

- (i) What is the probability that the student has failed in mathematics when it is known that he has failed in chemistry?
- (ii) What is the probability that the student has failed either in Mathematics or in Chemistry?

Your Roll No.....

Sr. No. of Question Paper : 7529

Unique Paper Code : 61018220

Name of the Paper : Building Mathematical Ability

Name of the Course : B.Voc. (Banking Operations)
(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) Define Euclid's Division Algorithm. (3)
 - (b) Use the RSA Algorithm to encode the word 'CAGE'. (5)
 - (c) There are two families A and B. In family A, there are 4 men, 6 women and 2 children; and in family B there

are 2 men, 2 women and 4 children. The recommended daily requirement for calories is: men 2400, women 1900, and children 1800; and for protein is: men 55 gm, women 45 gm, children 33gm. Calculate the total requirements of calories and proteins for each of the two families using matrices. (7)

2. (a) What is statistics in plural sense? Explain characteristics of statistics in plural sense. (5)

(b) Differentiate between primary data and secondary data. (5)

(c) What is a questionnaire? Explain in brief qualities of a good questionnaire. (5)

3. (a) The average monthly salary of all employees in a company is Rs. 4440. The average monthly salary of male and female employees is Rs. 4800 and Rs. 3600 respectively. Find out the percentage of males and females employed by the company. (4)

(i) Combined standard deviation of salaries of the two factories.

(ii) Which factory has more consistent salary structure?

5. (a) In context of independent events, explain using an example the phenomena called Gambler's Fallacy. (3)

(b) The probability that a man will be alive in 25 years is $\frac{3}{5}$ and the probability that his wife will be alive in 25 years is $\frac{2}{3}$. Find the probability that (6)

(i) Both will be alive in 25 years.

(ii) Only wife will be alive in 25 years.

(iii) Only man will be alive in 25 years.

(iv) At least one of them will be alive in 25 years.

(c) In an examination 30% of the students have failed in mathematics, 20% of the students have failed in chemistry and 10% have failed in both Mathematics and Chemistry. A student is selected at random. (6)

Weight (In kg)	No. of Students
60-62	5
63-65	18
66-68	42
69-71	27
72-74	8

- (b) An analysis of monthly salaries paid to employees in 2 factories A and B belonging to the same industry, provides the following results (8)

	Factory A	Factory B
Number of employees	100	120
Average Salary (in Rs.)	2500	2800
Standard deviation of Salary	200	250

Find out the following from the above data:

- (b) The mean of the following frequency distribution is 33. But the frequencies f_1 and f_2 in classes 10-20 and 30-40 are missing. Find the missing frequencies (8)

Output (in units)	No. of workers
0-10	5
10-20	f_1
20-30	25
30-40	f_2
40-50	20
50-60	10
Total	100

- (c) Give 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)
4. (a) Calculate standard deviation and variance from the following data: (7)