Code: CHE230901

Duration: 75 Minutes

ZOHO

General Instructions:

- This question paper comprises 2 sections and a total of 20 questions.
- Section A comprises 10 programming questions for 40 minutes.
- Section B comprises 10 Aptitude questions for 35 minutes.
- There are no compilation errors, ignore missing things like, #include, {, }, etc.
- Incorrect answers will not result in Negative marks.
- Each question carries one mark.

Section A - Programming
10 questions | 40 minutes

Q1. What is the output for the provided input in the program below?

```
Input: s = "abca"

class Solution {
    public boolean zoho(String s) {
        int i = 0;
        int j = s.length() - 1;
        while(i <= j){
            if(s.charAt(i) == s.charAt(j)){
                i++;
                j--;
            }
            else return help(s, i + 1, j) || help(s, i, j - 1);
        }
        return true;
    }
    public boolean help(String s, int i, int j){
        while(i <= j){
            if(s.charAt(i) == s.charAt(j)){
                i++;
                j--;
            }
            else return false;
        }
        return true;
    }
}
```

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Q2. What is the output for the provided input in the program below?

```
Input: nums = [6,5,4,8]

public int[] zoho(int[] nums) {
    int[] temp = new int[101];
    for(int i=0; i<nums.length; i++)
      temp[nums[i]] +=1;
    for(int j=1; j<= 100; j++)
      temp[j] += temp[j-1];
    for(int k=0; k< nums.length; k++) {
      int pos = nums[k];
      nums[k] = pos==0 ? 0 : temp[pos-1];
    }
    return nums;
}
```

Q3. What is the output for the provided input in the program below?

```
Input: arr = [0,3,2,1]

class Solution {
    public boolean zoho(int[] arr) {
      if(arr.length < 3) return false;
      int l = 0;
      int r = arr.length - 1;
      while(l + 1 < arr.length - 1 && arr[l] < arr[l + 1]) l++;
      while(r - 1 > 0 && arr[r] < arr[r - 1]) r--;
      return l == r;
    }
}
```

Q4. What is the output for the provided input in the program below?

```
Input: nums = [1,3,5,6], target = 7

  public int zoho(int[] A, int target) {
    int low = 0, high = A.length-1;
    while(low<=high){
      int mid = (low+high)/2;
```

```
7           if(A[mid] == target) return mid;
8           else if(A[mid] > target) high = mid-1;
9           else low = mid+1;
10        }
11        return low;
12    }
```

Q5. What is the output for the provided input in the program below?

```
1   Input: arr = [1,0,0,0,1], n = 1
2
3   public class Solution {
4       public boolean zoho(int[] arr, int n) {
5           int count = 0;
6           for (int i = 0; i < arr.length; i++) {
7               if (arr[i] == 0) {
8                   boolean l = (i == 0) || (arr[i - 1] == 0);
9                   boolean r = (i == arr.length - 1) || (arr[i + 1] == 0);
10                  if (l && r) {
11                      arr[i] = 1;
12                      count++;
13                  }
14              }
15          }
16          return count >= n;
17      }
18  }
```

Q6. What is the output for the provided input in the program below?

```
1   Input: n = 5
2
3   public int[] zoho(int num) {
4       int[] f = new int[num + 1];
5       for (int i=1; i<=num; i++) f[i] = f[i >> 1] + (i & 1);
6       return f;
7   }
```

Q7. What is the output for the provided input in the program below?

```
1   Input: arr = [3,1,7,11]
2
```

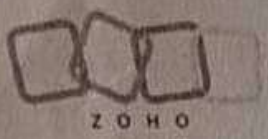
```
3   class Solution {
4     public boolean zoho(int[] arr) {
5       Arrays.sort(arr);
6       for (int i = 0; i < arr.length; i++) {
7         int target = 2 * arr[i];
8         int lo = 0, hi = arr.length - 1;
9         while (lo <= hi) {
10          int mid = lo + (hi - lo) / 2;
11          if (arr[mid] == target && mid != i)
12            return true;
13          if (arr[mid] < target)
14            lo = mid + 1;
15          else
16            hi = mid - 1;
17        }
18      }
19      return false;
20    }
21  }
```

Q8. What is the output for the provided input in the program below?

```
1   Input: nums = [0,2,1,5,3,4]
2
3   public int[] buildArray(int[] nums) {
4     int[] ans = new int[nums.length];
5     for(int i = 0; i < nums.length; i++)
6     ans[i] = nums[nums[i]];
7     return ans;
8   }
```

Q9. What is the output for the provided input in the program below?

```
1   Input: str1 = "aA", str2 = "aAAbbbb"
2
3   class Solution {
4     public int zoho(String str1, String str2) {
5       int num = 0;
6     for (int i = 0 ; i < str2.length(); i ++) {
7     if(str1.indexOf(str2.charAt(i)) != -1)
8     num++;
9     }
10    return num;
11    }
```



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```
12 }
```

Q10. What is the output for the provided input in the program below?

```
Input: nums = [2,2,3,1]

class Solution {
    public int zoho(int[] nums) {
        Pair<Integer, Boolean> a = new Pair<Integer, Boolean>(-1, false);
        Pair<Integer, Boolean> b = new Pair<Integer, Boolean>(-1, false);
        Pair<Integer, Boolean> c = new Pair<Integer, Boolean>(-1, false);
        for (int num : nums) {
            if ((a.getValue() && a.getKey() == num) ||
                (b.getValue() && b.getKey() == num) ||
                (c.getValue() && c.getKey() == num)) {
                continue;
            }
            if (!a.getValue() || a.getKey() <= num) {
                c = b;
                b = a;
                a = new Pair<Integer, Boolean>(num, true);
            }
            else if (!b.getValue() || b.getKey() <= num) {
                c = b;
                b = new Pair<Integer, Boolean>(num, true);
            }
            else if (!c.getValue() || c.getKey() <= num)
                c = new Pair<Integer, Boolean>(num, true);
        }
        if (!c.getValue())
            return a.getKey();
        return c.getKey();
    }
}
```

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Section B - Aptitude
10 questions | 35 minutes

Q1. Two dice are tossed. The probability that the total score is a prime number is:

Q2. The total age of A and B is 12 years more than the total age of B and C. C is how many years younger than A?

Q3. A man completes a journey in 10 hours. He travels the first half of the journey at the rate of 21 km/hr and the second half at the rate of 24 km/hr. Find the total journey in km.

Q4. In how many ways can a committee, consisting of 5 men and 6 women can be formed from 8 men and 10 women?

Q5. Three pipes A, B, and C can fill a tank in 6 hours. After working at it together for 2 hours, C is closed and A and B can fill the remaining part in 7 hours. The number of hours taken by C alone to fill the tank is:

Q6. Two numbers A and B are such that the sum of 5% of A and 4% of B is two-third of the sum of 6% of A and 8% of B. Find the ratio of A: B.

Q7. Mahendra Rajapaksa bought a total of 15 Aircraft, BMW, and Audi for ₹68 million. He bought more BMW than Audi. The cost of each Aircraft was ₹8 million each BMW was ₹3 million and each Audi was ₹4million. How many Aircraft did he buy?

Q8. Two numbers are in the ratio 3: 5. If 9 is subtracted from each, the new numbers are in the ratio 12: 23. The smaller number is:

Q9. The shopkeeper sold article A at a 20% loss and the cost price of article A was ₹4500. With that amount, he bought article B and sold it at a profit of 30%. What is the overall profit or loss in the whole transaction?

Q10. Excluding stoppages, the speed of a bus is 54 kmph, and including stoppages, it is 45 kmph. For how many minutes does the bus stop per hour?