

SECTION – 1

1. Write a query to print the number of employees per department in the organization

```
SELECT count(*),department FROM employee group by department;
```

2. Write an SQL query to find the name of the top-level manager of each department

```
SELECT name,max(MANAGER) FROM employees group by department;
```

3. Write a query to find the total incentive received by a given employee in a given month.

```
SELECT FIRST_NAME,sum(INCENTIVE_AMOUNT) from Employee join  
Incentives on EMPLOYEE_ID = EMPLOYEE_REF_ID group by  
EMPLOYEE_REF_ID,MONTH(INCENTIVE_DATE);
```

4. Write a query to find the month where employees got maximum incentive.

```
SELECT MONTH(INCENTIVE_DATE),Max(Sum(INCENTIVE_AMOUNT)) from  
Employee join Incentives on EMPLOYEE_ID = EMPLOYEE_REF_ID group by  
MONTH(INCENTIVE_DATE);
```

SECTION – 2

5. You have two sand timers, which can show 4 minutes and 7 minutes respectively. Use both the sand timers (at a time or one after other or any other combination) and measure a time of 9 minutes.

Sol: There are many ways to answer this question, one of the methods is

- Start both the timers at a time.
- Flip over 4 m timer twice & so that when 7m timer is over, flip it.
- There is sand remaining in 4m timer for one minute.
- Start 7m timer and when one-minute sand in 4m timer is over mark that point on 7m timer.
- We will get one-minute marking on 7m timer.
- Now start 4m timer and then flip it over so that we get $4 + 4 = 8$ m
- then start 7m timer up to one-minute mark.
- we will get: $4 + 4 + 1 = 9$ minutes.

6. John and Mary are a married couple. They have two kids, one of them is a girl. Assume safely that the probability of each gender is $1/2$. What is the probability that the other kid is also a girl?

Sol:

Since we know that one of the kid is a girl, we can narrow our choices:

1. <Girl, Girl>
2. <Boy, Girl>
3. <Girl, Boy>

Of these three outcomes, we can see that there is only one that satisfies the condition that other kid is also girl:

1. **<Girl, Girl>**
2. <Boy, Girl>
3. <Girl, Boy>

7. The following appeared as part of a campaign to sell advertising time on a local radio station to local businesses.

Ron's Cafe began advertising on our local radio station this year and was delighted to see its business increase by 10 percent over last year's totals. Their success shows you how you can use radio advertising to make your business more profitable.

Discuss how well reasoned you find this argument. In your discussion be sure, to analyse the line of reasoning and the use of evidence in the argument. For example, you may need to consider what questionable assumptions underline the thinking and what alternative explanations or counterexamples might weaken the conclusion. You can also discuss what sort of evidence would strengthen or refute the argument, what changes in the argument would make it more logically sound and what, if anything, would help you better evaluate in conclusion.

Sol:

The author in the argument concludes that as Ron's cafe increased its business by 10 percent over the last year by advertising in the local radio station, so other businesses should follow suit and advertise their businesses on the local radio to make their business more profitable. However, the argument is flawed because it fails to supply sufficient support in favor of the argument. First, we are told that Ron's Cafe increased its business by 10 percent over the last year by advertising on the local radio, but it has not been mentioned that whether the increase in the business was offset by the amount of money spent on advertisement in the radio channel. If the previous scenario holds, then companies actually might not be increasing their profits. Second, even if we consider that the business for Ron's coffee increased after it was advertised on the local radio, we cannot be sure that this will happen for other businesses. It could well be the case that many people who listen to the radio might be coffee consumers, but might not be interested in other products. Therefore, the generalization that the author makes based on a single case might not hold for other scenarios or businesses. Finally, there could be other alternate reasons that could have contributed to the success of the cafe business such as the opening of a new outlet or better management of the cafe resources, or introduction of a new product in the cafe outlet that sold well. Any of these reasons could account for the increase in the business. Therefore, advertising on the local radio might not be the only contributor to the increase in the cafe business.