

- (iii) Techniques for visualising data
- (iv) Population, sample and events

[This question paper contains 6 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 2650

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) Explain Euclid's Division Algorithm and use it to find out the H.C.F of 867 and 222. (5)
- (b) Use the RSA Algorithm to encode and decode the word 'FAN'. (5)

(c) There are two shops each selling baked cakes, donuts and bread selling 1200, 2000 and 2500 units respectively in shop 1 and 3000, 1500 and 1800 units respectively in shop 2. If the unit price of them is Rs. 75, Rs. 50 and Rs. 35. Calculate the total revenue earned in each shop using matrices. Also if the cost price of each product is Rs. 55, Rs. 30 and Rs. 10.

Find the total profit earned by each shop. (5)

2. (a) What is the need of data collection? What are the various sources of collecting Primary Data? Explain. (6)

(b) What are the qualities of a good questionnaire? Prepare a questionnaire to analyse the impact of social media on children by the people in your area for the research of XYZ company. (9)

3. (a) The arithmetic mean of the marks obtained by 50 students was calculated as 55. It was later discovered that a score of 36 was misread as 56. Find the correct value of the arithmetic mean of the marks obtained by the students. (3)

question is selected at random from the question bank, what is the probability that

(i) easy question given that it is a multiple choice question

(ii) difficult question given that it is a True/False question

(iii) difficult question given that it is a multiple choice question

(iv) easy question given that it is a True/false question

	True/False	Multiple choice	Total
Easy	300	500	800
Difficult	200	400	600
Total	500	900	1400

(8)

6. Write short notes : (Any 3) (3×5)

(i) Properties of prime numbers

(ii) Kepler's law for planetary orbits from Tycho-Brache astronomical observations

- (b) Find the missing frequencies in the following distribution if  $N=100$  and median is 30.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
Number of Students	10	?	25	30	?	10

(6)

- (c) Calculate mode of the following data

Marks	0-5	5-10	10-20	20-40	40-60	60-80	80-90	90-100
Number of students	5	7	9	25	30	24	8	6

(6)

4. (a) The co-efficient of variation of wages earned by workers of a factory worked out to be 30% while their mean equalled Rs. 5000. Subsequently, each of the workers was paid Rs. 1000 by way of bonus.

How would it affect the mean and co-efficient of variation? (5)

- (b) For the day and evening workers in a factory, the following information is given. You are required to calculate the combined standard deviation of the entire set of workers.

	Day	Evening
Number of workers	40	60
Total Income per week	27400	38400
Standard Deviation	95	90

Also, determine for which group the variability in income is greater. (10)

5. (a) Explain the concept of Independent Events with examples. (3)
- (b) What do you mean by Gambler's Fallacy? Elaborate with examples. (4)
- (c) An instructor has a question bank consisting of 300 easy True/False questions, 200 difficult True/False question, 500 easy multiple choice questions and 400 difficult multiple choice questions. If a