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FYBCOM-13/10/16-SUB-MATHS – SEM I OCT 2016- 75 MARKS-2 ½ HOURS

N.B.: 1. All questions are compulsory.

    2. All questions carry equal marks.

    3. Figures to the right indicate maximum marks allotted to the sub-questions.

    4. Use of simple calculator is allowed.

①

Q.1] Attempt any three of the following:

A) Nisha sold 60 shares of market value Rs. 75 per share at the brokerage of 0.4%. Calculate the amount she received during this transaction. [5]

B) Arjun owned 30 shares of a company, brought at the market price of Rs. 4,450 each. If the company decided to give one bonus share for three shares held and if the market price of the share after bonus is Rs.3,520, find his gain due to the bonus. [5]

C) Neha invested Rs. 76,500 in kotak mutual fund when NAV was Rs. 150 and entry load of 2%. She received a dividend at 6% and then sold the units at Rs. 168. If the exit load is 0.5%, find her gain/loss in the entire deal.(Assume face value Rs.10) [5]

D) An investor joined the S.I.P scheme for mutual fund with Rs. 750 per month for 4 months. If the NAV's are Rs.75, Rs.60, Rs.25 and Rs.50 respectively with entry load 2% throughout the scheme. Find the average price per unit using Rupee cost method. [5]

Q.2] Attempt any three of the following:

A) How many number of 5 digits can be formed using the digits 1,2,3,4,5,6 such that i) No digit is repeated, ii) Repetition of digits is allowed. [5]

B) A class has 6 girls and 5 boys. If 4 persons out of these are to be selected, find the total number of choices if i) there is no restriction on gender, ii) 3 boys and 1 girl is to be selected. [5]

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C) Two different kinds of food A and B are to be considered to form a weekly di
minimum weekly requirements for fats, carbohydrates and proteins are 12, 30 and 2
respectively. One Kg. of food A has 2, 16, and 4 units respectively of these ingredients a
Kg. of food B has 6, 4 and 3 units respectively. If the cost per Kg. of food A is Rs.75, per
food B is Rs.80. Construct the problem to minimize the cost.

D) Solve the following LPP graphical method:

Maximize $Z = 6x + 4y$ Subject to $x + 2y \leq 8$, $3x + 2y \leq 12$, $x, y \geq 0$. ②

Q.3] Attempt any three of the following:

A) Find the mode for the following data:

Class interval	0-20	20-40	40-60	60-80	80-100
frequency	5	7	20	10	8

B) Find D_5 and P_{70} for the following distributions:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70 abc
No. of students	8	12	20	34	30	25	17	4

C) Find mean deviation from the mean for the following:

x	5	6	7	8	9	10
f	9	13	18	8	3	1

D) Find the mean and standard deviation for the following:

Class interval	0-2	2-4	4-6	6-8	8-10
Frequency	10	20	30	10	10

Q.4] Attempt any three of the following:

A) A bag box contains 4 white and 6 black balls. Two balls are drawn at random. Find
probability that both are of the same colour.

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B) The probability that a student A can solve a problem is $\frac{1}{3}$, that B can solve it is $\frac{1}{2}$, and that C can solve it is $\frac{1}{4}$. If all of them try it independently, what is the probability that the problem is solved? [5]

C) The probability that a person stopping at petrol pump will ask for petrol is 0.80, the probability that he will ask for water is 0.70 and the probability that he will ask for both is 0.65. Find the probability that a person stopping at this petrol pump will ask for i) either petrol or water, ii) neither petrol nor water. [5]

D) Find mean and variance for the following probability distribution. [5]

x	0	1	2	3
P(x)	0.3	0.4	0.2	0.1

Q.5] Attempt any three of the following:

A) The following matrix gives the payoff in rupees of different acts against different events. What decision can be taken using i) Maximax criterion, ii) Laplace criterion. [5]

Events	Acts		
	A_1	A_2	A_3
E_1	5,000	8,000	1,500
E_2	20,000	10,000	5,000
E_3	25,000	20,000	18,000

B) The projected pay-offs for each variant under each demand situation is given below: [5]

Demand	Product variant		
	A_1	A_2	A_3
High	30	40	55
Medium	10	15	20
Low	10	05	03

Find the optimal decision using Minimax regret criterion.

C) Find the best decision by using EMV criterion for the following pair of Matrix.

State of nature	Decisions			
	A1	A2	A.	probability
S1	20	30	10	0.5
S2	60	40	30	0.3
S3	30	70	40	0.2

D) A manufacturing company has to select one of the two products X & Y product. X
an investment of Rs.20,000 and product Y, 15,000 market research survey serves high.
and law demand with corresponding probability and return from sales in thousand rupe
following table:

Market	Probability		Return from sales in thousand Rs.	
	X	Y	X	Y
High	0.4	0.3	50	80
Medium	0.3	0.5	30	60
Low	0.3	0.2	10	50

Construct decision tree. Also state which decision the company should take.

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