

FY B Com (2) / Maths / 422

Q.P. Code :01247

[Time: Three Hours]

[Marks:100]

Please check whether you have got the right question paper.

- N.B:
1. All Questions are compulsory.
  2. Figures to the right indicate full mark allotted.
  3. Use of simple non-programmable calculator is allowed.
  4. Graph papers will be provided on request.

SECTION-I

Q.1 Attempt any FOUR of the following.

- a) Mihir sold some shares at a market price of Rs.300 per share with 0.1% brokerage. He got Rs.1, 13,886 in (5) this transaction. Find the number of shares he sold.
- b) Chaitali got 320 shares of a company of face value Rs.10 at a market price of Rs.120 each. After 3 months (5) she received dividend at 40%. After 6 months she sold the shares at a market price of Rs.160. She paid brokerage at 0.4% for both the transactions. Find the percentage profit.
- c) An investor joined a mutual fund with Rs.26, 176 when N.A.V. was Rs.80. When the N.A.V. touched (5) Rs.100 he sold all his units. Find his gain in the entire deal if the entry load is 2.25% and the exit load is 0.5%.
- d) If a mutual fund has N.A.V. of Rs.36 at the beginning and Rs.45 at the end of the year, find the absolute (5) change and the percentage change during the year.
- e) On the instructions of Mr. Anant Gonsalvis, a mutual fund executed an S.I.P. and invested Rs.5000 each (5) on the 8<sup>th</sup> of each month from January-2016 to April-2016. The N.A.V. s for these four days were Rs.37.34, Rs.37.56, Rs.37.66 and Rs.37.78 respectively. Find the average acquisition cost per unit up to 2 decimal places. (The number of units was rounded off up to 3 decimal places. There was no entry load.)

Q.2 Attempt any FOUR from the following.

- a) An organization consists of 9 members of which 4 are doctors. A selection of 4 persons is to be done (5) amongst these members. Find how many selections will have i) no doctor ii) exactly 2 doctors.
- b) There boys and five girls are made to sit in a line for a music competition. How many different (5) arrangements can be made so that no two boys are together?
- c) Solve the following linear programming problem by using graphical method : (5)  
Maximize  $Z = 2x + 3y$   
Subject to,  
 $x + y \leq 6$ ;  
 $3x + y \leq 12$ ;  
 $x \geq 0$ ;  $y \geq 0$ .

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- d) A painter makes two paintings A and B. He spends 1 hour for drawing and 3 hours for coloring the painting A and he spends 3 hours for drawing and 1 hour for coloring the painting B. He can spend at most 8 hours and 9 hours for drawing and coloring respectively. The profit per painting of Type A is Rs.4000 and that of type B is Rs.5000. Formulate as Linear Programming Problem to maximize the profit. (5)
- e) Solve the Linear programming problem graphically: (5)
- Minimize  $Z=25x + 10y$   
Subject to  
 $10x + 2y \geq 20$   
 $X + 2y \geq 6$   
 $x \geq 0, y \geq 0$

#### SECTION-II

Attempt any FOUR of the following.

- a) Calculate the Arithmetic Mean and Mode of Marks of students from the following frequency distribution. (5)

Marks	0-10	10-20	20-30	30-40	40-50
No. of students	7	12	15	10	5

- b) Define the term Arithmetic Mean and State any two of its properties. (5)
- c) Draw less than ogive curve for the following frequency distribution and hence locate the Median Graphically. (5)

Production in number of units	0-10	10-20	20-30	30-40	40-50
No. of days	12	16	24	15	13

- d) The following data gives the Mean & Standard Deviation of wages of two groups of workers. (5)

	Group-I	Group-II
Number	50	100
Mean wages (Rs.)	120	85
Variance of Wages (Rs.)	9	16

In which group is there greater variation in the distribution of wages?

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e) Find Quartile Deviation for the following data. (5)

Marks	0-10	10-20	20-30	30-40	40-50
No. of students	12	18	26	15	09

3.4 Attempt any **FOUR** of the following.

a) Define the following terms with example. (5)

- I) Sample Space
- II) Exhaustive Events

b) Three coins are tossed, find the probability of getting (5)

- i) All tails
- ii) At most two tails

c) Find  $E(X)$  and  $V(X)$  for the following probability mass function of Random Variable X.

X	1	2	3	4
P (X = x)	0.2	0.3	0.4	0.1

d) If  $P(A^c) = 2/3$ ,  $P(B) = 1/4$ ,  $P(A \cup B) = 5/12$  Find  $P(A \cap B)$  and  $P(A/B)$ . (5)

e) A ticket is drawn from 35 lottery tickets numbered from 1 to 35. Find the probability that the number on the ticket is divisible by 5 or 7.

3.5 Attempt any **FOUR** of the following.

a) Construct Regret Table and find the best decision by Minimax Regret Criterion.

State of Nature	Course of Action		
	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>
S <sub>1</sub>	30	25	39
S <sub>2</sub>	42	47	40



- b) Given the following Pay-off table, find optimal decision using : (5)
- i) Laplace Criterion,
  - ii) Maximax Criterion
  - iii) Maximin Criterion

Demand	Course		
	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>
Low	100	98	82
Medium	92	105	81
High	85	70	60

- c) Draw a decision tree for the decision making problem and suggest the best action. (5)

State of Nature	Probability	Course of Action.	
		A <sub>1</sub>	A <sub>2</sub>
S <sub>1</sub>	0.7	45	25
S <sub>2</sub>	0.3	5	20

- d) Find the best Action by using EOL criterion for the following pay-off matrix. (5)

State of Nature	Probability	Actions.	
		A <sub>1</sub>	A <sub>2</sub>
S <sub>1</sub>	0.4	120	150
S <sub>2</sub>	0.3	160	100
S <sub>3</sub>	0.3	140	170

- e) Find the best decision by using EMV criterion for the following pay-off matrix. (5)

State of Nature	Probability	Action		
		A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>
S <sub>1</sub>	0.5	20	30	10
S <sub>2</sub>	0.3	60	40	30
S <sub>3</sub>	0.2	30	70	40