

DURATION:- 2½ HOURS

TOTAL MARKS:- 75

- INSTRUCTIONS:-**
- 1) All the questions are compulsory.
 - 2) Graph papers will be provided on request.
 - 3) Use of simple nonprogrammable calculator is allowed.

Q.1 Attempt any three from the following.

1. A company pays a fixed monthly salary and a commission at a certain rate to its salesmen. If a salesman received a total remuneration of Rs. 1775/- & Rs. 1913/- in 2 successive months, during which his total sales were Rs. 15500/- & Rs. 18260/- respectively, find his fixed monthly salary and the rate of commission on sales. (5)
2. A shopkeeper sold an article at Rs. 912, after allowing 20% trade discount and 5% cash discount. What is the list price of the article? (5)
3. A machine which costs Rs. 800, depreciates 5% of its value each year. Show that its values at the end of successive years are in geometric progression. Find the depreciated value after 10 years. (5)
4. In certain period of time a sum of Rs. 10000 amounts to Rs. 13100 at 6.2% p.a. simple interest. Find the compound interest on the same sum, at the same rate & for the same period. (5)

Q.2 Attempt any three from the following.

1. Given $f(x) = 5x+2$, for $0 \leq x < 1$ (5)
 $= 7x-1$, for $1 \leq x < 2$
 $= 10$, for $2 < x \leq 3$
 Find $f(0.5)$, $f(1)$, $f(2)$, $f(3)$
2. Find dy/dx for the following:- (5)
 $y = 5x^2 + 7x^2 + 4e^x$
 $Y = \frac{8x^2 + 9x + 10}{5x - 4}$
3. The company determines that, the cost to make each unit is Rs. 5 and the fixed cost is Rs. 1500. Find the total cost function. (5)

Q.3 Attempt any three from the following.

1. What is primary data? Write short note on collection of primary data (5)
2. The following is a distribution of age (in years) of 100 employees of a company. Draw both the ogives and hence find median. (5)

Age (in year)	20-25	25-30	30-35	35-40	40-45
No of Employees	5	9	13	28	20

3. The data below gives the yearly profits of two companies A and B. Represent the data by means of a multiple bar diagram. (5)

Profit (lakhs Rs)		
Year	Company A	Company B
2002	10	15
2003	12	16
2004	15	20

4. Represent the following data by a pie diagram. The data refers to the monthly budget of a family. (5)

Head of Expenditure	Amount spent (in Rs)
Rent	3000
Food	6000
Clothing	3000
Education	6000
Fuel	4800
others	7200

Q.4 Attempt any three from the following.

1. What is measure of central tendency? Write merits and demerits of median. (5)

2. Calculate the mean and median for the following data: (5)

x	5	6	7	8	9	10	11
f	11	15	20	16	12	9	4

3. Find mode for the following data: (5)

Class interval	0-100	100-200	200-300	300-400	400-500	500-600
Frequency	8	25	45	12	7	3

4. Explain the concept of measures of Dispersion. State all measures of dispersion. (5)

Q.5.A. Solve the following:

1. If $f(x) = ax - 1$ & $f(3) = 5$, find a. Also find $f(1)$. (2)

2. In how many years a sum of money will double itself at 20% p.a. simple interest?

3. Define secondary data with example. (2)

4. Define qualitative data with example. (2)

5. 14 is the mean of 7 observations. 20 is the mean of 8 observations. The mean of a combined set is given by----- (2)

B) Solve the following:

1. Find t_n and S_n for the series 10, 7, 4, 1, - - - - . (1)

(i) 48 & 50, (ii) 768 & 3072 (iii) 78 & 3072, (iv) 50 & 98.

2. If $f(x) = ax - 1$ & $f(3) = 5$, find a. Also find $f(1)$. (1)

3. Ogives for more than type and less than type distribution intersect at (i) Mean (ii) median (iii) mode (iv) none of the above (1)

4. With the help of histogram, one can determine (i) median (ii) mode (iii) mean (iv) all of the above. (1)

5. ----- is affected by extreme values. (1)