UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2017 – 1st Year Examination – Semester 1

IT1205 – Computer Systems I

Multiple Choice Question Paper

27th May, 2017

(TWO HOURS)

Important Instructions :

- The duration of the paper is **2 (two) hours**.
- The medium of instruction and questions is English.
- The paper has **50 questions** and **11 pages**.
- All questions are of the MCQ (Multiple Choice Questions) type.
- All questions should be answered.
- Each question will have 5 (five) choices with **one or more** correct answers.
- All questions will carry equal marks.
- There will be a penalty for incorrect responses to discourage guessing.
- The mark given for a question will vary from 0 (*All the incorrect choices are marked & no correct choices are marked*) to +1 (*All the correct choices are marked & no incorrect choices are marked*).
- Answers should be marked on the special answer sheet provided.
- Note that questions appear on both sides of the paper.
  If a page is not printed, please inform the supervisor immediately.
- Calculators are **not** allowed.
- Mark the correct choices on the question paper first and then transfer them to the given answer sheet which will be machine marked. **Please completely read and follow the instructions given on the other side of the answer sheet before you shade your correct choices.**

1) ASCII and EBCDIC are the popular character coding systems. What does EBCDIC stand for?

(a) Extended Binary Coded Decimal Interchange Code
(b) Extended Bit Coded Decimal Information Code
(c) Extended Bit Code Decimal Interchange Code
(d) Extended Bit Case Decimal Interchange Code
(e) Extended Binary Case Decimal Interchange Code

2) Which of the following computer implemented binary numbers perform calculations using electronics and implemented separate computation and memory for the first time?

(a) Mark I	(b) ABC	(c) ENIAC
(d) Z3	(e) Difference Engine	

3) Who developed a mechanical device in the 17th century that could add, subtract, multiple, divide and find square roots?

(a) Babbage	(b) Napier	(c) Leibniz
(d) Pascal	(e) Mauchly	

4) The first microprocessor built by the Intel corporation was called

(a) 8008	(b) 8080	(c) 8086
(d) 8080	(e) 4004	

5) The processing speed of first generation computers was

(a) milliseconds	(b) microseconds	(c) nanoseconds
(d) picoseconds	(e) attoseconds	

6) What is the decimal value of the hexadecimal number 777?

(a) 19	(b) 191	(c) 1911
(d) 1991	(e) 19111	

7) Convert the decimal number 151.75 to binary.

(a) 10000111.11	(b) 11010011.11
(c) 00111100.11	(d) 10010111.11
(e) 10011101.11	

8) When using the repeated division by 2 method of converting from decimal to binary, one must write the first remainder as the

(a) Most Significant Bit (MSB)
(b) MSB, provided the following sequence of remainders are written in descending order until the final remainder is achieved.
(c) Least Significant Bit (LSB)
(d) LSB, provided the final remainder is used to replace the original LSB, which is then moved to the MSB position.
(e) Sign Bit, provided the following sequence of remainders are written in descending order until the final remainder is achieved.

9) Which of the following is the correct decimal number of the 32-bit IEEE floating point representation 0 10000110 00011101010000000000000?

(a) +142.625	(b) +87.625	(c) +197.5
(d) +119.875	(e) +43.75	

10) Which of the following is the correct decimal number of the 16-bit floating point representation 010101 0101011010 with a sign bit, 5-bit exponent and 10-bit mantissa?

(a) +87.625	(b) +85.625	(c) +89.625
(d) +43.625	(e) +47.625	

11) What is the loss of accuracy (round-off-error) when converting the decimal value +1000576.96875 to 32-bit IEEE floating point representation?

(a) 0.5	(b) 0.25	(c) 0.125
(d) 0.0625	(e) 0.03125	

12) Which of the following logical operator(s) is/are used in relation to negating numbers in Two's Complement binary numbers?

(a) NOT	(b) AND	(c) OR
(d) XOR	(e) NAND	

13) Consider the following Boolean function

$$F(x, y) = (\overline{x} + \overline{y} + x + y).(\overline{x.y})$$

Which of the following Boolean functions provide(s) a simplified form of F?

(a) $\overline{x}$	(b) $\overline{y}$	(c) x
(d) y	(e) $\overline{x}.\overline{y}$	

14) Consider the following Boolean function

$$F(x, y) = (\overline{x}.\overline{y}).(x + y)$$

Which of the following Boolean function provide(s) a simplified form of F?

(a) $\overline{x}$	(b) $\overline{y}$	(c) 0
(d) y	(e) $\overline{x}.\overline{y}$	

15) Consider the following Boolean function

$$F(A, B, C) = (A.B) + (A.C) + (B.C)$$

How many NAND gates are required for the above Boolean function, if it is to be implemented only using NAND gates?

