

b. Classify each of the following variables as nominal, ordinal, discrete or continuous.

(5 mark)

- i. The breaking strength of a given type of string:
- ii. The length of time required to answer telephone call at a certain office:.....
- iii. Number of items purchased:
- iv. Daily temperature:
- v. Number of Students in your class:

c. A survey is to be carried out on makers of organic cheese in England. The aim is to assess their training needs in relation to their knowledge of food health and safety laws. Cheese makers are a very busy group of people who start work early in the morning and often work right through the day. They work in controlled environments, widely scattered throughout England, to which the general public are not normally allowed access and which they cannot leave for long. You have been given the names, addresses and telephone numbers of the people in the sample, together with the questions to be asked. Some questions are closed and some are open. You have a fixed budget and a short timescale.

Outline the advantages and disadvantages of each of the following methods for obtaining the required information in this survey.

i. Direct Interview method

(5 mark)

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ii. Postal questionnaire (Questionnaire filled by responder)

(5 mark)

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3. A lift operating company sells lifts for various organizations. A large organization having two separate multi storey blocks: A and B wants to buy two lifts from the above company. It is known that the block A is used by adults and B only by children. According to the company's previously conducted survey data, frequencies of the weight of users of lifts are as given in the following table 01 below.

Table 01: Frequencies of the weight of users

Class Mark (kg)	Frequency	
	Adults	Children
20.5-30.5	1	5
30.5-40.5	2	6
40.5-50.5	4	66
50.5-60.5	17	16
60.5-70.5	66	4
70.5-80.5	5	3
80.5-90.5	5	0

- a. Calculate the mean, median and mode for each group of the adults and children. (8 mark)
- b. Any lifts has a limitation on the weight it can carry. For safety precautions the numbers of passengers are displayed, meeting the load requirement. Which location parameter is suitable in determining the number of passengers to be allowed to travel? (3 mark)
- c. If it is required to carry a maximum number of ten passengers in each block what load requirement should be asked for each lift from the company. (3 mark)
- d. What is the maximum possible load the lift may have to carry in the case of
- adults
 - children
- (3 mark)
4. A random sample of 50 households is taken in each of two districts, A and B, and for each household the presence or absence of digital television is recorded. The data are presented in the table 02 below.

Table 01: Household distributions in two districts

	District A	District B
Digital TV: Yes	38	27
Digital TV: No	12	23

Investigate whether there is significant evidence of a difference between the two districts in the uptake of digital TV. Briefly state your conclusions. (Chi square table value = 3.841)

(10 mark)

5. The organization and methods unit of a company is reviewing its in-house consulting service to other sections of the business. It is particularly interested in the relationship between invoiced cost and job duration. A random sample of consulting service projects is taken from the company's records, yielding data for job duration x in hours and invoiced cost y in Rs. as follows:

x	1	1.5	3	3.5	3.5	4.5	5	6	8
y	40	74	80	140	180	220	175	209	331

You are given that:

$$\sum_{i=1}^9 x_i = 36$$

$$\sum_{i=1}^9 y_i = 1449$$

$$\sum_{i=1}^9 x_i y_i = 7278$$

$$\sum_{i=1}^9 x_i^2 = 182$$

$$\sum_{i=1}^9 y_i^2 = 29743$$

$$n = 9.$$

- Calculate the sample Mean of x and mean of y ; Comment on it. (4 mark)
- Draw a scatter diagram showing the relationship between x and y and comment on what it shows. (4 mark)
- Calculate the Pearson Product-moment correlation coefficient (r) and Comment on both the sign and the magnitude of the coefficient. (4 mark)
- Calculate the equation of the regression line of y on x and plot the line on your scatter diagram. (5 mark)
- Use your equation to estimate the invoiced cost (y in Rs.) when job duration x is 7 hours. Say, with reasons, whether this is likely to be a good prediction. (3 mark)

