

PGEE 2019

1. Worst case time complexity for insertion in binary tree. A: $O(n)$
2. No. of networks in class C addressing A: 221
3. Data structure used in iterative DFS: A: Stack
4. Algorithm used to find MST. A: Kruskal
5. Number of child processes using fork(), when run n times: A: $2n-1$
6. Number of edges in spanning tree: $n-1$
7. Options: 3, 5, 7, 9 How many pairs of positive integers do m and n satisfy in $\frac{1}{m} + \frac{4}{n} = \frac{1}{12}$, where n is odd and less than 60?
8. Which representation finds if there is edge between two vertices in $O(1)$ time? Ans: Adjacency matrix
9.

```
int cnt = 0; recursive_count(int n){
    if (n==0){return n; cnt++;recursive_count(n/10);}}
```
10.

```
int main(){ recursive_count(123456790); printf("%d", cnt);return 0;}
```
11. Trace of matrix where $A[i][j] = i+j$ A: 6
12. The time complexity to delete an arbitrary node from binary heap. A: $O(n)$
13. Let $m[0]...m[4]$ be mutexes (binary semaphores) and $P[0] P[4]$ be processes. Suppose each process $P[i]$ executes the following:

```
wait (m[i]); wait(m[(i+1) mode 4]);
-----
release (m[i]); release (m[(i+1)mod 4]);
```


This could cause: (A) Thrashing (B) Deadlock (C) Starvation, but not deadlock (D) None of the above
14. <https://gateoverflow.in/2202/gate2010-23>
15. In a token ring network the transmission speed is 107 bps and the propagation speed is 200 metres/micro second. The 1-bit delay in this network is equivalent to:
16. Static variables are stored in: Heap, Stack, and Heap, None
17. <https://www.geeksforgeeks.org/gate-gate-cs-2012-question-8/>
18. Pipelining increases the: Latency, Throughput and two other options A: Improves throughput
19. $(A'B')(A+B) = ?$. A' B' are complements of A and B. A: 0

```
1. for(int i=0; i<=100;i++) {
2. if (i % 3 == 0)
3. printf("Great");
4. if(i%5 == 0)
5. printf("India");}
```

Count the number of times GreatIndia is printed. A. 6, B.¹20, C.33, D.NOT

20. Cycle frequency is 2GHZ. What is clock time? A: 0.5 ns
21. <https://www.geeksforgeeks.org/gate-gate-cs-2010-question-24/>
22. $X(X + YZ) = ?$ A: X
23. One question was there where they initialized the variables to 0 and were calculating product ans to that was 0. A: 0
24. Max height of binary tree with 14 nodes? A: 14 (counting height as starting from one)
25. XOR gate can be formed using which gates ?
26. Binary representation of -77 in 2's compliment
27. Decimal representation of 250.2 which is in base 8
28. Which DS can be used to access initially added elements in $O(1)$ time: stack, queues, linked list or heap ? A: Queue
29. High level to assembly language converter?
30. Finding strongly connected components using DFS. A: Refer to Dasgupta
31. <https://www.geeksforgeeks.org/gate-gate-cs-2006-question-20/>
32. <https://www.geeksforgeeks.org/gate-gate-cs-2007-question-65/>
33. <https://gateoverflow.in/490/gate2008-67>
34. <https://gateoverflow.in/310572/liit-h-2018>
35. Three-four cache questions, which were basic.
36. One question on C++ classes.
37. One C++ program whose gist was, it was rotating the array clockwise in every iteration and we had to print the output after three iterations.
38. <https://gateoverflow.in/43470/gate2009-58>
39. Number of cells in an eight variable K-map A: 256
40. One question on CRC polynomial