

Time: 3 hrs.

Marks:100

Note:

1. All questions are compulsory with internal choice.
2. Figures to the right indicate full marks.
3. Use of simple non-programmable calculator is allowed

Q.1 Attempt any 4 from the following. (20)

- (a) Yash purchased 832.347 units of a Mutual Fund on 15<sup>th</sup> May, 2008 with NAV of ₹ 30.6546. Its NAV on 20<sup>th</sup> November, 2008 was ₹ 34.7394. The fund had no entry and exit loads. Find amount invested by him on 15<sup>th</sup> May and value of the investment on 20<sup>th</sup> November, 2008.
- (b) Rohit had 400 preference shares and 200 ordinary shares of a company at ₹ 10 each. The annual dividend declared was 8% on preference shares and 14% on ordinary shares. Calculate the total dividend of Rohit.
- (c) Find the face value of a 12% share if ₹10,540 were invested to purchase shares at a market price of ₹124 and a total dividend of ₹102.00 was received.
- (d) Payal invested ₹60,000 in Mutual Fund on 20<sup>th</sup> April, 2008 with NAV of ₹157.2436. She redeemed all units on 17<sup>th</sup> August, 2008 and received 2.52% rate of return on her investment. If there were no entry or exit loads, find the NAV on 17<sup>th</sup> August upto 4 decimal places.
- (e) Mr. Shah invested ₹75,375 to purchase equity shares of a company at market price of ₹250 through a brokerage firm, charging 0.5% brokerage. The face value of a share is ₹10. How many shares did he purchase?

Q.2 Attempt any 4 from the following. (20)

- (a) How many words can be formed using four different alphabets of word "COMBINE"?
- (b) Find the number of different numbers of six different digits, which can be formed with the digits 0, 1, 3, 5, 8, 9. How many of these have 0 in ten's place?
- (c) There are 5 professors and 5 students. A committee of 6 persons is to be formed taking at least 2 persons from each group. Find the number of such possible committees.
- (d) Solve the linear programming graphically.

$$\text{Min } Z = 4x + 6y$$

$$\text{Subject to, } x + 2y \geq 80$$

$$3x + y \geq 75$$

$$x \geq 0, y \geq 0$$

- (e) Solve the linear programming graphically.

$$\text{Max } Z = 180x + 220y$$

$$\text{Subject to, } 6x + 4y \leq 120$$

$$3x + 10y \leq 180$$

$$x \geq 0, y \geq 0.$$

Q.3 Attempt any 4 from the following. (20)

- (a) The mean marks of two groups of students in a certain test are 76.5 and 76.25 respectively with the standard deviation 16.97 and 5.82 for the two groups. Find which group is more consistent or uniform.

(b) Find M.D. from mean for the given data 17, 19, 18, 22, 19, 18, 19, 21, 19, 20, 24, 20, 23, 25, 21.

(c) Calculate the mean for the following distribution:

X	12	14	16	18	20	22
f	5	10	15	12	8	3

(d) Find the standard deviation for the following distribution.

Size of shoe	7	8	9	10	11
No. of Persons	5	10	20	10	5

(e) Draw a Histogram of the following data and hence locate mode graphically.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of students	15	20	40	20	10	4

Q.4

Attempt any 4 from the following.

(20)

- (a) If the letters of the word **RANDOM** be arranged at random, what is the chance that the two letters A and O will be at the extremes.
- (b) A biased coin is tossed thrice.  $X$  denotes the number of heads in the three tosses. If probability of  $X$  is as follows.

$$P(X = x) = \frac{5}{16}; \quad x = 0, 1$$

$$= \frac{1}{8}; \quad x = 2$$

$$= \frac{1}{4}; \quad x = 3$$

Find the value of  $V(X)$ .

(c) Solve the given decision problem using (i) Maximax (ii) Laplace criteria.

Course of Action	State of nature		
	$S_1$	$S_2$	$S_3$
$A_1$	25	85	95
$A_2$	40	0	60
$A_3$	65	30	55

(d) Given the pay-off matrix, solve the decision problem using EMV criterion.

Course of Action	State of nature		
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
A <sub>1</sub>	80	110	250
A <sub>2</sub>	120	150	300
A <sub>3</sub>	45	80	320
Probability of State of Nature	0.35	0.45	0.2

(e) Construct the Decision Tree and find the value of EOL Criterion.

Course of Action	State of nature		
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
A <sub>1</sub>	25000	35000	40000
A <sub>2</sub>	50000	20000	10000
Probability	0.3	0.5	0.2

Q.5 Attempt any 4 from the following.

(20)

- Write Short note on Equity Shares.
- Write Merits and demerits of Mean.
- Write Requisites of a good measures of dispersion.
- Write a note on Decision Theory.
- Write Merits and demerits of Standard Deviation.

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