
   c. Adhoc Problem
   d. None of the above
13. The time factor when determining the efficiency of algorithm is measured by?
   a. Counting microseconds
   b. Counting the number of key operations
   c. Counting the number of statements
   d. Counting the kilobytes of algorithm
14. The time complexity to find the longest common subsequence of two strings of length M and N is?
   a. O(N)
   b. O(M * N)
   c. O(M)
   d. O(log N)

15. Which of the following algorithms is the best approach for solving Huffman codes
    a. exhaustive search
    b. greedy algorithm.
    c. brute force algorithm
    d. divide and conquer algorithm

SECTION- II

NOTE:1. Answer any THREE questions, each question carries 10 Marks

3*10=30 Marks

1. Write an algorithm to implement N-queens algorithm and Hamiltonian cycle using back tracking.
2. Explain mathematical analysis of recursion and non recursive algorithm.
3.
    a. Maximize Z=5x1+3x2 subject to x1+2x2<=10, x1-x2<=8 and x1>0 and x2>0 using simplex method.
    b. Three men and three women. Consider the preference-lists in the table:

Man	Man's preference-list	Woman	Woman's preference-list
m1	*(w1,w2,w3)*	*w1*	*(m3,m1,m2)*
m2	*(w1,w3,w2)*	*w2*	*(m1,m2,m3)*
m3	*(w2,w3,w1)*	*w3*	*(m3,m2,m1)*

find the best match using stable marriage problem.

4. Write an algorithm to implement optimal binary search tree. Compute the number of optimal comparisons needed to search for a key for the following given keys and frequencies.. keys:10,20,30,40 corresponding frequencies:4,2,6,3.
5. Write algorithm for merge sort and large integer multiplication.
6. Write algorithm for kurkuls and prims. And give complexities.

B181500

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2021-2022)

Computer Science and Engineering Department

Subject Name: Computer Organization and Architecture | Subject code: CS2201

Date: 23/07/2022 | Time: 1 hours

Exam: E2_SEM2_MT1 | Max Marks: 30

Section-I **(20*1=20Marks)**

Answer all the questions, each question carries 1 mark

1. In which of these modes, the immediate operand is included in the instruction itself?
a) register operand mode
b) immediate operand mode
c) register and immediate operand mode
d) none of the mentioned

2. The push and pop instructions belonging to the category of transfer instructions of microprocessor perform data transformation between _____.
a) two registers
b) processor register and memory stack
c) processor register and interface register
d) interface register and memory word

3. In PUSH instruction, after each execution of the instruction, the stack pointer is
a) incremented by 1
b) decremented by 1
c) incremented by 2
d) decremented by 2

4. The instruction that supports addition when carry exists is
a) ADD
b) ADC
c) ADD & ADC
d) None of the mentioned

5. The instruction, CMP to compare source and destination operands it performs
a) addition
b) multiplication
c) division
d) subtraction

6. Which of the following is not a status flag in microprocessor?
a) Overflow flag
b)Direction flag
c) Interrupt flag
d) Index flag

7. A 20-bit address bus allows access to a memory of capacity
a) 1 MB
b) 2 MB
c) 4 MB
d) 8 MB

8. The result of >> of 11001 by 3-bits will be _____
a) 01000
b) 01111
c) 00011
d) 11111

9. Using Booth's Algorithm for multiplication, the multiplier -57 will be recorded as
a) 0 -1 0 0 1 0 0 -1
b) 1 1 0 0 0 1 1 1
c) 0 -1 0 0 1 0 0 0
d) 0 1 0 0 -1 0 0 1

10. Carry lookahead logic uses the concepts of _____
a) Inverting the inputs
b) Complementing the outputs
c) Generating and propagating carries
d) Ripple factor

11. The two numbers given below are multiplied using the Booth's algorithm.

Multiplicand : 0101 1010 1110 1110
Multiplier: 0111 0111 1011 1101

How many additions/Subtractions are required for the multiplication of the above two numbers?
a) 6
b) 8
c)10
d) 12

12. 2's complement of 11001011 is _____
a) 01010111
b) 11010100
c) 00110101
d) 11100010

13. Which method of representation has two representations for '0'.
a) Sign magnitude
b) 1's complement
c) 2's complement
d) none of the mentioned

14. Representation of hexadecimal number (6DE)H in decimal:
a) 6 * 16^2 + 13 * 16^1 + 14 * 16^0
b) 6 * 16^2 + 12 * 16^1 + 13 * 16^0
c) 6 * 16^2 + 11 * 16^1 + 14 * 16^0
d) 6 * 16^2 + 14 * 16^1 + 15 * 16^0

15. The accessing of string data can be done from higher memory location to lower memory location, if direction flag is made to _____.

16. Using 4 bit 2's complement arithmetic, which of the following additions will result in an overflow?
i. 1100+1100
ii. 0011+0111
iii. 1111+0111
a) i only
b) ii only
c) iii only
d) i and iii only

17. 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

18. What is the output of the following assembly program.

```
include 'emu8086.inc'
MOV AL, 255
ADD AL, 1
JC label1
PRINT 'no carry'
JMP exit
label1:
PRINT 'has carry'
exit:
RET
```

a) no carry
b) has carryno carry
c) no carryhas carry
d) has carry

19. How many AND, OR and EXOR gates are required for the configuration of full adder, provided using half adder?
a) 1, 2, 2
b) 2, 1, 2
c) 3, 1, 2
d) 4, 0, 1

20. What is the content of BL register after executing following instructions

```
MOV BL, 4Ch
SAR BL, 1
```

a) 01001100b
b) 01010011b
c) 00100110b
d) 1101100b

Section-II

Answer any two questions, each question carries 5 marks **[2*5=10Marks]**

1. Explain architecture of 8086 microprocessor with a diagram. [5 Marks]
2. Write Booth's algorithm and apply the same to multiply (-7) and (+3). [5 Marks]
3. Explain any 5 addressing modes with diagram. [5 Marks]
4. Explain carry look ahead adder in detail with diagram [5 Marks]

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2021-2022)

Computer Science and Engineering Department

B181500

Subject Name: Computer organization and architecture — Subject code: CS2201

Date: 23/09/2022 — Time: 1hour

Exam: E2_CSE_SEM2_MT2 — Max Marks: 30

Section-I

Answer all the following questions, each question carries 1 mark (20*1=20 Marks)

Two continuous questions 1 and 2 based on the below representation. Each question carries 1 mark. Consider the following representation of a number in IEEE 754 single-precision floating point format with a bias of 127. S : 1 E : 10000001 F : 11110000000000000000000. Here, S,E and F denote the sign, exponent, and fraction components of the floating point representation. (1 and 2 questions)

1. The decimal value of the above representation is _____.

a) -7.75 b)+7.75 c)-5.57 d) 5.75

2. The exponent value of the above representation is _____.

a) 8 b) 6 c) 4 d) 2

3. Which of the following option is correct about the indirect instruction sub cycle

a) T1: MAR <--- (IR(address))

T2: MBR <--- Memory

T3: IR(address) <--- (MBR(address))

b) T1: MAR <---PC

T2: MBR <--- Memory

PC <--- (PC)+1

T3: IR <---MBR

c) both a and b are correct

d) none of the above

4. What are the inputs for the control unit?

a) clock b) instruction register

d) codition codes d) all of the above

5. What are the control signals generated from external inputs?

a) WMFC b) interrupt signals

c) both a and b d) none of the above

6. Assume a 4-stage pipeline system with a stage delay of 20 ns required in each segment to execute 100 instructions in sequence. What is the speedup ratio?

a) 4.6 b) 4.12 c) 3.88 d) 3.6

7. Which of the following are the IO module functions?

a) control and timing b) Device communication

c) data bufferring d) all of the above

8. What processor commands does the I/O module accept?

a) Read sector b) Write sector

c) seek track number d) all of the above

9. In programmed IO, which commands are generated from the processor?

a) Control and Test only
b) Read and Write only
c) Control, Test, Read and Write
d) none of the above

10. Which of the following statements about interrupt-driven IO is/are correct?

a) Processor Issues read command to the IO module and do something else

b) Processor repeatedly checks IO module for getting device status information

c) both a and b are correct

d) none of above

11. In which processor sends interrupt acknowledgement (INTA) through all IO modules?

a) Software poll
b) Daisy chain
c) Bus arbitration
d) none of the above

12. Which of the following statements about the DMA is correct?

I) DMA is more efficient technique to transfers large volume of data between I/O module and memory.

II) The DMA module takes control of system bus to transfer data to and from memory over system bus.

a) Only I
b) only II
c) both I and II are correct
d) none

13. When the data transfer is completed, which line is deactivated between the DMA module and the processor?

a) DACK
b) DREQ
c) HRQ
d) none

14. Which of the following options is correct regarding the DMA configuration?

a) In single bus detached DMA, two system bus cycles are required to transfer data between IO devices and memory.

b) In single bus, integrated DMA-IO, one system bus cycle is required to transfer data between IO devices and memory.

c) both a and b are correct

d) none of the above

15. Which of the following options is correct about random access memory?

a) DRAM is refreshed automatically and used in main memory

b) SRAM is not refreshed automatically and used in cache memory

c) both a and b are correct

d) both a and b are incorrect

16. Which computer's memory contains the system's Boot sector files?

a) RAM
b) ROM
c) Cache
d) Register

17. How many 32 K x 1 RAM chips are needed to provide a memory capacity of 256 K bytes?

a) 8
b) 32
c) 64
d)128

18. Whenever the data is found in the cache memory it is called as _____

a) HIT
b) MISS
c) FOUND
d) ERROR

19. Which of the following options is correct about the magnitic disks?

a) The inner track sector has higher data density than the outer track sector.

b) The inner track sector has less data density than the outer track sector.

c) more zones on the outer track and fewer zones on the inner track

d) Answers a and c are correct.

20. Assume that the cache memory consists of 128 blocks of 16 words each, for a total of 2048 words. Assume that the main memory has a 16-bit address. which we will view as 4096 bloks of 16 words each. In set associative mapping, 64 sets, how many memory blocks are mapped to each set of cache memory?

a) 128 b) 256 c) 64 d) 32

Section – II

Answer any two Questions, each question carries 5 marks **(2*5=10Marks)**

1. Write in detail about the five I/O module functions (5 marks).
2. Write about the DMA controllers with a diagram (5 marks).
3. Draw a diagram to explain the hardwired control unit (5 marks).
4. Describe in detail any two pipeline hazards and their solutions (5 marks).

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2021-2022)

Computer Science and Engineering

Subject Name: **Computer Organization& Architecture** Subject Code: **CS2201**

Date: 12-10-2022 Time: 120 Minutes

Exam: E2/S2/REG/SET2 ID No: B182276 Max Marks: 60

SECTION - A [30M]

Answer all the questions.

The Section A consists of multiple-choice questions (MCQs), fill in the blanks, true or false short answer type questions.

1. 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
2. $(1217)_8$ is equivalent to
   A. (195 084) 10 B. (001011111010 0000 1100) 2
   C. Both (A) and (B) D. None of these
3. Which of the following condition is true for determining overflow in 2's complement?
   A. When adding two positive numbers gives a negative result or when two negatives give a positive result.
   B. If sign bit (MSB) of result and sign bit of two operands are of different signs.
   C. The '1' in the MSB position indicates a negative number after adding two positive numbers.
   D. All of the above
4. The BSA instruction is
   A. Branch and store accumulator B. Branch and save return address
   C. Branch and shift address D. Branch and show accumulator
5. What is the result of evaluating the following two expressions using three-digit floating point arithmetic with rounding?

   $(113. + -111.) + 7.51$

   $113. + (-111. + 7.51)$

   A. 9.51 and 10.0 respectively B. 10.0 and 9.51 respectively
   C. 9.51 and 9.51 respectively D. 10.0 and 10.0 respectively
6. The contents of a base register are added to the contents of index register in
   A. indexed addressing mode
   B. based indexed addressing mode
   C. relative based indexed addressing mode
   D. based indexed and relative based indexed addressing mode
7. In _____ mapping, the data can be mapped anywhere in the Cache Memory.
   A. Associative B. Direct
   C. Set Associative D. Indirect
8. If the amount of data to be transferred is huge and at the same time, the involvement of CPU should be less, then _____ method of data transfer is most suitable.
   A. DMA B. Interrupt Driven
   C. Program based D. None of the above
9. Implementation of rounding needs:
   A. sticky bit B. round bit
   C. Both D. None of the above
10. The restoring division algorithm uses:
    A. Left shift operations B. Right shift operations
    C. Both Left and Right shift operations D. None of the above
11. Which micro-operation must be executed at time step t3 for an interrupt cycle shown below?

    t1 : MBR <- PC

    t2 : MAR <- Address to save the contents of PC

PC <- Address of start of interrupt service routine

t3 : ----------

A. MAR <- PC
B. Memory <- MBR
C. Memory <- MAR
D. None of the above

11. If the last operation performed on a computer with an 8-bit word was an addition in which the two operands were 00000010 and 00000011, what would be the value of the following flags? Assume that, the operands are stored in sign-magnitude form.

Carry Zero
Overflow
Sign
Even Parity
Half-Carry

A. 0, 0, 1, 0, 1, 0
B. 0, 1, 0, 0, 1, 0
C. 0, 0, 0, 0, 1, 0
D. 0, 0, 1, 0, 0, 0

12. The instruction that loads effective address formed by destination operand into the specified source register is

A. LEA
B. LDS
C. LES
D. LAHF

13. The process wherein the processor constantly checks the status flags is called as _____

A. Polling
B. Inspection
C. Reviewing
D. Echoing

14. A decoder is required in case of a _____

A. Vertical Microinstruction
B. Horizontal Microinstruction
C. Multilevel Microinstruction
D. All types of microinstructions

15. What is computer architecture?

A. set of categories and methods that specify the functioning, organization, and implementation of computer systems
B. set of principles and methods that specify the functioning, organization, and implementation of computer systems
C. set of functions and methods that specify the functioning, organization, and implementation of computer systems
D. None of the mentioned

SECTION-B(30M)

Note:

i. Answer any three, out of six questions.
ii. Answer all sub questions at one place.

