NEW

2016

BCA

1st Semester Examination

COMPUTER FUNDAMENTALS AND APPLICATION SOFTWARE

PAPER—1101

Full Marks : 70

Time : 3 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Group — A

Attempt *Q. No. 1* and any *two* from the rest.

1. (a) What is multiprogramming ? 2

(b) What is VDU ? 1

(c) Write down the truth table to represent the boolean function $(\bar{A}.\bar{B})+(C.\bar{D})$. 4

(d) What is High Level Language ? Give two examples. 1+1

(e) $(0.6875)_{10} = (?)_2$ 2

2. (a) What are the functions of CPU ? 3

(b) Discuss about the input devices and output devices of a computer. 4

(c) Define the term 'byte'. What is the difference between a bit and a byte ? 3

(d) Calculate $(1010)_2 - (1110)_2$ by 2's complement method. 2

3. (a) Write down the definition of r's complement of a number. 2

(b) Evaluate the following : 2+2+1

10's complement of (19.3267) = ?

9's complement of (225.639) = ?

2's complement of (10111) = ?

(c) Draw the logic gates to implement the boolean function :

$\bar{X}\,\bar{Y}\,Z + X\,Y\,Z \oplus X\,\bar{Y}$. 4

(d) Evaluate : $(11101)_2 - (11010)_2$. 1

4. (a) What is an algorithm ? 2

(b) Draw a flowchart to test a number is prime or not. 5

(c) Draw a block diagram to illustrate the basic organisation of a computer system. 5

5. (a) Draw a flowchart to find the factorial of a number. 3

(b) Draw a Flowchart to find the greatest of 3 numbers taken as input from the user. 2

(c) Prove that $\overline{X+Y+Z}=\bar{X}.\bar{Y}.\bar{Z}$ using Truth Table. 2

(d) Explain normalized floating point representation of a signed number. 2

(e) Explain bus architecture. 3

Group — B

Attempt *Q. No. 6* and any *two* from the rest.

6. (a) Explain Memory Hierarchy. 4

(b) Differentiate between RAM and SAM 2

(c) Explain the five essential components required for Data Communication. 5

7. (a) Explain Simplex, Half Duplex and Full Duplex modes of Data Communication. 2+2+2

(b) What is Net Banking? 3

(c) What type of memory does a floppy disk represent? 1

(d) What is WAN? 2

8. (a) A signal has bandwidth of 20Hz. The highest frequency of the component signal is 60 Hz. Find the lowest frequency of the component signal. 2

(b) Differentiate between Mesh Topology and Star Topology. 4

(c) What is a Computer Network? 2

(d) Write the difference between Logical Address and Physical Address. 4

9. Write short note on any *three* : 3×4

(a) DOS ;

(b) E-Commerce ;

(c) UNIX ;

(d) TCP/IP ;

(e) rlogin.

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12. Design a Buffer register and show the following result :

Input = 1010

Output = 1010

13. Design a ripple counter using J-K flip-flop. 30

14. Design a J-K master slave flip-flop and verify its result. 30

15. Design a 4 bit bidirectional shift register. 30

16. Design asynchronous up counter of the following MOD using IC-7476. 30

(i) MOD 10 (ii) MOD 5

17. Design a clocked SR and J-K flip-flop with preset and clear using NAND gates only. 30

18. Design a 4 bit bidirectional shift register. 30

19. Design AND and OR operation using DTL and establish its truth table. 30

20. Construct astable multivibrator using IC 555 timer. Measure its frequency and duty cycle by CRO.