(a) 3	(b) 4	(c) 5
(d) 6	(e) 7	

16) Output of the Boolean function $F(a,b,c) = (a+b).(b+c).(a+c)$ is 1 when

(a) a=1, b=1, c=0	(b) a=1, b=0, c=1	(c) a=1, b=1, c=1
(d) a=0, b=0, c=1	(e) a=0, b=1, c=0	

17) Output of the Boolean function $F(a,b,c) = (\overline{a.b}) + (\overline{b.c}) + (\overline{a.c})$ is 1 when

(a) a=1, b=1, c=0	(b) a=1, b=0, c=1	(c) a=1, b=1, c=1
(d) a=0, b=0, c=1	(e) a=0, b=1, c=0	

18) Which of the following gate or sets of gates can be used as functionally complete sets of gates that any Boolean function can be implemented using only the gates in the set?

(a) AND, OR	(b) AND, NOT	(c) OR, NOT
(d) NAND	(e) NOR	

19) Which of the following components is/are not (a) part(s) of the CPU?

(a) Registers	(b) Control Unit	(c) Memory
(d) Arithmetic Logic Unit	(e) System Clock	

Questions 20 and 21 are based on the following:

Suppose, a particular memory with 4GB memory addresses and each location can hold a word of size 32 bits.

20) What should be the size of the memory space?

(a) 2GB	(b) 4GB	(c) 8GB
(d) 16GB	(e) 32GB	

21) What should be the minimum address lines the memory bus of this system requires?

(a) 12	(b) 22	(c) 26
(d) 32	(e) 40	

22) Which of the following will not be triggered within the processor as an interrupt?

(a) Arithmetic errors
(b) Overflow or Underflow
(c) Invalid Instructions
(d) User-defined break points
(e) Input/output requests

23) Which of the following statements is/are true with respect to General Purpose Registers (GPR)?

(a) GPR hold data that can be readily accessed by the CPU
(b) GPR carries out logical and arithmetic operations
(c) GPR act as a Policemen or Traffic Manager
(d) GPR operations are controlled by the Registers
(e) GPR determines which actions to carry out according to the values in a Program Counter (PC) register

24) The two kinds of main memory are:

(a) Primary and Secondary	(b) Random and Sequential	(c) ROM and RAM
(d) Internal and External	(e) Primary and Microprocessor	

25) A storage area used to store data to compensate for the difference in speed at which the different units can handle data is the

(a) Accumulator	(b) CPU Registers	(c) Buffer
(d) Memory	(e) Hard Disk	

26) The ALU of a computer responds to the commands coming from the

(a) Primary Memory	(b) Cache Memory	(c) Control Unit
(d) Secondary Memory	(e) External Memory	

27) To produce high quality graphics (hardcopy) in color, you would want to use a/an:

(a) RGB Monitor	(b) Plotter	(c) Ink-Jet Printer
(d) Laser Printer	(e) Optical Printer	

28) Which of the following is/are not (an) input device(s)?

(a) OCR	(b) Optical Scanners	(c) Voice Recognition Device
(d) Light Pen	(e) COM (Computer Output to Microfilm)	

29) Which of the following statements is/are true with respect to the CPU cycle?

(a) Multiplication takes longer than addition
(b) CPU throughput does not defend on the number of instructions in a program
(c) Floating point operations requires more cycles than integer operations
(d) Accessing memory takes longer than accessing CPU registers
(e) CPU throughput does not defend on the number of CPU cycles per instruction

30) Which of the following is/are true with respect to the CPU time required to run a program?

(a) Time it takes to run the program
(b) No. of instructions in a program
(c) Average cycles per instruction
(d) Does not defend on the amount of work in one CPU cycle
(e) Time it takes to a CPU cycle

31) What type of control pins are needed in a microprocessor to regulate traffic on the bus, in order to prevent two devices from trying to use it at the same time?

(a) Bus Control	(b) Status Register	(c) Data Control
(d) Control Unit	(e) Bus Arbitration	

32) Which of the following statements is/are true with respect to Cache Memory?

(a) Accessing cache memory faster than accessing main memory, but more expensive
(b) Accessing cache memory faster than accessing CPU registers
(c) Cache memory contains data which the CPU is likely to use next
(d) Cache memory allows the computer to behave as though it has more memory than what is physically available
(e) Cache memory is an extension of main memory using the Hard Disk

33) Registers which are partially visible to users and used to hold conditional codes (bits set by the CPU hardware as the result of operations), are known as

(a) Status Register	(b) Flags	(c) Program Counter
(d) Memory Address Registers	(e) General Purpose Registers	

34) Which of the following statements is/are true about the Virtual Memory?