1. Explain 8086 Architecture with a neat diagram [10M]

2. a) What is set-associative mapping technique? Consider 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. Find the number of bits for the TAG field. [5M]
   b) Explain SRAM structure with a diagram. [5M]

3. a) Explain ripple carry adder with a neat diagram. [5M]
   b) Write and explain floating point addition and subtraction flowchart. [5M]

4. a) Describe I/O module functionalities. [5M]
   b) Explain the DMA controller. [5M]

5. a) Write down the micro instructions of fetch and interrupt cycles. [5M]
   b) Explain pipeline hazards with examples [5M]

6. a) Write Non-restoring division algorithm and apply the same to divide 24 and 8. [5M]
   b) Explain Hardwired control unit. [5M]

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES – BASAR
(AY 2021-2022)
MT-1 EXAMINATIONS

SUBJECT: ENVIRONMENTAL STUDIES — SUBJECT CODE: BS1201/BS2201
DATE: 26-07-2022 — TIME : 1 Hrs.
YEAR / SEM / Department: E1&E2/SEM-2/EEE, CSE and Chem. — MAX. MARKS : 30

Note: Answer all the questions in serial order

SECTION-A: Answer the following Multiple choice/fill in the blank questions (20 x 1 = 20 Marks).

1. The objective of environmental education is
   A. Raise consciousness about environmental conditions
   B. To teach environmentally appropriate behavior
   C. Create an environmental ethic
   D. All the above
2. What is the significance of the day 4th October
   A. World forest day
   B. Animal welfare day
   C. World heritage day
   D. Green Consumer day
3. Which one of the following is not a non-renewable source of energy?
   A. Solar
   B. Natural gas
   C. Nuclear
   D. Petroleum
4. ___ published a major document on the 'State of India's Environment'?
   A. CEE
   B. CPCB
   C. CSE
   D. BNHS
5. _____ is an unpredictable climatic condition and occurs due to the failure of one or more monsoons
   A. Earthquake
   B. Flood
   C. Cyclone
   D. Drought
6. World Environment day is celebrated on ___
   A. 2nd February
   B. 5th June
   C. 21st March
   D. 22nd May
7. Which of the following statement is false?
   A. Prevention of greenhouse effect is localized environmental service.
   B. Biosphere is the relatively thinnest layer of all the spheres.
   C. Our fertile soils are exploited faster than they can recuperate.
   D. Transpiration process is also associated with the water cycle.
8. Expand ICIMOD_____
9. Expand SAARC_____
10. Match the following

a. BNHS	1.Produces snake and scorpion anti-venom
b. BVIEER	2.'Save the silent valley campaign'
c. MCBT	3. Publisher of "Down to earth"
d. CSE	4. UGC text book on ES

   A. a-1, b-4, c-3 and d-2
   B. a-2, b-4, c-1 and d-3
   C. a-2, b-3, c-1 and d-3
   D. a-3, b-2, c-1 and d-4

11. Match the following

a.	Wangari Maathai	1.diversity of life
b.	Rachel carson	2.Silent Spring
c.	EO wilson	3. Green belt movement
d.	Madhav Gadgil	4. Lifescapes of peninsular India

A. a-1, b-2, c-3, d-4
B. a-1, b-3, c-4, d-1
C. a-4, b-2, c-1, d-3
D. a-3, b-2, c-1, d-4

12. Each step in resource use can affect the environment for better or worse. The control of these steps is known as _____?
13. EIA, is a tool used to identify
    A. Environmental impacts of a project
    B. Social impacts of a project
    C. Economic impacts of a project
    D. All the above
14. The Centre for Science and Environment (CSE) is located in?
    A. New Delhi
    B. Kolkata
    C. Mumbai
    D. Chennai
15. Who among the following has single-handedly won numerous landmark judgments (like Protecting Tajmahal, cleaning of Ganga River, implementation of environmental education in schools and colleges etc.) from India's Supreme Court?
    A. Medha Patkar
    B. MS Swami Nathan
    C. MC Mehta
    D. Madhav Gadgil
16. The share of profit is 100% for_____state VFC as per the JFM of National Forest Policy 2002
17. Whose name is synonymousornithology in India?
18. Scientists estimate that India should ideally have____ percent of its land under forests.
19. The quality of the ecosystems have _____indicators (write any one) that are more difficult to assess.
20. Which one of the following is not a function of forest __?
    A. Reduce the rate of surface run-off of water.
    B. Maintaining the local climatic conditions
    C. Enhancement soil erosion
    D. Absorption of solar heat during evapotranspiration

SECTION - B: Answer any TWO of the following Descriptive questions. (2 x 5 = 10 Marks)

1. What is the role of MCBT and BNHS in the conservation and protection of Environment(2.5+2.5)M
2. What are problems caused by Dams and how Sustainable water management achieved (2.5+2.5)M
3. What is the importance of Environmental studies and environmental services provided by preserving Natural ecosystems 5M
4. Write about the people who contributed their services to protect tribal people and forest conservation.5M

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES – BASAR

ID No. B171326

AY 2020-21_EST EXAMINATION

SUBJECT: ENVIRONMENTAL SCIENCE — **SUBJECT CODE: BS2201/ ES**

DATE: 16-11-2021 — **TIME : 2:00Hrs**

EAR / SEM: E2_Sem-2 (CHE/CSE) — **MAX. MARKS : 60**

SECTION- A

wer any **THREE** of the following Descriptive questions **(3 x 10 = 30 Marks)**

1. Write about -
   A). Any two internationally well known **environmental thinkers (People)** (5M)
   B). Any two **Institutions of the Environment** that promote education and protection of the environment? (5M)
2. Describe **A**). The **Renewable resources** (5M)
   B). Nitrogen Cycle (5M).
3. Write about **A).** The different **values of Biodiversity**? (5M)
   B). The various **Threats** caused by human **to Biodiversity**? (5M)
4. Explain the **Food Chain, Food Web** & **Ecological Pyramids** with examples? (10M)
5. Explain the **Forests Ecosystems**- its **structure, functions (uses) & threats**? (10M)
6. Explain the **Causes, effects and control of Water Pollution** ?(10M)

SECTION- B

Answer **ALL** the questions **(30 x 1 = 30 Marks)**

1. The objective of environmental education is
   A. To Raise consciousness about environmental conditions
   B. To teach environmentally appropriate behavior
   C. To Create an environmental ethic
   D. All of the above.
2. Who is the Environmental thinker who played a very significant role as administrator (Prime minister of India) for the protection of wild life by increasing the Network of Protected areas from 65 to 298 !.
   A. M.S.Swaminthan
   B. Anil Agarwal
   C. Medha Patkar
   D. Indira Gandhi
3. Who is the rural India's champion (environmental protector), that supported the cause of downtrodden people along the valley of River Narmada through ***Narmada Bachao Andolan*** ?
   A. Medha Patkar
   B. Sunderlal Bahuguna
   C. Anil Agarwal
   D. None of the Above.
4. A popular magazine ***Hornbill*** - an internationally well-known Journal on *Natural History* is published by____?
   A. BVIEER
   B. BNHS
   C. SACON
   D. MCBT

5. What is the significance of the day **June 5th** ?
   A. Animal welfare day
   B. World Environment Day
   C. Green Consumer day
   D. National Science Day

6. The order of levels in a food chain from bottom to top is ?
   A. Producers > Primary consumers > Secondary consumers> Tertiary consumers
   B. Primary consumers > Secondary consumers> Tertiary consumers > Producers
   C. Tertiary consumers > Secondary consumers> Primary consumers > Producers
   D. None of the Above

7. A network of food chains in an ecosystem constitute
   A. ecological niche
   B. food pyramid
   C. food web
   D. food energy

8. ***Fall of a sparrow*** is an autobiography of whom of the following environmental thinker?
   A. Indira Gandhi
   B. Salim Ali
   C. MS Swaminathan
   D. Sunderlal Bahuguna

9. Herbivores, Nectarivores, gamnivores are _____?
   A. Producers
   B. Primary Consumers
   C. Secondary consumers
   D. Top predators.

10. The largest mangrove forests in India are found at?
   A. Sunderbans(West Bengal)
   B. Coringa (near Kakinada)
   C. Goa
   D. Tamilnadu

11. Which one of the following is NOT a function of forest?
   A. Reduce the rate of surface run-off of water.
   B. Maintaining the local climatic conditions
   C. Enhancement soil erosion
   D. Absorption of solar heat during evapotranspiration.

12. Which of the following places is termed as 'Cold Desert' of Our Country?
   A. Leh
   B. Ooty
   C. Manali
   D. Ladakh

13. The three R's to save the environment are
   A. Reserve, Reduce, Recycle
   B. Reuse, Reserve, Reduce
   C. Reserve, Reuse, Reduce
   D. Reduce, Recycle, Reuse.

14. Which of the following are major environmental problems involved in mining?
   A. Air pollution

B. Water pollution
C. Soil degradation
D. All of the above

15. A popular magazine ***Down to Earth*** which is a science and environment fortnightly is published by which of the following institute?
A. Botanical Survey of India (BSI)
B. Bombay Natural History Society (BNHS)
C. Centre for Science and Environment (CSE)
D. Centre for Environment Education (CEE)

16. The objective(s) of Joint Forest Management (JFM)?
A. To form village forest committees (VFCs), Forest Protection Committees (FPCs) to participate & protect the areas being over exploited.
B. To include local communities in supporting greening, conservation of forests provided with some economic benefit.
C. Only A
D. Both A & B

17. Which of the following is / are consequences of Mining activities?
A. Pollution of air, water, & soil.
B. Health hazards
C. Land subsidence & landscape destruction
D. All of the above

18. Which one of the following are the Problems caused by Dams?
A. Fragmentation & physical transformation of rivers.
B. Serious impact on river ecosystems.
C. Social impact- displacement of people
D. All of the above

19. Pick the FALSE statement about the stratosphere layer of atmosphere?
A. Stratosphere is above troposphere, contains sulphates which are important for rain formation.
B. It contains Ozone layer
C. It is 50km thick.
D. It cannot protect from UV harmful effect

20. Congress grass, Eupatorium are the examples of ?
A. Exotic species
B. Endemic species
C. Endangered species
D. Both A &B

21. This is an example of non-polluting renewable source of energy?
A. Tidal
B. Wind
C. Solar
D. All of these

22. **Identify the correct statement about *Azadiracta indica (Neem)* ?**
A. It has small yellow fruit, has leaves and fruit in bitter taste.
B. Used as eco friendly insecticide
C. It is a medicinal plant
D. All of the above

23. Which of the following is an In situ conservation of Biodiversity?
   A. National Parks & Wild Life sanctuaries
   B. Gene Bank
   C. Seed bank
   D. Zoological parks & Botanical gardens

24. The areas that are rich in species diversity are called ?
   A. Hotspots of Biodiversity
   B. Genetic Diversity
   C. Exotic Species
   D. None of the Above.

25. The accumulation of DDT in food chain can result in??
   A. Birds lay eggs with much thinner shells
   B. Premature breaking of eggs & kills immature chicks inside
   C. Has no harmful effect as it can be easily degraded
   D. Both A & B

26. The institution that ***studies and develops modern Nuclear technology*** in India is ?

   A. BARC
   B. BSI
   C. CPCB
   D. CSE

27. Consequences of Global Warming are?
   A. With a warmer earth the polar ice caps will melt
   B. Islands like Maldives could disappear beneath waves if sea level rises by 3m.
   C. Rise in temperature can decrease agriculture produce.
   D. All of the above.

28. Ozone layer is depleting mainly due to _____?
   A.CFC (Chloro fluoro carbons)
   B. Only CO
   C. Only CO2
   D. None of the above.

29. Match the Following:

Name of the National Park	Location (State)
a. Vincristine & Vinblastine	i. Anti malarial drug
b. Menthol	ii. Anticancer drug
c. Cocaine	iii. Reduces pain by increasing local blood supply
d. Quinine	iv. Reduce & Prevents Pain during surgery(Analgesic)

   A. **a – iv, b-iii, c- ii, d –i.**
   B. **a – ii, b – i. c – iv. d- iii**
   C. **a- iv, b-ii, c – i. d- iii**
   D. **a –ii., b-iii., c- iv. d- i.**

30. The SARS CoV-2 causes_____ disease.

******** END OF THE PAPER ********

"Our addiction to fossil fuels is pushing humanity to the brink. We face a stark choice: Either we stop it — or it stops us. It's time to say: enough."

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES – BASAR

(AY 2021-22).

B182276

MT-2 Examination

SUBJECT: ENVIRONMENTAL SCIENCE SUBJECT CODE: BS1201/BS2201

DATE: 24/09/2022 TIME: 1 Hr.

YEAR / SEM: E1&E2 SEM-2/CHEM, EEE, CSE MAX. MARKS : 30

Section-A

Answer Any TWO of the following Descriptive questions (2 x 5 = 10 Marks)

1. Explain -
   A).Solar Energy and its applications? (2 ½ Marks)
   B).The types of Biodiversity with examples? (2 ½ Marks)
2. A). Describe briefly the Forest Ecosystem - threats and Types? (2 ½ Marks)
   B). Explain the Food Chain and Food web? (2 ½ Marks)
3. Describe briefly the causes and effects of Air pollution? (5 Marks)
4. Explain the Threats Caused to The Biodiversity & Methods of Conservation of Biodiversity? (5 Marks)

Section-B

Answer All the questions (20 x 1 = 20 Marks)

1. Pick the FALSE Statement?
   A. In Nitrogen cycle, the atmospheric Nitrogen is directly used as a nutrient by plants.
   B. The atmospheric Nitrogen cannot be used by plants hence it has to be converted into its compound form.
   B C. The Nitrogen fixing bacteria fixes the nitrogen into the soil
   D. The global Nitrogen cycle is disturbed due to nitrogen rich fertilizers in agriculture, & pollution.

