

SEAL

R/C/P/EXAM
2021

150090

TECHNICAL PAPER
(Computer Science / Application)

Time : 3 hours]

[Full Marks : 100

PART—I

(Marks : 20)

- Notes :** (i) Answer **all** questions.
(ii) Each question carries **1** marks.

1. Write a significant difference between combinational circuit and sequential circuit.

2. Consider the following statements :

Statement-I : Running time of heap sort is better than that of insertion sort, in worst case.

Statement-II : An in-order traversal of the Binary Search Tree (BST) will return all of the values in ascending order.

Which of the above statement/s is/are TRUE?

3. If the address bus size of a microprocessor is 16 bits, how many unique addresses can it cater service to?

SEAL

SEAL

4. What is the outcome of the following program segment in C?

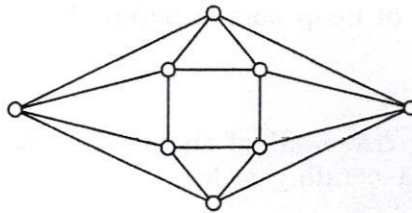
```
int main()  
{  
    int i, j, k;  
    i=2;  
    j=++i;  
    k=i++;  
    printf("%d %d %d", i, j, k);  
}
```

5. Arrange the following time complexities in ascending order.

$O(1)$, $O(n)$, $O(n \log 2n)$, $O(n!)$, $O(2n)$, $O(\log 2n)$, $O(n^2)$

6. In which layer of network architecture, the Secured Socket Layer (SSL) is used?

7. What is the minimum number of colours required to colour the following graph, such that no two adjacent vertices are assigned the same colour?



8. What do you mean by the following C statement?

```
Ptr=(int*) malloc(40 * sizeof(int));
```

9. How is an automatic variable different from static variable in C++?

10. Which of the following statements is/are TRUE?
- (i) A hash function takes a message of arbitrary length and generates a fixed length code.
 - (ii) A hash function takes a message of fixed length and generates a code of variable length.
11. Convert the decimal number $(50)_{10}$ into its binary equivalent.
12. What is semaphore?
13. In software engineering, test cases should uncover which of the following errors?
- (A) Non-existent loop termination
 - (B) Comparison of different data types
 - (C) Incorrect logical operators or precedence
 - (D) All of the above
14. Find the output of the following C procedure for $n=25$:
- ```
Void fun2(int n)
{
 if(n==0)
 return;
 fun2(n/2);
 printf("%d", n%2);
}
```
15. Exclusive-OR (XOR) logic gates can be constructed from what other logic gates?
16. What are the ACID properties in DBMS?