(i) What is the probability that the person chosen is above 30 years of age provided she is a female?

(ii) What is the probability that the person chosen is a female given that the person chosen is above 30 years of age?

(iii) Also explain the concept of probability used for finding the probability.   (6)

8/S/18 (Evening)

[This question paper contains 6 printed pages.]

Your Roll No...............

Sr. No. of Question Paper : 9432

Unique Paper Code   : 61018220

Name of the Paper   : Building Mathematical Ability

Name of the Course   : **B.Voc. (BFSI) (GEC-2.2)**

Semester   : II

Duration   : 3 Hours

Maximum Marks   : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.

2. Attempt **All** questions.

3. **All** questions carry equal marks.

1. (a) What are prime numbers and composite numbers? How are prime numbers different from co – prime numbers? Explain using an example.   (5)

    (b) In a certain city there are 25 colleges and 100 schools. Each school and college has 5 peons, 2 clerks and 1 cashier. Each college in addition has 1 accountant and

1 head clerk. The monthly salary of each of them is as follows :

Peon – Rs. 625, Clerk – Rs. 740, Cashier – Rs. 760, Accountant – Rs. 1200 and Head Clerk – Rs. 1250.

Using Matrix notation to indicate the above information and then use matrix algebra to find :

(i) Total number of posts of each kind in schools and colleges taken together.

(ii) Total monthly salary bill of each school and college.

(iii) The total monthly salary bill of all the schools and colleges taken together.　　(10)

2. (a) Here is a list of probable questions for statistical investigation. For each one, suggest a data source that you may use for your investigation. Classify the data source chosen by you as primary or secondary data. Justify your choice.

(i) Do you earn more working in a garments shop than in a food shop?

Find out the following from the above data :

(i) Which factory pays a greater magnitude of salary?

(ii) Combined standard deviation and variance of salaries of the two factories.

(iii) Which factory has more consistent salary structure?

5. (a) Consider the following set of statements :

"Dinesh Karthik has scored a century. India will win the match."

Explain whether the two statements in the set depend on each other or not.　　(3)

(b) Give an example in real life of events that have.

(i) zero probability

(ii) half probability

(iii) probability 1

Justify your choice of the example.　　(6)

(c) Out of 5000 people residing in a locality, 1200 are above 30 years of age and 3000 are females. Out of 1200, who are above 30, 200 are females. Suppose that a person is chosen at random.

P.T.O.

(b) State the empirical relationship between mean, median and mode for a moderately skewed distribution. Given the mode = 120 and median = 140, find the value of arithmetic mean. (3)

(c) The arithmetic mean, median and mode of a set of 75 observations were calculated to be 27, 29 and 34 respectively. It was later discovered that one observation was wrongly read as 43 instead of correct value 53. Examine to what extent the values of these 3 averages will be affected by the discovery of this error. (6)

4. (a) If 40 is added to each value of a set of 25 values, the coefficient of variation changes to 40% and if it is subtracted from each value, coefficient of variation rises to 80%. What is the mean and standard deviation of the set of 25 values? (5)

(b) An analysis of monthly salaries paid to employees in 2 factories X and Y belonging to the same industry, provides the following results (10)

	Factory X	Factory Y
Number of employees	100	200
Average Salary (in Rs.)	1600	1750
Variance of Salary	256	289

(ii) How does the size of a country's population relate to its per capita income?

(iii) Is classical music more popular than pop music?

(iv) Do some newspapers use longer words than other newspapers?

(v) Are people's elbows – to – wrist measurements the same as their foot lengths? (5)

(b) Prepare a questionnaire to analyze the TV viewing habits of the people in your locality as an employee of Indian Statistical Institute. A total of 10 questions may be asked in the questionnaire. Only relevant demographic information needs to be obtained. (10)

(a) The mean height of students in a class is 152 cm. The mean height of boys is 158 cm and with a standard deviation of 5 cm and the mean height of girls is 148 cm with a standard deviation of 4 cm. Find the percentage of boys and girls in the class and the standard deviation of all students of the class taken together. (6)