2. Which of the following are drawbacks of Hydro electric power?
   A. Silting if reservoirs reduce the life of Hydro electric power installations.
   D B. Large area of forests and agricultural lands are prone to submerge.
   C. Resettlement of displaced people is not properly done.
   D. All of the above

3. The forests that have tall stately trees, with needle like leaves, downward sloping branches are called?
   A. Evergreen forests
   B B. Coniferous Forests
   C. Deciduous Forests
   D. Mangrove Forests.

4. The term ***Fume*** means?
   A. The mixture of solid and liquid particles produced by chemical reactions such as fires.
   C B. The mixture of Smoke & fog
   C. A form of the smoke coming out of the chimney
   D. Aerosol produced by condensation of hot vapours of metals

5. The eupatorium, Lantana and Congress grass (Parthenium) are the examples of?
   A. Endangered Species
   B. Endemic Species.
C C. Exotic Species
   D. Both B & C

6. Which of the following protected areas of India are recognized as the World Heritage sites?
   A. Kaziranga National park
D B. Bharatpur Bird Sanctuary
   C. Manas Sarovar
   D. A, B & C

7. Which of the following are the Hotspots of the biodiversity of India?
   A. Andaman & Nicobar islands
C B. North East of India & Western Ghats.
   C. Both A & B
   D. Only A

8. When big fish eats a small fish which eats water flies supported by phytoplankton, in this food chain the water flies are?
   A. Producers
B B. Primary consumers
   C. Secondary consumers
   D. Top consumers

9. Match the following with correct pair of match:

I	II
i). Royal Bengal tiger	a). Gir National Park
ii). Asiatic Lion conservation	*b).* Primary pollutants
iii). CO,SO2, NO3	*c).* Ozone Depleters
iv). CFCs	d). Endangered Species

C
   A. i-d. ii-c. iii-a. iv-b
   B. iv-b. iii-c. ii-a. i-d.
   C. i-d. ii-a iii-b iv-c.
   D. i-a. ii-b. iii-c. iv-d.

10. The following is NOT a method of In-situ conservation?
    A. Wild Life Sancturies
    B. National parks
C   C. Seed banks & Gene Banks
    D. Both A& B

11. Shola grasslands are found in??
    A. Western Ghats
    B. The nilgiri ranges
D   C. Annamalai ranges
    D. All the three of the above.

12. During the Nitrogen cycle, the ***Nitrates are converted to Nitrogen*** by a process called?
A. Dentrification.
B. Nitrification.
C. Ammonification.
A D. Nitrate Fomration.

13. The cycling of elements in an ecosystem is called
A. Geological cycles
B. Bio-geo-chemical cycles
B C. Chemical cycle
D. Geochemical cycle.

14. Match the following :

Plant source	Drug & Use
a). Rosy Periwinkle(Sadabahar plant)	i). Qunine –Antimalarial
b). Wild Yams	ii).Vinblastine- Anticancer
c). Yellow cinchona	iii). Bromelain –controls tissue inflammation
D d). Pine apple	iv). Diosgenin – Female Contraceptive

A. a)- iv, b)-iii, c)-ii, d)- i.
B. a)- iv, b)-i., c)- ii., d)- iii.
C. a)- ii., b)- i. c)- iii d)- iv
D. a)- ii. b)- iv c)- i d)- iii

15. The world's largest ecological unit found in which of the zone of sea?
A. Euphotic Zone
C B. Bethyal zone
C. Abyssal zone
D. None of the above.

16. The measure of thickness of Ozone layer is?
A. Ohms
B. Amperes
D C. Decibels Units
D. Dobson Units

17. Bio accumulation and Bio magnification of DDT affects birds in a food chain & results in?
C A. Birds lay eggs with shells that are much thinner than normal
B. Premature breaking of the eggs & killing immature chicks inside.
C. Both A & B
D. Only B

18. Which of the following statements are TRUE about endemic plant of India ***Tamarind*** ?

i). Grows in large size & lives for 200 years
ii). Fruit is a curved pod with sour pulp, containing a number of squarish seeds.
iii). Rich in Vitamin C
iv). Used as Preservative and an Additive in food to give a tangy flavour

C
A. Statements i. ii. Are True & iii, iv are False
B. Statements i. ii & iii are True & iv is False
C. All the statements i., ii., iii. & iv are True.'
D. All the Statements i., ii., iii., iv are False.

19. The TWO examples of Secondary Pollutants? Ozone & ~~Sulphuric Acid~~ Nitrogen dioxide

20. The TWO examples of Endemic Species Kangaroo & ~~Asiatic~~ lion.

*** **End of the Paper*** ***

"Look deep into the nature, and then you will understand everything better" – Albert Einstein.

B18

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2021-2022)

Computer Science & Engineering

Subject Name :Database Management Systems

Date:23/07/2022

Exam: E2SemII-MT1

subject code: **CS2202**

Time: 60 Min

Max Marks: 30M

SECTION – A

Answer All

20*1=20M

A 1.ER model is the diagrammatical view or represents___ level(schema).

(A)logical/conceptual B)physical/internal. C)view/external D)all of the above

D 2.Select the correct command to find the number of values in a column.

A)ADD. B)SUM C)TOTAL. (D)COUNT.

C 3. Which one of the following is a set of one or more attributes taken collectively to uniquely identify a record?

A) candidate key B)sub key (C)super key D)foreign key

B 4.Which command is used to remove a relation from an SQL?

A) Drop table (B) Delete C) Purge D) Remove

D 5.Which key maintain data integrity and allow navigation between two differenr instances of an entity?

A) key B)Cardinality key C)Primary Key (D)Foreign key

D 6.Select operation in SQL is equivalent to

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

C 7. The total number of attributes in a relation is called ____.

A)Cardinality B)Keys (C)Degree D)Query

D 8.ROLLBACK in a database is __ statement.

A) DDL B) DML C) DCL (D)TCL

9.In three level DBMS architecture logical level also called as ___level conceptual

10. Which clause is used to sort query elements?

D

A) Group B) Group by C) Order D) Order by

11.Which level of Abstraction describes what data are stored in the Database?

D

A) Physical Level B) View Level C) Abstraction Level D)Logical Level

12.Which join is to be used between two tables A and B when the resultant table needs rows from A and B that matches the condition and rows from A that does not match the condition?

A

A)Outer Join B)Cross Join C)Inner Join D) None of the above

13.Which of the following is not a characteristic of MySQL

B

A)open source B)portability C)slow speed D)ease of use

14._____operations do not preserve non-matched tuples

D

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

15.Which of the following operator is used to compare a value to a list of literals values that have been specified?

C

A) ANY B)BETWEEN C)IN D)ALL

16.Which of the following is not aggregate function?

C

A) sum B) min C) list D) avg

17.Which of the following is not a valid SQL type?

C.

A)FLOAT B)NUMERIC C).DECIMAL D) CHARACTER

18. Which data structure is used in Hierarchical model records?

B

A)Graph B)Tree C)Linked list D)Stacks

19. Select the correct foreign key constraint?

A

A)Referential integrity B)Entity integrity C)Domain integrity D)None

20. Select the correct properties of entities?

C

A)Table B)Groups C)Attributes D)Switchboards

SECTION – B

Answer Any Two Questions 2*5=10M

1] a) Mention the issues with traditional file-based systems that make DBMS a better choice?(2M)

b) Explain different parts (languages)present in SQL.(3M)

2] a) Explain different levels of data abstraction in a DBMS(2.5M)

b) Explain different types of keys in a database.(2.5M)

3] a) Explain 1-tier, 2-tier and 3-tier architecture in a DBMS.(2M)

Given a table named EMPLOYEES task is

ID	NAME	DEPT	SAL
101	PETER	CSE	90000
102	JHONY	CSE	85000
301	PETER	EEE	75000

b)To write an SQL query to find all duplicate name in the table.(1M)

c)To find how many employees working in each department(1M)

d)To find all employees who draw more than avg salary(1M)

4] Explain different operators(UNARY,BINARY,DERIVED) in Relational algebra(5M)

Rena | U | joins
Sele | Set | division
P | Cross | Inter

RSP . UCS JID.

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2021-22,E2Sem2)

Computer Science & Engineering

B181500

Subject Name: Database Management Systems
Subject code: CS2202
Date: 23/09/2022
Duration : 60 Mins
Exam: E2S2MT2
Max. Marks: 30

SECTION-A

20 *1 =20M

ANSWER ALL

1. Which of the following depicts transitive rule
   a. If A→B then AC→BC for any C in the relation
   b. If A→B and A→C then A→BC
   c. If A→BC then A→B and A→C
   d. If A→B and B→C then A→ C
2. Normalization is a process to
   a. To provide security to data
   b. To reduce redundancy in data
   c. To allow concurrent execution
   d. Query the database
3. The following schedule is
   R1(X) ; R2(X); W1(X); W2(X) ; C1; C2;
   a. Conflict serializable
   b. Non-conflict serializable
4. In multiple granularity locking protocol, if a IX(intention exclusive) lock is held by a transaction, then which of the following locks can be granted to other transaction on same data object
   a. IX (intention exclusive)
   b. IS (intention shared)
   c. Both (a) and (b)
   d. S (shared)
5. Consider R(A,B,C,D) and F={AB→C , C→ D},the relation R is in(assume every attribute is atomic)
   a. 1NF
   b. 2NF
   c. 3NF
   d. BCNF
6. Consider relation R(A,B,C,D,E) and functional dependencies F ={A→BC, CD→E, B→D, E→A}which of the following is candidate key?
   a. A
   b. E
   c. Both (a) & (b)
   d. None of the above

7. Consider a relation schema R(A,B,C,D) and functional dependency set F={A→ B, C → D} then the decomposition R1(A,B) and R2(C,D) is
   a. Dependency preserving and loss less join
   b. Dependency preserving but not loss less join
   c. Loss less join but not dependency preserving
   d. Both dependency preserving and lossless join
8. Consider the following relation R(ABC)

A	B	C
a1	b1	c1
a1	b2	c2
a2	b3	c2
a2	b4	c3

Which of the following functional dependencies hold on R?
   a. A→ B b) A →C c) C→ A d) B→C
9. Consider a relation R (A,B,C) and F={AB→C, C→A} the result of BCNF decomposition is
   a. R1(A,B) and R2(B,C)
   b. R1(A,C) and R2(B, C)
   c. The given relation is already in BCNF
   d. R1(A,B) and R2(A, C)
10. Consider a relation R (ABCDEFGH) and Functional Dependencies F = {CH→G, A→BC, B→CFH, E→A, F→EG}. Number of candidate keys in the above relation is
   a. 3 b) 4 c)5 d) 6
11. A clustered index is created on which of the following field/attribute of a table
   a. Ordered non-key field
   b. Unordered non-key field
   c. Both (a) and (b)
   d. Ordered key field
12. In which normal form "every determinant(LHS of Functional Dependency) is candidate key/super key"
   a. 1 NF
   b. 2 NF
   c. 3 NF
   d. BCNF
13. Which of the following transaction properties are to be ensured in case of system failures
   a. Atomicity and consistency
   b. Atomicity and durability
   c. Isolation and consistency
   d. Consistency and durability

14. Consider a relation R (roll_no, name, dob, age) and functional dependencies are dob → age, name→roll_no, roll_no→name, name→dob. This relation is {every attribute has atomic values}
    a. In 2NF (2nd Normal Form) but not in 3NF
    b. In 3NF but not in BCNF
    c. In BCNF
    d. In 1NF
15. Indexes are created on _____ of the relations
    a. Records /tuples
    b. Attributes/fields
    c. Both (a) and (b)
    d. Keys
16. Searching of a key takes constant time in which of the following file organization techniques
    a. Sorted File organization
    b. Unsorted file organization
    c. Hash based file organization
    d. All of the above
17. _____ is used to permanently save the work
    a. Commit
    b. Read
    c. Write
    d. Abort
18. A precedence graph that contains cycles on schedule S is ___.
    a. Serializable
    b. Non-serializable
    c. Serial
    d. Non-serial
19. Transaction T_i commits before T_j in a schedule where T_i reads data item written by T_j makes the schedule
    a. Non-serializable
    b. Recoverable
    c. Irrecoverable
    d. Serializable
20. Lock based protocols ensure
    a. Recoverability
    b. Serializability
    c. Both (a) and (b)
    d. None of the above

SECTION-B

Answer any TWO of the following. 2*5M=10M

1. (a) Explain Transaction ACID properties (4M)
   (b) Define Conflict Serialiazable Schedule (1M)
2. (a) Define B-tree and B^+ -tree. Write differences between them (4M)
   (b) Define Primary Index with suitable example (1M)
3. (a) Explain Partial Dependency, Transitive Dependency with examples (3M)
   (b) Find the highest Normal form of the following relation (2M)
   Relation: R (ABCDE)
   Functional Dependencies: F= {A→B, BC→E, ED→A}
4. (a) Explain 2-phase locking protocol (3M)
   (b) Construct B-tree of order 3 for the following keys (2M)
   1, 8, 4, 5, 6, 9, 7, 11, 10

---------- END of PAPER ----------

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, **BASAR**

(A.Y. 2020-2021)

Department: CSE

Subject Name: DBMS
Date: 10 /11/2021
Exam: E2S2EST

Subject Code: CS2202
Time: 2 hours
Max Marks: 60

NOTE:

i) Section A carries 30 marks and Section B carries 30 marks.
ii) In section A three questions need to be answered out of 6 questions asked, each question carries 10 Marks.

