

Seat
No.

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आभास - 077

208

**Quantitative Techniques
(4208)**

P. Pages : 3

Time : Three Hours

Max. Marks : 60

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any three** questions from Section I & **any two** question from Section II.
5. Use of simple calculator is allowed.
6. All question carry equal marks.

SECTION - I

1. a) The distribution of marks secured by some students in an examination. 8

Marks	0-20	21-30	31-40	41-50	51-60	61-70	71-80
Number of Student	42	38	120	84	48	36	31

- Find i) Median Marks
ii) Percentage of failure if the minimum for a pass is 35 marks.

- b) What is the relationship between mean, mode & median ? Explain. 4

2. a) Calculate coefficient of correlation between advertisement cost & sales as per data given. 8

Advertisement Cost (in' 000 Rs)	39	65	62	90	82	75	25	98	36	78
Sales (in lakh Rs)	47	53	58	86	62	68	60	91	51	84

- b) What do you mean by regression. Explain different types of regression. 4

3. a) A bag contains 8 red & 5 white balls. Two successive draws of 3 balls are made without replacement. Find the probability that first drawing will give 3 white balls & the second 3 red balls. 8

b) Write a note on addition & multiplication theorem of probability. 4

4. a) For the following data, compute the Laspeyre's & Paasche's price & quantity index numbers for 1980 with 1970 as base year. 8

Commodity	1970		1980	
	Quantity	Value	Quantity	Value
A	50	350	60	420
B	120	600	140	700
C	30	330	20	200
D	20	360	15	300
E	5	40	5	50

b) Define Index number. Explain types of index number. 4

5. a) The following figures show the distribution of digits in numbers chosen at random from telephone directory. Test whether the digits may be taken to occur equally frequently in directory. 8

Digit	0	1	2	3	4	5	6	7	8	9	Total
Frequency	1026	1107	997	966	1075	933	1107	972	964	853	10000

(Value of Chi-square for 9 d.f. at 5% is 16.92).

b) What are the properties & uses of T - test ? 4

SECTION - II

6. Explain the role of quantitative techniques in business & industries. 12

7. a) Using graphical method, find the value of Z. 6

$$\begin{aligned}
 &\text{Minimize } z = -x_1 + 2x_2 \\
 &\text{Subject to } -x_1 + 3x_2 \leq 10 \\
 &\quad x_1 + x_2 \leq 6 \\
 &\quad x_1 - x_2 \leq 2 \\
 &\quad x_1, x_2 \geq 0.
 \end{aligned}$$

b) Write a note on.

6

i) Feasible solution.

ii) Decision variable.

iii) Optimum solution.

8. a) A person wants to invest in one of three alternatives investment plans : stock, bonds, saving accounts. It is assumed that the person wishes to invest all of the funds in plan. The conditional payoffs of investment are based on three potential economic conditions accelerated, Normal & slow growth. The payoff matrix is given below.

8

Alternative Investment	Economic Condition		
	Accelerated growth	Normal Growth	Slow Growth
Stocks	Rs. 10000	Rs. 6500	-Rs. 4000
Bonds	8000	6000	1000
Saving Account	5000	5000	5000

Determine best investment plan using.

i) Laplace

ii) Maximin

iii) Maximax

iv) Hurwicz with coefficient of optimism $\alpha = 0.6$

b) What is the difference between CPM & PERT ?

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