(a) Accessing virtual memory faster than accessing main memory, but less expensive
(b) Accessing virtual memory slower than accessing main memory, but more expensive
(c) Virtual memory need a scheme that allows us to translate virtual addresses into physical addresses
(d) Virtual memory allows the computer to behave as though it has more memory than what is physically available
(e) Virtual memory is an extension of main memory using the Hard Disk

35) The magnetic storage chip used to provide non-volatile direct access storage of data and has no moving parts are known as

(a) Magnetic core memory
(b) Magnetic tape memory
(c) Magnetic disk memory
(d) Magnetic bubble memory
(e) Magnetic drum memory

36) Different components of the motherboard of a PC unit are linked together by sets of parallel electrical conducting lines. What are these lines called?

(a) Conductors	(b) Connectors	(c) Buses
(d) Consecutive lines	(e) Protocols	

37) What is the main difference between a mainframe and a super computer?

(a) A super computer is much larger than a mainframe computers
(b) A super computer is much smaller than mainframe computers
(c) A supercomputer is focused to execute a few programs as fast as possible while mainframe uses its power to execute as many programs concurrently
(d) A supercomputer is focused to execute as many programs as possible while mainframe uses its power to execute few programs as fast as possible.
(e) Performance of a supercomputer is measured in floating-point operations per second (FLOPS) instead of million instruction per second (MIPS)

38) Which of the following statements is/are **false** with respect to a magnetic disk?

(a) It is expensive relative to magnetic tape
(b) Users can easily update records by writing over the old data
(c) It provides only sequential access to stored data
(d) Magnetic storage uses different patterns of magnetisation in a magnetisable material to store data and is a form of non-volatile memory
(e) Magnetic storage media can be classified as either sequential access memory or random access memory, although in some cases the distinction is not perfectly clear

39) Through which device does the main components of the computer communicate with each other?

(a) Keyboard	(b) System Bus	(c) Monitor
(d) Memory	(e) CPU	

40) Which of the following input devices is/are user-programmable?

(a) Smart terminal	(b) Dumb terminal	(c) Intelligent terminal
(d) VDT	(e) Think terminal	

41) Which of the following is/are true about hybrid computer?

(a) Hybrid computers are computers that exhibit features of analog computers and digital computers
(b) Nervous system in animals is a form of hybrid computer
(c) The first desktop hybrid computing system was the Hycomp 250, released in 1963
(d) One of the main technical problems to be overcome in hybrid computers is minimizing digital-computer noise in analog computing elements and grounding systems
(e) Hybrid computers should not be distinguished from hybrid systems

42) Which of the following is/are true about Optical Fiber Cables?

(a) Used to transmission of data over long distances at high data range like 40GB/s
(b) Save space in cabling specially in LAN environment
(c) Immune to electrical interface preventing cross talks
(d) Glass or plastic fiber designed to guide light over its length
(e) Electro-magnetic field carrying the signals in the space between inner and outer conductors

43) Which of the following has the fastest access time?

(a) Semiconductor Memories	(b) Magnetic Tapes	(c) Magnetic Disks
(d) Compact Disks	(e) USB	

44) A computer has very low failure rate, because it uses electronic components. It produces very consistent results. Which of the following highlight this feature of a computer?

(a) Accuracy	(b) Performance	(c) Reliability
(d) Versatility	(e) Automatic	

45) Which of the following statements is/are true when replacing a motherboard?

(a) The motherboard has to be compatible with the speakers connected to the sound card.
(b) The CPU has to be compatible with the motherboard type.
(c) The motherboard has to be compatible with the monitor.
(d) The power supply has to be of the same form factor as the motherboard.
(e) The motherboard has to be compatible with the hard disk type.

46) Which of the following best describes a dedicated computer?

(a) Which is used by one person only
(b) Which uses one kind of system software
(c) Which uses one kind of application software
(d) Which is assigned one and only one task
(e) Which is assigned to person for one and only one task

47) FORTRAN programming language is more suitable for

(a) Business Applications	(b) Marketing Applications
(c) Scientific Applications	(d) Forecasting Applications
(e) Statistical Applications	

48) The terminal device that functions as a cash register, computer terminal and OCR reader is the

(a) Data Collection Terminal	(b) OCR Register Terminal	(c) Video Display Terminal
(d) POS Terminal	(e) OMR Terminal	

49) A technique used by codes to convert an analog signal into a digital bit stream is known as a

(a) Pulse Code Switching	(b) Pulse Code Packing	(c) Pulse Code Modularization
(d) Pulse Code Stretcher	(e) Pulse Code Modulation	

50) Computer is free from tiresome and boredom. We call it

(a) Accuracy	(b) Reliability
(c) Diligence	(d) Versatility
(e) Performance	

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