Section A

1. a. Consider the following relation:
   Employee(Ename: string, SSN: string, Salary: real, Deptnumber:integer).
   SSN is the primary key of the relation then answwer the following queries (5M)

   i). Select employee names who are getting maximum salary in each department.

   ii). Find all employees whose salary is above average for their department by using correlated nested query

   b. What is Normalization explain 3NF and BCNF. (5M)

2. a. Why foreign key constraints are important? Explain with employee database. (4M)

   b. Explain rules for the conversion of ER diagrams into tables. (6M)

3. Consider the following schema: (10M)
   Suppliers(sid: integer, sname: string, address: string)
   Parts(pid: integer, pname: string, color: string)
   Catalog(sid: integer, pid: integer, cost: real)

   The key fields are underlined, and the domain of each field is listed after the field name. Therefore sid is the key for Suppliers, pid is the key for Parts, and sid and pid together form the key for Catalog. The Catalog relation lists the prices charged for parts by Suppliers. Write the following queries in SQL and Relational Algebra:

   a. Find pairs of sids such that the supplier with the first sid charges more for some part than the supplier with the second sid.

   b. Find the pids of parts supplied by at least two different suppliers.

   c. Find the pids of parts supplied by every supplier at less than $200.

4. a. Explain any three DML commands and three TCL commands with examples. (6M)

   b. Explain about the following clauses with example queries. (4M)
   i) Group by
   ii) Order by

5. a. Explain the lossless join decomposition, dependency preservation decomposition with suitable examples. (5M)

b. Check if the Following Relation is in BCNF, if not normalize it to BCNF form. (5M)
Note : specify normalized relations in 1NF, 2NF, 3NF and BCNF
A Table has fields A, B, C, D, E, F, G , H, I , J and K with the following Functional dependencies :

A → BCD
HI → J
AEFG →HIK

6. a. S: $W_1(X), R_2(X), W_1(X), C_2$, $Abort_1$. Find the schedule is

1. Conflict serializable or not
2. View serializable or not
3. Recoverable or not
4. Cascade schedule or not

(6M)

b. Explain ACID Properties of transactions. (4M)

Section B (2x15 =30 Marks)

1. What is the operator which is used to extend traditional projection operator by including projection attributes in function?
   A. Relational Projection
   B. Analyzed Projection
   C. Generalized Projection
   D. Multiple Projection

2. Choose correct operation
   → T1 $\sigma_\theta((r \times s) \% r)$
   → T2 $\sigma_\theta(s)$
   → T3 $\sigma_\theta(r)$

   A. T1=T3
   B. T2=T3
   C. T1=T2
   D. None of the above

3. Given relations r and s. function C denotes number of rows in result which of the fallowing statements can be correct?
   I. $C(r \times s) > C(r \rhd\lhd s)$
   II. $C(r \rhd\lhd s) > C(r \rhd\lhd s)$
   III. $C(r \rhd\lhd s) > C(r \mapsto s)$
   IV. $C(r \rhd\lhd s) > C(r \mapsto s)$

   A. I and II
   B. II and III
   C. Only III
   D. III and IV

4. Consider the fallowing relation schema and a query that uses additional operators of relational algebra
r(A,B,C); s(D,A,E); t(A,B,C,D,E); u(C,D,E)

((r * s) ∩ t) % u)

Note: * denotes Natural Join

What can be result if we write this query using 6 basic operators of relation algebra?

A. Result set of the basic operators query will be larger than result set of given query.
B. Result set will have attributes A and B only
C. Some of the operations can't be performed due to incompatible relation schema.
D. Query can't be written using only basic operators.

5. Why are additional operators used in relational algebra?
I. Set Intersection operator increases the expressive power of 6 basic operators.
II. Assignment operator increases the expressive power of 6 basic operators.
III. Join operator increases the expressive power of 6 basic operators.
IV. Division operator increases the expressive power of 6 basic operators.
V. Addition of these operators simplifies writing queries.

A. Only I, II and V
B. Only III and IV
C. Only IV
D. Only V

6. Which of the following statements are not true?
A. Super set of a super-key is also a super-key.
B. Super set of a candidate key is a super-key.
C. Subset of a candidate key can be a super-key.
D. Proper subset of a candidate key is also a candidate key.

7. From the following options, select the Data Manipulative Language (DML) command.
A. INSERT INTO table-name VALUES (comma separated list of values);
B. DROP TABLE table-name;
C. ALTER TABLE table-name DROP attribute-name;
D. None of the above

8. Which is the keyword used in SQL to remove a table?
A. REMOVE
B. DELETE
C. ALTER
D. DROP

9. For relation R = (L, M, N, O, P) the following dependencies hold:
{ M → O, NO → P, P → L and L → MN }
R is decomposed into R1 = (L, M, N, P) and R2 = (M, O). The decomposition is:

A. Lossless decomposition and dependency preserving
B. Lossless decomposition and not dependency preserving
C. Lossy decomposition and dependency preserving
D. Lossy decomposition and not dependency preserving

10. Let relation R(A, B,C, D, E, F,G, H) satisfy the following functional dependencies:
{ A → B, CH → A, B → E, BD → C, EG → H, DE → F }
Which of the following FDs is also guaranteed to be satisfied in R?

A. BFG → AE
B. CEG → AB
C. CGH → BF
D. ADE → CH

11. Which of the following is true?

A. Blind writes appear in any schedule that is view serializable but not conflict serializable
B. Blind writes appear in all view serializable schedules that are also conflict serializable
C. Blind writes appear only in conflict serializable schedules that are not view serializable
D. Blind writes appear in non conflict serializable schedules

12. Assume two transactions T1, T2 and number of statements in T1=5, T2=4 identify number of concurrent schedules.

A. 5!*4!
B. 126
C. 9!
D. None of the above.

13. Which one of the fallowing statements about normal forms is FALSE?

A. FD X→Y is allowed in 3NF if X is part of the superkey.
B. 3NF may not preserve all the dependencies.
C. Any relation with two attributes is in BCNF
D. BCNF is stricter than 3NF

14. In the fallowing transactions

T1 reads from X T1 Writes to Y T1 Writes to Z	T2 Writes from Z T2 Writes to W T2 reads from X	T3 reads from X T3 writes to P

Which of these are in conflict?

A. T1 and T2
B. T1,T2 and T3
C. T1 and T2, T1 and T3
D. T1 and T3, T2 and T3

15. Consider the fallowing queries.

a. SQL Query: SELECT $_{\text{first\_name, last\_name}}$ FROM EMPLOYEE
b. Relational Algebra Query: $\pi_{\text{first\_name, last\_name}}$ (EMPLOYEE)

Can the two queries have different number of tuples in their output?

A. Yes
B. No
C. Not enough information
D. The two queries are not same

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

B182276.

(A.Y. 2021-2022)

Subject Name: Data Analytics
Subject Code: CS2204
Date: 26/7/2022
Exam: E2S2MT1

Branch: CSE
Time: 60 Min
Max Marks: 30

SECTION –A (20M)

Answer all Questions, each question carries 2 Marks

1. A researcher divided subjects into two groups according to gender and then selected members from each group for her sample. What sampling method was the researcher using?
   A) Cluster
   B) Random
   C) Systematic
   D) D) Stratified

D

2. Which one is not a valid sampling method
   A) Random
   B) Systematic
   C) Stratified
   D) D) Statistical

D

3. Suppose you have a dada set of scores which are normally distributed with mean of 86 and standard deviation of 14. you picked a random test without looking at the score and you want to know the probability the score was below 72
   A) 0.572
   B) B) 0.159
   C) 0.227
   D) 0.115

B

$\mu = 86$; $\sigma = 14$ $P(X < 72)$?

$\frac{x-86}{14} < \frac{72-86}{14}$ $P(z < \ldots)$

z.

4. For given data 17, 19, 29, 32, 43, 17,54 what is mean, mode and IQR(inter quartile range)
   A) 30.14, 17, 26
   B) 25.24, 17, 19
   C) 20.22, 17, 17
   D) 19.56, 19, 17

A

$1 - P(z > \ldots)$

$1 -$

$\geq$

5. Classify each variable as discrete or continuous. i) The number students in class ii) Ages of students
   A) i) Continuous, ii) Discrete
   B) i) Discrete, ii) Discrete
   C) i) Continuous, ii) Continuous
   D) i) Discrete, ii) Continuous

B B

6. Kurtosis refers to the _____ of the distribution
   A) peakedness
   B) symetry
   C) shape
   D) None

A

7. Classify each as nominal level, ordinal level, interval level, or ratio level of measurement. i) Rating of movies as G(General audiences – All ages admitted), PG(Parental guidance suggested), and R(Restricted) ii) Classification of automobiles as subcompact, compact, standard, and luxury
A) i) Nominal, ii) Ratio
B) i) Nominal, ii) ordinal
B C) i) Ratio, ii) ordinal
D) i) interval, ii) Ratio

8. what is the allowed skewness value to treat the distribution as normal distribution
A) skewness <= 3 Standard Error
A B) skewness >= 3 Standard Error
C) skewness <= 2 Standard Error
D) skewness >= 4 Standard Error

9. Find the first quartile and third quartile for given data: 23, 42, 12, 10, 15, 14,9.
A) 10, 23
A B) 10, 42
C) 14, 23
D) 12, 42

10. The average annual salaries of male and female MBA students are different at the time of graduation. State the null and alternative hypotheses.
A) H0 : mu_f >= mu_m, H1 :mu_f < mu_m
D. B) H0 : mu_f <= mu_m, H1 :mu_f > mu_m
C) H0 : mu_f != mu_m, H1 :mu_f = mu_m
D) H0 : mu_f = mu_m, H1 :mu_f != mu_m

Ho: $\mu_f = \mu_m$

H1: $\mu_f \neq \mu_m$

SECTION – B(10M)

Answer any two Questions

1. What is Descriptive Analytics? Explain Statistical teqniques used in Descriptive Analytics with example.**(5 Marks)**

2. Sugar is packed in 5-pound bags. An inspector suspects the bags may not contain 5 pounds. A sample of 50 bags produces a mean of 4.6 pounds and a standard deviation of 0.7 pound. Test the hypothesis using Confidence Intervals at 95% confidence Level. **(5 Marks)**

$H_0: \mu_1 = 5$

$H_1: \mu_1 \neq 5$

3. Explain how to clean data while preprocessing of data if NULL values and categorical data is present in dataset. **(5 Marks)**

4. A Manufacturer produces bolts with a thickness of exactly 1 inch. A customer takes a random sample of of 100 bolts and find that $\bar{X} = 1.2$ inches and $s = 0.40$ inches. Should the manufacturer 's claim that the bolts are exactly 1 inch(on average) be rejected? Assume Confidance level 95%.
a) Write Null and Alternate Hypothesis **(1 Marks)**
b) Test weather the maufacturer's claim true or false using Confidence Intervals **(4 Marks)**

$CI = \bar{X} \pm Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$

$\bar{X} = 1$

$\bar{X} \neq 1$

$n = 100$

$\bar{X} = 1.2$

$\sigma = .040$

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RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR
(A.Y. 2021-2022)

B181500

Subject Name: Data Analytics
Subject Code: CS2204
Date: 24 /09/2022
Exam: E2S2MT2

Branch: CSE
Time: 60 Min
Max Marks: 30

$\bar{X} = 2800$
$n = 100$
$\sigma = 500$

$\geq$
< 3200

SECTION –A (20M)

Answer all Questions, each question carries 2 Marks

1. A manufacturer purchased bulbs that are supposed to burn mean life time of atleat 3100 hours with population standard deviation of 500 hrs. if sample of 100 bulbsis taken with mean x_bar = 2800 hrs, test the hypothesis at 95% confidence level. Find test statistic.
   A) z = -6
   B) z = -4
   C) z = -4
   D) z = -6

$\frac{\bar{x}_1 - \mu_1}{\sigma_1/\sqrt{n}}$

2. For given data, sample mean x_bar is 29, sample size is 15, The sample standard deviation is 11.51 and hypothised mean(mu0) is 25. What is the test statistic?
   A) z = 2.672
   B) z = 0.372
   C) t = 1.345
   D) t = 2.651

$\bar{X} = 29 \quad \sigma = 11.51$
$n = 15 \quad \mu_0 = 25.$

3. Average weekly consumption of alcohol(ml) before and after breakup is 11.5 and the corresponding sample standard deviation is 95.67 of 20 candidates. Conduct a hypothesis test to check whether the alcohol consumption is more after the breakup at 95% confidence. What is the test statistics?
   A) z = 2.03
   B) t = 0.53
   C) t = -1.22
   D) t = -1.16

4. Find the chi squared statistic if random sample of 100 people has been drawn from a population in which men and women are equal in frequency, the observed number of men and women would be compared to the theoretical frequencies of 50 men and 50 women. If there were 44 men in the sample and 56 women
   A) 1.2
   B) -3.33
   C) 2.45
   D) 1.44

$\chi^2 = \frac{(44-50)^2 + (56-50)^2}{50}$

4 ; n = 6 ; (84) 68

5. Consider an experiment to study the effect of four different levels of a factor on a response. If we had 6 observations for each level. The "between-group" sum of squared differences is 84 and The within-group sum of squares is 68. what is the F statistic value?
   A) F = 5.8
   B) F = 9.3
   C) F = 8.2
   D) F = 7.8

$F = \frac{(\frac{84}{3})}{\frac{68}{a(n-1)}}$

6. A survey found that the average hotel room rate in New Orleans is $80 and the average room rate in Phoenix is $70. Assume that the data were obtained from two samples of 50 hotels each and that the standard deviations of the populations are $5.62 and $4.83, respectively. At alpha = 0.05, can it be concluded that there is a significant difference in the rates? find only appropriate test ststistic

B

A) F = 5.05
B) Z = 9.54
C) t = 3.34
D) chi_squared = 7.65

7. The best simple linear regression model is the one for which

A

A) The R-square (coefficient) is the highest.
B) The residuals follow normal distribution.
C) The p-value corresponding to t-test is less than the significance value alpha
D) The p-value corresponding to t-test is less than the significance value alpha and the residuals follow normal distribution and the residual are homoscedastic.

