2019

COMPUTER SCIENCE

[General]

PAPER —I

Full Marks : 90

Time : 3 hours

The figures in the right-hand margin indicate marks

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

Illustrate the answers wherever necessary

GROUP — A

Answer any **two** questions :   15 × 2

1. (a) What is High level language ?   2

(b) Write down the difference between primary memory and secondary memory.   4

(c) What is algorithm ? Write an algorithm to find factorial of a no. $2 + 5$

(d) Define the notations of Flowchart.   2

2. (a) Explain X-OR Gate work as a Buffer and Inverter. $2\frac{1}{2} + 2\frac{1}{2}$

(b) Explain SR Flip-Flop with truth table.   5

(c) Explain memory organization.   5

3. (a) What is Toggling ? How avoid it. $2\frac{1}{2} + 2\frac{1}{2}$

(b) Design 1×8 De-Multiplexing with truth table and block diagram.   5

(c) Design Full-Adder with using Half-Adder.   5

4. (a) Write down the difference between Laser printer and dot-matrix printer.   5

(b) Comment the following : $2\frac{1}{2} + 2\frac{1}{2}$

   (i) $(895)_{10} = (?)_2$
   (ii) $(657)_8 = (?)_{10}$

(c) Write down the difference between sequential and combinational circuit.   5

GROUP – B

Answer any **five** questions :   8 × 5

5. (a) Write an algorithm for Insertion sort.   4

   (b) Explain overflow and underflow operation on stack.   2 + 2

6. What is queue ? Write an algorithm for enqueue and dequeue operation.   2 + 3 + 3

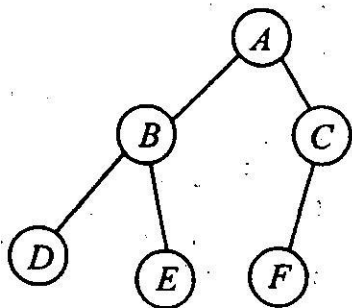7. (a) Write down the difference between structure and array.   4

   (b) Write a 'C' program to find fibonacci series.   4

8. What is switch statement ? Explain with suitable example.   2 + 6

9. Subtract 36 from 87 by using $(r – 1)'s$ complement method.   4 + 4

10. (a)

From the above figure generate the Pre-order, In-order and Post-order traversal. 4

(b) Define strictly binary tree and complete binary tree. 4

11. (a) Comment $(48)_{BCD} = (?)_{Gray}$. 4

(b) What is time and space complexity. 2 + 2

GROUP – C

Answer any **five** questions : 4 × 5

12. What is cache miss and cache hit ? 2 + 2

13. Write a 'C' program to check a no. is prime or not. 4

14. Simplify the following expression.

$$F = AB\overline{C} + \overline{A}BC + \overline{A}\overline{B}C + AB\overline{C} + \overline{A}\overline{B}\overline{C}$$ 4

15. Implimenting NAND gate using universal gate.   4

16. Write an algorithm to search an element using Binary search method.   4

17. Write down the difference between while and do-while loop.   4

18. Write down the following function (any *two*) :

2 + 2

   (*i*) Getchar( );

   (*ii*) Malloc( );

   (*iii*) Getc( ).

19. Write a 'C' program to find highest no. between two no. using call by reference.   4

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