8. In a model Y=B0+B1X, the value of B1, is for

A

A) Change in value of Y for unit change in value of X
B) Change in value of X for unit change in value of Y.
C) Percentage change in value of X for unit change in value of Y.
D) Percentage change in value of Y for unit change in value of X.

9. Which hypothesis test used for testing Homogeneity of variance Bartlett's & Levene's test

10. Which hypothesis test is used to compare two population means, when we have data from two samples and do not have any idea about population distribution(or does not follow normal distribution) Aspin-Welch t-test

SECTION – B(10M)

Answer any two Questions

1. The average size of a farm in Indiana County, Pennsylvania, is 191 acres. The average size of a farm in Greene County, Pennsylvania, is 199 acres. Assume the data were obtained from two samples with standard deviations of 38 and 12 acres, respectively, and sample sizes of 8 and 10, respectively. Can it be concluded at alpha = 0.05 that the average size of the farms in the two counties is different? Assume the populations are normally distributed and population standard deviations are not equal.**(5 Marks)**

2. Consider the following set of points: {(-2 , -1) , (1 , 1) , (3 , 2)}
Find the least square regression coefficients for the given data points. . **(5 Marks)**

3. Explain which metrics/tests used to validate Multiple Linear Regression. **(5 Marks)**

4. A research study was conducted to examine the clinical efficacy of a new antidepressant. Depressed patients were randomly assigned to one of three groups: a placebo group, a group that received a low dose of the drug, and a group that received a moderate dose of the drug. After four weeks of treatment, the patients completed the Beck Depression Inventory. The higher the score, the more depressed the patient. The data are presented below. Compute the appropriate test. Is there a significant difference between the groups? **(5 Marks)**

Placebo	Low Dose	Moderate Dose
38	22	14
47	19	26
39	8	11
25	23	18
42	31	5

cum. prob	$t_{.50}$	$t_{.75}$	$t_{.80}$	$t_{.85}$	$t_{.90}$	$t_{.95}$	$t_{.975}$	$t_{.99}$	$t_{.995}$	$t_{.999}$	$t_{.9995}$
one-tail	0.50	0.25	0.20	0.15	0.10	0.05	0.025	0.01	0.005	0.001	0.0005
two-tails	1.00	0.50	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.002	0.001
df											
1	0.000	1.000	1.376	1.963	3.078	6.314	12.71	31.82	63.66	318.31	636.62
2	0.000	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	22.327	31.599
3	0.000	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	10.215	12.924
4	0.000	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	0.000	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	5.893	6.869
6	0.000	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	0.000	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	0.000	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	0.000	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.297	4.781
10	0.000	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	0.000	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	0.000	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	0.000	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	0.000	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	0.000	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	3.733	4.073
16	0.000	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	3.686	4.015
17	0.000	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.646	3.965
18	0.000	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.610	3.922
19	0.000	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.579	3.883
20	0.000	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.552	3.850
21	0.000	0.686	0.859	1.063	1.323	1.721	2.080	2 518	2.831	3.527	3.819
22	0.000	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.505	3.792
23	0.000	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.485	3.768
24	0.000	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.467	3.745
25	0.000	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.450	3.725
26	0.000	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.435	3.707
27	0.000	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.421	3.690
28	0.000	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.408	3.674
29	0.000	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.396	3.659
30	0.000	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.385	3.646
40	0.000	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3 307	3.551
60	0.000	0.679	0.848	1.045	1.296	1.671	2.000	2.390	2.660	3.232	3.460
80	0.000	0.678	0.846	1.043	1.292	1.664	1.990	2.374	2.639	3.195	3.416
100	0.000	0.677	0.845	1.042	1.290	1.660	1.984	2.364	2.626	3.174	3.390
1000	0.000	0.675	0.842	1.037	1.282	1.646	1.962	2.330	2.581	3.098	3.300
z	0.000	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.090	3.291
	0%	50%	60%	70%	80%	90%	95%	98%	99%	99.8%	99.9%
	Confidence Level										

F-table of Critical Values of $\alpha = 0.05$ for F(df1, df2)

DF2=1 \ DF1=1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞
1	161.45	199.50	215.71	224.58	230.16	233.99	236.77	238.88	240.54	241.88	243.91	245.95	248.01	249.05	250.10	251.14	252.20	253.25	254.31
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.41	19.43	19.45	19.45	19.46	19.47	19.48	19.49	19.50
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.37
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.13	2.05	2.01	1.96	1.91	1.86	1.81	1.76
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.15	2.07	1.99	1.95	1.90	1.85	1.80	1.75	1.69
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20	2.13	2.06	1.97	1.93	1.88	1.84	1.79	1.73	1.67
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.12	2.04	1.96	1.91	1.87	1.82	1.77	1.71	1.65
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18	2.10	2.03	1.94	1.90	1.85	1.81	1.75	1.70	1.64
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39
120	3.92	3.07	2.68	2.45	2.29	2.18	2.09	2.02	1.96	1.91	1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2021-2022)

B181500

Subject Name: Data Analytics
Subject Code: CS2204
Date: 21/10/2022
Exam: E2S2EST-SET-I

Branch: CSE
Time: 2 hrs
Max Marks: 60

SECTION –A (30M)

Answer all Questions, each question carries 2 Marks

1. Find the critical values for a. A left-tailed test with alpha = 0.30. b. A two-tailed test with alpha 0.10.
   A) a = -1.26, b= |1.96|
   B) a = -0.52, b= |1.64|
   C) a = -3.06, b= |1.64|
   D) a = -0.84, b= |3.33|

2. Find the t critical value when the sample size is 5, and the test is one-tailed. at alpha is 0.3.
   A) 1.29
   B) 0.88
   C) 0.56
   D) 0.67

3. State the null and alternative hypotheses for The average age of community college students is 24.6 years.
   A) H0 : mu = 24.6, H 1 :mu != 24.6
   B) H0 : mu != 24.6, H 1 :mu = 24.6
   C) H0 : mu <= 24.6, H 1 :mu > 24.6
   D) H0 : mu >= 24.6, H 1 :mu < 24.6

4. A manufacturer purchased bulbs that are supposed to burn mean life time of atleat 3500 hours with population standard deviation of 400 hrs. if sample of 100 bulbsis taken with mean x_bar = 2800 hrs, test the hypothesis at 95% confidence level. Find test statistic and find wether to reject null hypothesis or not
   A) z = -12.5, do not Reject Null Hypothesis
   B) z = -17.5, do not Reject Null Hypothesis
   C) z = -17.5, Reject Null Hypothesis
   D) z = -12.5, Reject Null Hypothesis

5. For given data, sample mean x_bar is 29, sample size is 15, The sample standard deviation is 11.51 and hypothised mean mu0 is 25. What is the test statistic?
   A) z = 2.672
   B) z = 0.372
   C) t = 1.345
   D) t = 2.651

6. Average weekly consumption of alcohol(ml) before and after breakup is 15 and the corresponding sample standard deviation is 81 of 10 candidates. conduct a hypothesis test to check whether the alcohol consumption is more after the breakup at 95% confidence. what is the test statistics?
   A) z = 1.21, two sample z test
   B) t = 1.67, paired sample t test
   C) t = 0.42, one sample t test
   D) t = 0.58, paired sample t test

7. A sample of 81 patients chosen to estimate the length of stay at hospital the sample mean was 3.5 days and the population standard deviation was know to be 1 day. What is the 95% confidence interval for population mean
   A) [3.91 - 4.52]
   B) [3.28 - 3.72]
   C) [2.19 - 3.5]
   D) [3.4 - 4]

8. Consider an experiment to study the effect of four different levels of a factor on a response. If we had 6 observations for each level. The "between-group" sum of squared differences is 84 and The within-group sum of squares is 68. what is the F statistic value?
   A) F = 5.8
   B) F = 9.3
   C) F = 8.2
   D) F = 7.8

9. Typing speed on a pc, who type faster men or women? the 40 men average typing speed is 65 wpm(words per minute),sample standard deviation is 10 wpm,the 60 women average typing speed is 63 wpm(words per minute),sample standard deviation is 14 wpm,find only appropriate test statistic?
   A) F = 2.02
   B) t = 1.09
   C) Z = 0.83
   D) chi_squared = 6.01

10. The average size of a farm in Indiana County, Pennsylvania, is 191 acres. The average size of a farm in Greene County, Pennsylvania, is 199 acres. Assume the data were obtained from two samples with standard deviations of 38 and 12 acres, respectively, and sample sizes of 8 and 10, respectively. Can it be concluded at alpha = 0.05 that the average size of the farms in the two counties is different? Assume the populations are normally distributed and population standard deviations are not equal. find only appropriate test statistic.

A) t = 1.22
B) Z = -1.5
C) t = -0.57
D) Z = 2.12

11. If the residuals do not follow normal distribution:

A) The regression coefficient estimates are incorrect.
B) The R-square values are incorrect.
C) The standard error of estimate is incorrect.
D) The t-test for the coefficient of the explanatory variable (B1) is not valid.

12. For a positively skewed distribution

A) Mode is greater than median and median is greater than mean
B) Mean is greater than median
C) Median is greater than mean
D) Mean is is greater than median and median is greater than mode

13. A group of subjects selected from the group of all subjects under study is called a

A) population
B) sample
C) cluster
D) observations

14. for given data 10,17, 21, 29, 12, 21, 29, 21 what is mean, mode and IQR(inter quartile range)

A) 16, 21, 9.5
B) 25, 21, 15
C) 20, 21, 10.5
D) 19, 21, 12.5

15. Classify each variable as discrete or continuous.

i) The number students in class ii) heights of students

A) i) Continuous, ii) Discrete
B) i) Discrete, ii) Discrete
C) i) Continuous, ii) Continuous
D) i) Discrete, ii) Continuous

SECTION – B(30M)

Answer any three Questions

1. a) What is Descriptive Analytics? Explain Statistical teqniques used in Descriptive Analytics with example. (5 Marks)

   b) What is difference between R square and Adjusted R square? Explain Why R square can't be used for Multiple Linear Regression? (5 Marks)

2. To compare customer satisfaction levels of two competing cable television companies, 174 customers of Company 1 and 355 customers of Company 2 were randomly selected and were asked to rate their cable companies on a five-point scale, with 1 being least satisfied and 5 most satisfied. The survey results are summarized in the following table: (10 Marks)

Company 1	Company 2
n1=174	n2=355
Sample mean1 =3.51	Sample mean2 = 3.24
s1=0.51	s2=0.52

Test at the 99% Confidence level whether the data provide sufficient evidence to conclude that Company 1 has a higher mean satisfaction rating than does Company 2.

3. For the following set of data (10 Marks)

{(-1 , 0),(0 , 2),(1 , 4),(2 , 5)}

Find the least square regression coefficients and Pearson correlation coefficient.

4. A research study was conducted to examine the differences between older and younger adults on perceived life satisfaction. A pilot study was conducted to examine this hypothesis. Ten older adults (over the age of 70) and ten younger adults (between 20 and 30) were give a life satisfaction test (known to have high reliability and validity). Scores on the measure range from 0 to 60 with high scores indicative of high life satisfaction; low scores indicative of low life satisfaction. The summary data are presented below. Compute the appropriate t-test. (10Mark)

Older Adults	Younger Adults
N = 10	N = 10
Mean = 44.5	Mean = 28.1
S = 8.682677518	S = 8.543353492

a. What is your computed t- statistic?
b. What would be the null hypothesis and alternate hypothesis in this study?
c. What is your t – Critical value?
d. do you reject null hypothesis or not?

5. A public opinion poll surveyed a simple random sample of 100 voters. Respondents were classified by gender (male or female) and by voting preference (Republican, Democrat, or Independent).

Observed Values

	Democrat	Republican	Independent
Male	28	18	4
Female	22	27	1

Expected values

	Democrat	Republican	Independent
Male	25	22.5	2.5
Female	25	22.5	2.5

Is there a gender gap? Do the men's voting preferences differ significantly from the women's preferences? Use appropriate hypothesis test at 0.05 level of significance. (10 Marks)

6. The times required by three workers to perform an assembly-line task were recorded on five randomly selected occasions. Here are the times, to the nearest minute.

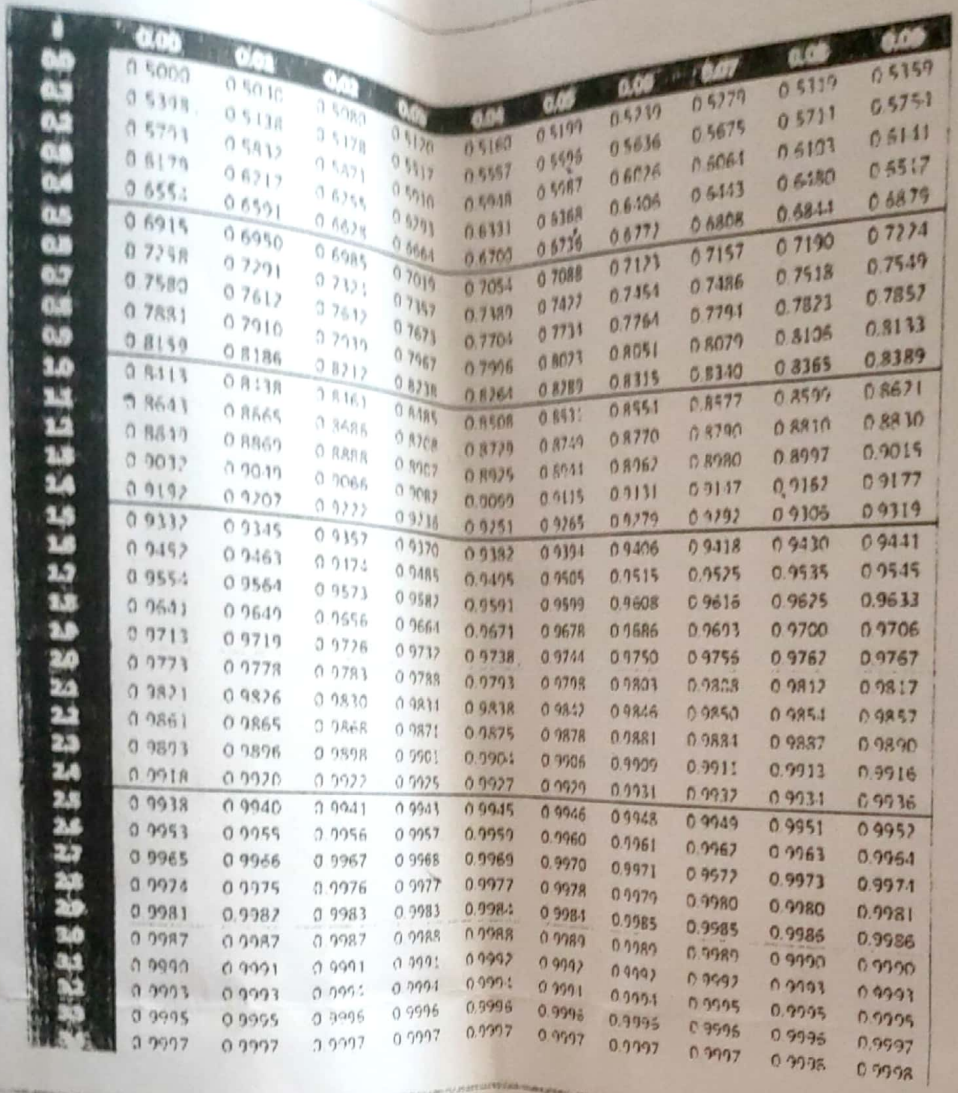
Hank	Joseph	Susan
8	8	10
10	9	9
9	9	10
11	8	11
10	10	9

perform one-way ANOVA to test the weather same time required to perform the task by three workers. (10 Marks)

cum. prob	$t_{.50}$	$t_{.75}$	$t_{.80}$	$t_{.85}$	$t_{.90}$	$t_{.95}$	$t_{.975}$	$t_{.99}$	$t_{.995}$	$t_{.999}$	$t_{.9995}$
one-tail	0.50	0.25	0.20	0.15	0.10	0.05	0.025	0.01	0.005	0.001	0.0005
two-tails	1.00	0.50	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.002	0.001
df											
1	0.000	1.000	1.376	1.963	3.078	6.314	12.71	31.82	63.66	318.31	636.62
2	0.000	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	22.327	31.599
3	0.000	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	10.215	12.924
4	0.000	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	0.000	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	5.893	6.869
6	0.000	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	0.000	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	0.000	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	0.000	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.297	4.781
10	0.000	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	0.000	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	0.000	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	0.000	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	0.000	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	0.000	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	3.733	4.073
16	0.000	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	3.686	4.015
17	0.000	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.646	3.965
18	0.000	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.610	3.922
19	0.000	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.579	3.883
20	0.000	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.552	3.850
21	0.000	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.527	3.819
22	0.000	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.505	3.792
23	0.000	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.485	3.768
24	0.000	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.467	3.745
25	0.000	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.450	3.725
26	0.000	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.435	3.707
27	0.000	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.421	3.690
28	0.000	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.408	3.674
29	0.000	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.396	3.659
30	0.000	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.385	3.646
40	0.000	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3.307	3.551
60	0.000	0.679	0.848	1.045	1.296	1.671	2.000	2.390	2.660	3.232	3.460
80	0.000	0.678	0.846	1.043	1.292	1.664	1.990	2.374	2.639	3.195	3.416
100	0.000	0.677	0.845	1.042	1.290	1.660	1.984	2.364	2.626	3.174	3.390
1000	0.000	0.675	0.842	1.037	1.282	1.646	1.962	2.330	2.581	3.098	3.300
z	0.000	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.090	3.291
	0%	50%	60%	70%	80%	90%	95%	98%	99%	99.8%	99.9%
	Confidence Level										

F-table of Critical Values of $\alpha = 0.05$ for F(df1, df2)

	DF1=1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞
DF2=1	161.45	199.50	215.71	224.58	230.16	233.99	236.77	238.88	240.54	241.88	243.91	245.95	248.01	249.05	250.10	251.14	252.20	253.25	254.31
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.41	19.43	19.45	19.45	19.46	19.47	19.48	19.49	19.50
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.37
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.13	2.05	2.01	1.96	1.91	1.86	1.81	1.76
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.15	2.07	1.99	1.95	1.90	1.85	1.80	1.75	1.69
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20	2.13	2.06	1.97	1.93	1.88	1.84	1.79	1.73	1.67
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.12	2.04	1.96	1.91	1.87	1.82	1.77	1.71	1.65
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18	2.10	2.03	1.94	1.90	1.85	1.81	1.75	1.70	1.64
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39
120	3.92	3.07	2.68	2.45	2.29	2.18	2.09	2.02	1.96	1.91	1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00



Critical values of the Chi-square distribution with d degrees of freedom

	Probability of exceeding the critical value					
d	0.05	0.01	0.001	d	0.05	0.01	0.001
1	3.841	6.635	10.828	11	19.675	24.725	31.264
2	5.991	9.210	13.816	12	21.026	26.217	32.910
3	7.815	11.345	16.266	13	22.362	27.688	34.528
4	9.488	13.277	18.467	14	23.685	29.141	36.123
5	11.070	15.086	20.515	15	24.996	30.578	37.697
6	12.592	16.812	22.458	16	26.296	32.000	39.252
7	14.067	18.475	24.322	17	27.587	33.409	40.790
8	15.507	20.090	26.125	18	28.869	34.805	42.312
9	16.919	21.666	27.877	19	30.144	36.191	43.820
10	18.307	23.209	29.588	20	31.410	37.566	45.2

INTRODUCTION TO POPULATION GENETICS, Table D.1

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2020-2021)

Department of Management

Subject Name: Managerial Economics
Date: 08/11/2021
Exam: CSE E2S2 EST

Code: BM0001
Time: 2 hrs
Max Marks: 60

B171326

Section-A(30 M)
Objective Part

i) **This consists of 15 bits, these could be multiple choices, fill in the blanks, or a combination of both, each bit carrying two marks.**
ii) **All 15 bits are compulsory, there is NO Choice in Section-A.**
iii) **Each question carries two marks. (30 Marks)**

1. _____ **is known as father of economics**
a) Marshal
b) Robins
c) Adam smith
d) A C Pigou

2. **Welfare (neo classical) definition of economics is given by**
a) J B Say
b) Lionel Robbins
c) Adam Smith
d) Alfred Marshall

3. **In which market, single market price prevails for the commodity**
a) Monopoly market
b) Oligopoly market
c) Perfect competition market
d) Duopoly market

4. _____ **is a form of market organization in which there is only one seller of the commodity.**
a) Perfect Competition
b) Duopoly
c) Monopoly
d) Oligopoly

5. **Which of the following pairs of goods is an example of substitutes?**
a) Tea and Sugar
b) Tea and Coffee
c) Car and Petrol
d) None

6. **The demand curve slopes**
a) Upwards
b) Downwards
c) Linear
d) None of the above

7. **Application of Economics for managerial decision-making is called___.**
a) Macro Economics
b) Managerial Economics
c) Welfare Economics
d) Micro Economics

8. **Who explained the "Law of Demand"?**
a) Joel Dean
b) Cobb-Douglas
c) Marshall
d) C.I.Savage & T.R.Small

9. **Giffen goods, Veblan goods and speculations are exceptions to___.**
a) Cost function
b) Production function
c) Law of Demand
d) Finance function

10. **How many stages are there in 'Law of Variable Proportions'?**
a) Five
b) Three
c) Two
d) Four

11. **When proportionate increase in all inputs results in an equal proportionate increase in output, then we call_____.**
a) Increasing Returns to Scale
b) Decreasing Returns to Scale
c) Constant Returns to Scale
d) None

12. **When different combinations of inputs yield the same level of output Known as _____**
a) Different Quants
b) Output differentiation
c) Isoquants
d) Production differentiation

13. **Conversion of inputs in to output is called as _____**
a) Sales
b) Income
c) Production
d) Expenditure

14. The cost of best alternative forgone is_____

a) Outlay cost
b) Past cost
c) Opportunity cost
d) Future cost

15. The price at which demand and supply of a commodity equal is Known as

a) High price
b) Low price
c) Equilibrium price
d) Marginal price

SECTION –B (30M)
Descriptive Part:

i) **NOTE: Please write precisely and to the point. Credit will be given for neatness cleanness and the way of presentation. Showcase your Creativity and Logic ; Assume suitable data/assumption wherever necessary**

ii) **Three Questions need to be answered out of 6 questions asked, Each Question carries 10 Marks.**

iii) **Each individual question can have sub-questions, (a) and (b), or (a), (b), (c) etc, Total Marks for one question is 10 Marks.**

1. Define Managerial Economics. Explain its Nature and Scope. [10 M]
2. Define demand and explain the factors affecting law of demand. [10 M]
3. Explain Perfect Competition Market structure with example and graphs [10 M]
4. Write different sources to acquire funds (any 6 sources) [10 M]
5. Short answer questions:

a) Cross Elasticity of Demand [2 M]
b) Fixed Cost & Variable Costs [2 M]
c) Macro Economics [2 M]
d) Time Series Analysis [2 M]
e) Opportunity Cost [2 M]

6. a) What happens to the demand of cool drinks, jacket, and tea in Winter Season? What happens to the demand of movies, gambling in cricket, cold drinks in IPL Season? [6 M]
   b) Write a short note on Alfred Marshall's contribution to Economics. [2 M]
   c) Write 3 superior goods. [2 M]

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2020-2021)

Computer Science and Engineering

Subject Name: Design and Analysis of Algorithms | Subject Code: CS2203

Date: 12/11/2021 | Time: 2hrs

B171326 / CSE | Max Marks: 60

SECTION –A (30 M)

Answer any **THREE** questions.

1. Write an algorithm for convex hull problem using brute force approach.(10 M)
2. Write algorithm to Implement Floyd's algorithm (10 M)
3. Let us consider the given files, f_1, f_2, f_3, f_4 and f_5 with 20, 30, 10, 5 and 30 number of elements respectively. find an optimal solution, where the resultant merge file will be generated in minimum comparisons (10 M)
4. Write an algorithm to implement prims algorithm(10 M)
5. Write an algorithm to implement 0/1 knapsack .(10 M)
6. Write an algorithm to implement multiplication of large integers .(10 M)

SECTION –B (30 M)

Answer all the questions.

1. Consider the matrices P, Q and R which are 10 x 20, 20 x 30 and 30 x 40 matrices respectively. What is the minimum number of multiplications required to multiply the three matrices?
   a. 18000
   b. 12000
   c. 24000
   d. 32000
2. Which of the following methods can be used to solve the matrix chain multiplication problem?
   a. Dynamic programming
   b. Brute force
   c. Recursion
   d. Dynamic Programming, Brute force, Recursion
3. Consider the brute force implementation in which we find all the possible ways of multiplying the given set of n matrices. What is the time complexity of this implementation?
   a. O(n!)
   b. $O(n^3)$
   c. $O(n^2)$
   d. Exponential
4. Which of the following is/are property/properties of a dynamic programming problem?
   a. Optimal substructure
   b. Overlapping subproblems
   c. Greedy approach
   d. Both optimal substructure and overlapping subproblems

5. If an optimal solution can be created for a problem by constructing optimal solutions for its subproblems, the problem possesses _____ property.
   a. Overlapping subproblems
   b. Optimal substructure
   c. Memorization
   d. Greedy
6. If a problem can be broken into subproblems which are reused several times, the problem possesses _____ property.
   a. Overlapping subproblems
   b. Optimal substructure
   c. Memorization
   d. Greedy
7. If a problem can be solved by combining optimal solutions to non-overlapping problems, the strategy is called _____
   a. Dynamic programming
   b. Greedy
   c. Divide and conquer
   d. Recursion
8. In dynamic programming, the technique of storing the previously calculated values is called _____
   a. Saving value property
   b. Storing value property
   c. Memorization
   d. Mapping
9. A greedy algorithm can be used to solve all the dynamic programming problems.
   a. True
   b. False
10. Which of the following problems is NOT solved using dynamic programming?
   a. 0/1 knapsack problem
   b. Matrix chain multiplication problem
   c. Multi stage graph
   d. Fractional knapsack problem
11. Which of the following problems should be solved using dynamic programming?
   a. Merge sort
   b. Binary search
   c. Longest common subsequence
   d. Quicksort
12. Which of the following is the recurrence relation for the matrix chain multiplication problem where mat[i-1] * mat[i] gives the dimension of the ith matrix?
   a. dp[i,j] = 1 if i=j
      dp[i,j] = min{dp[i,k] + dp[k+1,j]}
   b. dp[i,j] = 0 if i=j
      dp[i,j] = min{dp[i,k] + dp[k+1,j]}
   c. dp[i,j] = 1 if i=j
      dp[i,j] = min{dp[i,k] + dp[k+1,j]} + mat[i-1]*mat[k]*mat[j].
   d. dp[i,j] = 0 if i=j
      dp[i,j] = min{dp[i,k] + dp[k+1,j]} + mat[i-1]*mat[k]*mat[j].

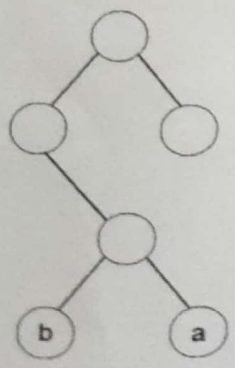
13. Which of the following methods can be used to solve the Knapsack problem?
    a. Brute force algorithm
    b. Recursion
    c. Dynamic programming
    d. Brute force, Recursion and Dynamic Programming

14. You are given a knapsack that can carry a maximum weight of 60. There are 4 items with weights {20, 30, 40, 70} and values {70, 80, 90, 200}. What is the maximum value of the items you can carry using the knapsack?
    a. 160
    b. 200
    c. 170
    d. 90

15. Which of the following problems is equivalent to the 0-1 Knapsack problem?
    a. You are given a bag that can carry a maximum weight of W. You are given N items which have a weight of {w1, w2, w3,...., wn} and a value of {v1, v2, v3,...., vn}. You can break the items into smaller pieces. Choose the items in such a way that you get the maximum value
    b. You are studying for an exam and you have to study N questions. The questions take {t1, t2, t3,...., tn} time(in hours) and carry {m1, m2, m3,...., mn} marks. You can study for a maximum of T hours. You can either study a question or leave it. Choose the questions in such a way that your score is maximized
    c. You are given infinite coins of denominations {v1, v2, v3,....., vn} and a sum S. You have to find the minimum number of coins required to get the sum S
    d. You are given a suitcase that can carry a maximum weight of 15kg. You are given 4 items which have a weight of {10, 20, 15,40} and a value of {1, 2, 3,4}. You can break the items into smaller pieces. Choose the items in such a way that you get the maximum value

16. What is the time complexity of the brute force algorithm used to solve the Knapsack problem?
    a. O(n)
    b. O(n!)
    c. $O(2^n)$
    d. $O(n^3)$

17. From the following given tree, what is the code word for the character 'a'?



    a. 011
    b. 010
    c. 100
    d. 101

18. In Huffman coding, data in a tree always occur?

a. Roots
b. Leaves
c. left sub trees
d. right sub trees

19. How many bits are needed for standard encoding if the size of the character set is X?

a. log X
b. X+1
c. 2X
d. X^2

20. Identify the correct problem for multistage graph from the list given below.

a. Resource allocation problem
b. Travelling sales person problem
c. Producer consumer problem
d. Coin change problem

21. Find the odd out

a. Prims algorithm
b. Kruskuls algorithm
c. Floyd,s algorithm
d. Dijkstra algorithm

22. **The minimum number of edges required to create a cyclic graph of N vertices is**

a. **N**
b. **N+1**
c. **N-1**
d. **2N**

23. What are the conditions for optimal binary search tree

a. The tree should not be modified and you should know how often the keys are accessed, it improves the lookup cost
b. You should know the frequency of access of the keys, improves the lookup time
c. The tree can be modified and you should know the number of elements in the tree before hand, it improves the deletion time
d. None of the mentioned

24. Which sorting is slowest sort

a. Bubble sort
b. Merge sort
c. Quick sort
d. Heap sort

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2020-21)

Computer Science and Engineering

Subject: **Data Analytics** Subject Code: **CS2204**
Date: **15-11-2021** Time: **120 Mins**
Exam: **E2S2EST** Max Marks: **60**

SECTION - A

Answer all Questions. Each multiple choice question carries ONE (1) mark. No negative marking.

1. The measure of central location for the data can be obtained by which of the following?
   A. standard deviation
   B. mean
   C. variance
   D. range
2. μ is an example of which of the following?
   A. population parameter
   B. sample statistic
   C. population variance
   D. mode
3. The median of a sample is equal to which of the following?
   A. mode
   B. mean
   C. 50th percentile
   D. all of the above
4. The weight of football players is normally distributed with a mean of 200 pounds and a standard deviation of 25 pounds. The probability of a player weighing more than 241.25 pounds is
   A. 0.4505
   B. 0.0495
   C. 0.9505
   D. 0.9010
5. Stratified random sampling is a method of selecting a sample in which:
   A. the sample is first divided into strata, and then random samples are taken from each stratum
   B. various strata are selected from the sample
   C. the population is first divided into strata, and then random samples are drawn from each stratum
   D. None of these alternatives is correct.
6. A question paper contains 90 multiple choice questions. There are 4 alternative ANSWER (A, B, C or D) out of which only one is correct. Mr X ANSWER these questions randomly (i.e. without preparation). What is the probability that X gets a score of at least 10 marks?
   A. 0.9997
   B. 0.7894
   C. 0
   D. 0.001
7. In a box plot, an observation beyond Q3 + 1.5 IQR is
   A. A potential outlier
   B. Maximum value
   C. Mode
   D. Median
8. An e-retailer (e-commerce retailer) is interested in predicting the number of returns that the e-retailer is likely to receive on any given day. Which of the following distribution is more appropriate for modeling this problem?
   A. Binomial Distribution
   B. Normal Distribution
   C. Poisson Distribution
   D. Geometric Distribution

9. Which statement is not true about the 95% confidence level?
   A. Confidence intervals computed by using the same procedure will include the true population value for 95% of all possible random samples taken from the population.
   B. The procedure that is used to determine the confidence interval will provide an interval that includes the population parameter with probability of 0.95.
   C. The probability that the true value of the population parameter falls between the bounds of an already computed confidence interval is roughly 95%.
   D. If we consider all possible randomly selected samples of the same size from a population, the 95% is the percentage of those samples for which the confidence interval includes the population parameter.
10. The parameter that determines the shape of the chi-square distribution is known as
   A. the mean.
   B. the standard deviation.
   C. degrees of freedom.
   D. the variance
11. A golfer practices 60 twenty-foot putts a day and historically makes 20 percent of them. Calculate the standard error of the sample proportion.
   A. 0.256
   B. 0.625
   C. 0.052
   D. 0.505
12. A sample size of 200 light bulbs was tested and found that 11 were defective. What is the 95% confidence interval around this sample proportion?
   A. 0.055 plus or minus 0.032
   B. 0.055 plus or minus 0.009
   C. 0.055 plus or minus 0.044
   D. 0.055 plus or minus 0.018
13. A random sample of 1000 people was taken. Four hundred fifty of the people in the sample favored Candidate A. The 95% confidence interval for the true proportion of people who favors Candidate A is
   A. 0.40 to 0.50
   B. 0.45 to 0.55
   C. 1.645 to 1.96
   D. 0.419 to 0.481
14. In order to estimate the average time spent on the computer terminals per student at a local university, data were collected for a sample of 81 business students over a one-week period. Assume the population standard deviation is 1.8 hours. With a 0.95 probability, the margin of error is approximately
   A. 0.39
   B. 1.96
   C. 0.20
   D. 1.64
15. Null hypothesis, H_0: Mu1- Mu2 = 0 is a:
   A. Upper tail test
   B. Lower tail test
   C. Two tail test
   D. F Test
16. If we have a sample size of 15 and population standard deviation is known we will use:
   A. t- test for hypothesis testing
   B. z-test for hypothesis testing
   C. both t and z test
   D. F-test
17. In the hypothesis testing procedure, Alpha is
   A. 1 - the level of significance
   B. The critical value
   C. The confidence level
   D. level of significance
18. If a hypothesis test leads to the rejection of the null hypothesis,
   A. a Type II error must have been committed
   B. a Type II error may have been committed
   C. a Type I error must have been committed
   D. a Type I error may have been committed

19. ANOVA was used to test the outcomes of three drug treatments. Each drug was given to 20 individuals. The MSE for this analysis was 16. What is the standard deviation for all 60 individuals sampled for this study?
    A. 6.928
    B. 48
    C. 16
    D. 4
20. Which of the following statistical concepts is used to test differences in the means for more than two independent populations?
    A. Regression analysis
    B. Confidence interval
    C. Analysis of variance
    D. Multiple t test
21. In a one-way ANOVA, how many degrees of freedom exist for the F test?
    A. (n – 1) and (c – n)
    B. (n – c) and (c – 1)
    C. (c – n) and (n – 1)
    D. (c – 1) and (n – c)
22. In regression, the equation that describes how the response variable (y) is related to the explanatory variable (x) is:
    A. the correlation model
    B. the regression model
    C. used to compute the correlation coefficient
    D. None of the above
23. A variety of summary statistics were collected for a small sample (10) of bi-variate data, where the dependent variable was y and an independent variable was x.
    $\Sigma x = 90$, $\Sigma(y- \bar{y})(x - \bar{x}) = 466$, $\Sigma y = 170$, $\Sigma(x - \bar{x})^2 = 234$, $\Sigma(y- \bar{y}) = 1434$, $n=10$.
    The sum of squares due to regression (SSR) is
    A. 1434
    B. 505.98
    C. 50.598
    D. 928.02
24. Which of the following metrics is equal to **True Positive / (True positive + False Positive), True Positive / (True positive + False Negative)**
    A. Precision, Recall
    B. Recall, Precision
    C. Accuracy, Precision
    D. None of the above
25. The following are different implementations of Logistic regression in Scikit-learn (Sklearn) in Python:
    A. LogisticRegression (sklearn.linear_model)
    B. LogisticRegressionCV (sklearn.linear_model)
    C. Both
    D. None of the above
26. The simple linear regression equation can be written as $y^{\wedge} = b_0+b_1x$. In the simple linear regression equation, the term $\mathbf{b_0}$, $\mathbf{b_1}$, x represents respectively
    A. estimated or predicted response, estimated slope, estimated intercept
    B. estimated intercept, estimated slope, explanatory variable
    C. estimated slope, explanatory variable, estimated intercept
    D. None of the above mentioned
27. What will be printed?

```
import numpy as np
a = np.array([1,2,3,5,8])
b = np.array([0,3,4,2,1])
c = a + b
c = c*a
print (c[2])
```

OUTP

28. What will be output for the following code?

```
import numpy as np
a = np.array([[1,2,3],[0,1,4]])
b = np.zeros((2,3), dtype=np.int16)
c = np.ones((2,3), dtype=np.int16)
d = a + b + c
print (d[1,2] )
```

OUTPUT:

_____

29. What will be the output for the following code?

```
import pandas as pd
S1=pd.Series([1,2,3,4])
S2=pd.Series([7,8])
S3=S1+S2
print(S3.size)
```

OUTPUT:

_____

30. Which of the following statement will return 10 values from the bottom/end of the Series 'S1'?

ANSWER:

_____

SECTION - B

Answer any three questions from given six questions. Each Question carries 10 Marks.

1.

a. The daily footfall at a retail store in Hyderabad over the last 30 days is shown below. **(6 M)**

232	277	261	173	283	197	251	212	213	213
229	164	219	196	186	247	244	269	269	272
252	314	161	165	221	260	219	290	225	251

i. Calculate the values of first quartile, Second and third quartiles. Are there any outliers in the data?
ii. Calculate the mean, median and standard deviation.
iii. Calculate the 90^{th} and 95^{th} percentile
iv. Calculate the inter quartile range(IQR)
v. Create a histogram for the data

b. Define following terms: **(4 M)**

i. Random Experiment
ii. Conditional probability
iii. Random variables and its types (discrete and continuous random variables)
iv. Z-score

2.

a. A rowing team consists of four rowers who weigh 152, 156, 160, and 164 pounds. Find all possible random samples with $\bar{X}$ placement of size two and compute the sample mean for each one. Use them to find the probability distribution, the mean, and the standard deviation of the sample mean **(6 M)**

b. Define the following terms: **(4 M)**

i. Confidence level, Confidence interval.
ii. How can you calculate Confidence Interval?
iii. What is margin Error? Why we are using margin Errror?
iv. What is population and sampling? What is sampling distribution?

3.

a. Assuming x is normally distributed; use the following information to compute a 90% confidence interval to estimate.
313 320 319 340 325 310 321 329 317 311 307 318. **(6 M)**

b. What is t-distribution? When we are using t-distribution? What is the use of using degree of freedom? **(4 M)**

4.

a. A passport office claims that the passport applications are processed within 30 days of submitting the application form and all necessary documents. Below table showing the processing time of 40 passport applicants. The population standard deviation of the processing time is 12.5 days. Conduct a hypothesis test at significant level ($\alpha = 0.05$) to verify the claim made by the passport office. (Use **Z=1.645**) **(6 M)**

Passport Processing Time

16	16	30	37	25	22	19	35	27	32
34	28	24	35	24	21	32	29	24	35
28	29	18	31	28	33	32	24	25	22
21	27	41	23	23	16	24	38	26	28

b. Define the following terms:

i. Define Hypothesis Testing. What is the importance of Hypothesis Testing? **(4 M)**
ii. How is the statistical significance of an insight assessed? What is an alternative hypothesis and null hypothesis?
iii. What is a Type 1 and Type 2 error in statistics?
iv. Define one tailed and two tailed test.

5.

a. **Develop a one-way ANOVA on the following data.** **(6 M)**

1	2	3	4
112	120	132	122
121	127	130	118
117	125	129	125
110	129	135	125

Determine the observed F value. Compare it to the critical F value and decide whether to reject the null hypothesis. Use a 1% level of significance.

b. What is confusion Matrix? What is use of using confusion matrix? What is recall, precision and F-measure? Explain clearly. **(4 M)**

6. Write any five methods from **Numpy** and **Pandas** with examples. **(10 M)**

t-Table

df/p	0.40	0.25	0.10	0.05	0.025	0.01	0.005	0.0005
1	0.324920	1.000000	3.077684	6.313752	12.70620	31.82052	63.65674	636.6192
2	0.288675	0.816497	1.885618	2.919986	4.30265	6.96456	9.92484	31.5991
3	0.276671	0.764892	1.637744	2.353363	3.18245	4.54070	5.84091	12.9240
4	0270722	0.740697	1.533206	2.131847	2.77645	3.74695	4.60409	8.6103
5	0.267181	0.726687	1.475884	2.015048	2.57058	3.36493	4.03214	6.8688
6	0.264835	0.717558	1.439756	1.943180	2.44691	3.14267	3.70743	5.9588
7	0.263167	0.711142	1.414924	1.894579	2.36462	2.99795	3.49948	5.4079
8	0.261921	0.706387	1.396815	1.859548	2.30600	2.89646	3.35539	5.0413
9	0.260955	0.702722	1.383029	1.833113	2.26216	2.82144	3.24984	4.7809
10	0260185	0.699812	1.372184	1.812461	2.22814	2.76377	3.16927	4.5869
11	0259556	0.697445	1.363430	1.795885	2.20099	2.71808	3.10581	4.4370
12	0259033	0.695483	1.356217	1.782288	2.17881	2.68100	3.05454	43178
13	0.258591	0.693829	1.350171	1.770933	2.16037	2.65031	3.01228	4.2208
14	0.258213	0.692417	1.345030	1.761310	2.14479	2.62449	2.97684	4.1405

F-Score Table

$F_{.10,\nu_1,\nu_2}$

ν_2 \ Degrees of Freedom for the Numerator (ν_1)	1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞
1	39.86	49.50	53.59	55.83	57.24	58.20	58.91	59.44	59.86	60.19	60.71	61.22	61.74	62.00	62.26	62.53	62.79	63.06	63.33
2	8.53	9.00	9.16	9.24	9.29	9.33	9.35	9.37	9.38	9.39	9.41	9.42	9.44	9.45	9.46	9.47	9.47	9.48	9.49
3	5.54	5.46	5.39	5.34	5.31	5.28	5.27	5.25	5.24	5.23	5.22	5.20	5.18	5.18	5.17	5.16	5.15	5.14	5.13
4	4.54	4.32	4.19	4.11	4.05	4.01	3.98	3.95	3.94	3.92	3.90	3.87	3.84	3.83	3.82	3.80	3.79	3.78	2.76
5	4.06	3.78	3.62	3.52	3.45	3.40	3.37	3.34	3.32	3.30	3.27	3.24	3.21	3.19	3.17	3.16	3.14	3.12	3.10
6	3.78	3.46	3.29	3.18	3.11	3.05	3.01	2.98	2.96	2.94	2.90	2.87	2.84	2.82	2.80	2.78	2.76	2.74	2.72
7	3.59	3.26	3.07	2.96	2.88	2.83	2.78	2.75	2.72	2.70	2.67	2.63	2.59	2.58	2.56	2.54	2.51	2.49	2.47
8	3.46	3.11	2.92	2.81	2.73	2.67	2.62	2.59	2.56	2.54	2.50	2.46	2.42	2.40	2.38	2.36	2.34	2.32	2.29
9	3.36	3.01	2.81	2.69	2.61	2.55	2.51	2.47	2.44	2.42	2.38	2.34	2.30	2.28	2.25	2.23	2.21	2.18	2.16
10	3.29	2.92	2.73	2.61	2.52	2.46	2.41	2.38	2.35	2.32	2.28	2.24	2.20	2.18	2.16	2.13	2.11	2.08	2.06
11	3.23	2.86	2.66	2.54	2.45	2.39	2.34	2.30	2.27	2.25	2.21	2.17	2.12	2.10	2.08	2.05	2.03	2.00	1.97
12	3.18	2.81	2.61	2.48	2.39	2.33	2.28	2.24	2.21	2.19	2.15	2.10	2.06	2.04	2.01	1.99	1.96	1.93	1.90
13	3.14	2.76	2.56	2.43	2.35	2.28	2.23	2.20	2.16	2.14	2.10	2.05	2.01	1.98	1.96	1.93	1.90	1.88	1.85
14	3.10	2.73	2.52	2.39	2.31	2.24	2.19	2.15	2.12	2.10	2.05	2.01	1.96	1.94	1.91	1.89	1.86	1.83	1.80
15	3.07	2.70	2.49	2.36	2.27	2.21	2.16	2.12	2.09	2.06	2.02	1.97	1.92	1.90	1.87	1.85	1.82	1.79	1.76
16	3.05	2.67	2.46	2.33	2.24	2.18	2.13	2.09	2.06	2.03	1.99	1.94	1.89	1.87	1.84	1.81	1.78	1.75	1.72
17	3.03	2.64	2.44	2.31	2.22	2.15	2.10	2.06	2.03	2.00	1.96	1.91	1.86	1.84	1.81	1.78	1.75	1.72	1.69
18	3.01	2.62	2.42	2.29	2.20	2.13	2.08	2.04	2.00	1.98	1.93	1.89	1.84	1.81	1.78	1.75	1.72	1.69	1.66
19	2.99	2.61	2.40	2.27	2.18	2.11	2.06	2.02	1.98	1.96	1.91	1.86	1.81	1.79	1.76	1.73	1.70	1.67	1.63
20	2.97	2.59	2.38	2.25	2.16	2.09	2.04	2.00	1.96	1.94	1.89	1.84	1.79	1.77	1.74	1.71	1.68	1.64	1.61
21	2.96	2.57	2.36	2.23	2.14	2.08	2.02	1.98	1.95	1.92	1.87	1.83	1.78	1.75	1.72	1.69	1.66	1.62	1.59
22	2.95	2.56	2.35	2.22	2.13	2.06	2.01	1.97	1.93	1.90	1.86	1.81	1.76	1.73	1.70	1.67	1.64	1.60	1.57

ν_2 = Degrees of Freedom for the Denominator

***** ALL THE BEST *****

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2021-2022)

Department of Management

B181500

Subject Name: ME
Date: 24/09/2022
Exam: E2MT2/CSE

Code: BM2201
Time: 1 hrs
Max Marks: 30

Section-A(20 M)
Objective Part

i) **All 10 bits are compulsory, there is NO Choice in Section-A.**
ii) **Each question carries two marks. (20 Marks)**

1. **Tea and coffee are _____goods.**
   A. Substitute
   B. Normal
   C. complimentary
   D. Inferior

2. **A firm that is the sole seller of a product without close substitutes is**
   A. Perfectly competitive
   B. Monopolistically competitive
   C. Monopoly
   D. An oligopoly

3. **Law of variable proportions" is also known as**
   A. Law of Diminishing Returns
   B. Law of Increasing Returns
   C. Law of Constant Returns
   D. None of the above.

4. **"Return to scale" means**
   A. Change in output when only some factors of production are increased
   B. Change in output when only variable factors of production are increased
   C. Change in output when all factors of production are increased simultaneously
   D. Change in output when only fixed factors of production are increased.

5. **In "Imperfect competition" products are**
   A. Differentiated
   B. Heterogeneous
   C. Homogeneous
   D. None of the above.

6. **Price discrimination refers to**
   A. Selling the same commodity at same prices to buyers
   B. Selling the same commodity at different prices to buyers
   C. Selling the different commodity at same prices to buyers
   D. None of the above.

B16 Copy

1. a
2. b
3. a
4. a
5. a
6. b
7. c
8. d
9. a
10. b
11. d
12. a
13 T
14 T
15. F

17

1 C
2. D
3. C
4. C
5. b
6. b
7. b
8. C
9. C
10 b
11 C
12 C
13 C
14 C
15 C

7. **If all resources used in the production of a product are increased by 20 percent and output increase by 20 percent, then there must be:**
   A. Economies of scale
   B. Diseconomies of scale
   C. Constant returns to scale.
   D. Increasing average total costs.

8. **Which is not a fixed cost?**
   A. Monthly rent of Rs.1,000 contractually specified in a one year lease
   B. An insurance premium of Rs.50 per year, paid last month
   C. An attorney's retainer of Rs.50,000 per year
   D. A worker's wage of Rs.15 per hour

9. **Iso-quant measures the .....**
   A. Marginal Rate of Technical Substitution between labour and capital
   B. Marginal Rate of Substitution between two goods
   C. Marginal utility of money
   D. Marginal Efficiency of capital

10. **Two Iso –quants ____ intersect each other**
   A. Can
   B. Always
   C. Do not
   D. May.

SECTION –B (10M)
Descriptive Part:

i) Two Questions need to be answered out of four questions asked, Each Question carries 5 Marks.

1. Define Demand? Explain the types of Demand in detail?
2. Explain Production Function with one variable with diagram?
3. Write the cost concepts any five with examples?
4. Bring out the difference between Perfect Competition and Monopoly Market Competition?

----------THE END----------

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2021-2022)

BB2276

Subject Name: Managerial Economics Department of Management
Date: 26/07/2022 Subject Code : BM0001 /BM2201
Exam: E2 Sem2 MT1 Time: 60 Min
BRANCH: CSE Max Marks: 30

Note – Answer of each question should not be more than 2 pages. Write precisely and to the point. Assume suitable data/ assumption wherever necessary
QUALITY of answer is more important than quantity.

Part I
(Objective Type)

Answer all the questions. Each question carries equal marks. (10×2=20 Marks)

1. The term "Oikino Mikos" means _____.
A) Household activities B) Class room activities C) Military activities D) None of these
2. Who authored the book Artha Shastra ?
B) Chandra Gupta B) Kautilya C) Ashoka D) None of these
3. Which of the following comes under the scope of managerial economics?
D) A) Cost analysis B) Demand analysis C) Profit management D) All of these
4. Micro economics deals with _____.
A) Profit maximization by a producer B) Utility maximization by a consumer
C) C) Both A and B D) None of these
5. Who is considered as the father of economics?
C) A) Alfred Marshal B) Lionel Robbins C) Adam Smith D) None of these
6. Wealth definition of economics is given by _____.
B) A) Pigou B) Adam Smith C) Robbins D) None of these
7. Welfare definition of economics is given by _____.
A) A) Marshall B) Adam Smith C) Peterson D) None of these
8. Scarcity definition of economics is given by _____.
C) A) Edwin Cannan B) Adam Smith C) Robbins D) None of these
9. Resource allocation by an individual firm is the characteristic of _____.
B) A) Macro economics B) Micro economics C) Both A and B D) None of these
10. No Profit No Loss Point in economics is _____.
C) A) Ideal Point B) Economic Point C) Break Even Point
D) None of these

Part II
(Descriptive Type)

Answer any TWO of the following questions. Each question carries equal marks. (2×5=10 Marks)

1. What is managerial economics? Explain the nature of managerial economics.
2. What is the scope of managerial economics?
3. What is scarcity definition of economics? Explain its impact on business decisions.
4. Briefly explain Opportunity Cost and Break Even Point concept in Economics.

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2021-2022)

Computer Science and Engineering Department

Subject Name: COA Lab
Date: 29/09/2022
Exam: E2_CSE_Sem2_Lab_Exam

Subject code: CS2801
Time: 3hour
Max Marks: 60

Section-I

Answer all the following questions, each question carries 2 mark (10*2=20 Marks)

1. segment register size is _____
a) 8 bits b) 16 bits c) 20 bits d) 32 bits

2. The method which offers higher speeds of I/O transfers is _____
A. Interrupts
B. Memory mapping
C. Program-controlled I/O
D. DMA

3. In memory-mapped I/O _____
A. The I/O devices have a separate address space
B. The I/O devices and the memory share the same address space
C. A part of the memory is specifically set aside for the I/O operation
D. The memory and I/O devices have an associated address space

4. The hardware interrupts which can be delayed when a much high priority interrupt has occurred at the same time are known as _____.
A. Non Maskable Interrupt
B. Maskable Interrupt
C. Normal Interrupt
D. None of the above

5. The contains an offset instead of actual address
A. SP B. IP C. ES D. SS

6. Which of the following is not an arithmetic instruction?
A. INC (increment)
B. CMP (compare)
C. DEC (decrement)
D. ROL (rotate left)

7. How many types of modes of I/O Data transfer?
a. 2 b. 3 c. 4 d. 5

8. The I/O devices are connected to the CPU via _____.
A. SDRAM's
B. Control circuits
C. Signals
D. BUS

9. The _____ is a hardware implementation to reduce the access time for processor operations.

A. RAM
B. ROM
C. Cache
D. All of the above

10. Which of the following is correct example for Auxiliary Memory?

A. Magnetic disks
B. Tapes
C. Flash memory.
D. Both A and B

Section – II

Answer any two Questions, each question carries 20 marks **(2*20=40 Marks)**

1. a) Write an assembly program to find the square root of given number and read input from keyboard.
   b) Write an assembly program to find the second minimum element in an array.
2. Write an assembly program to find the palindrome numbers in an array.
3. Write an assembly program to check whether the string is a palindrome or not.
4. a) Write an assembly program to search a given element in an array.
   b) Write an assembly program to find sum of digit of a given number.

Set-2

Write any of two

1.optimal binary search tree

2.pattern matching in a given text using bruteforce approach?

3.implement quicksort for the array of integers?

4. Given a set of weights, form a Huffman tree from the weight and also find out the code corresponding to each weight?

viva

1.what is linear search?

2.What is dynamic programming?

3.what is the knapsack problem?

4.list the advantages of greedy algoritham?