FYBcom - 20/3/17

ATKT.

[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.

Maths
sem - I

SECTION-I

(5)

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 8th 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 ≤ 6;
     3x + y ≤ 12;
     x ≥ 0; y ≥ 0.

d) A painter makes two paintings A and B. He spends 1 hour for drawing and 3 hours for coloring painting A and he spends 3 hours for drawing and 1 hour for coloring the painting B. He can spe most 8 hours and 9 hours for drawing and coloring respectively. The profit per painting of Type Rs.4000 and that of type B is Rs.5000.
Formulate as Linear Programming Problem to maximize the profit.

e) Solve the Linear programming problem graphically:
Minimize Z=25x + 10y
Subject to
$10x + 2y \geq 20$
$X + 2y \geq 6$
$x \geq 0, y \geq 0$

SECTION-II

Q.3   Attempt any FOUR of the following.

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

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.

c) Draw less than ogive curve for the following frequency distribution and hence locate the Media Graphically.

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.

	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?

(5)

e) Find Quartile Deviation for the following data.

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

Q.4   Attempt any FOUR of the following.   (5)

a) Define the following terms with example.
   I)   Sample Space
   II)   Exhaustive Events

(5)

b) Three coins are tossed, find the probability of getting
   i)   All tails
   ii)   At most two tails

(5)

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

(5)

(5)

d) If $P(A^c) = 2/3$, $P(B) = 1/4$, P (AUB) = 5/12 Find P (A∩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.

(5)

Q.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		
	A₁	A₂	A₃
S₁	30	25	39
S₂	42	47	40

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

Demand	Course		
	C_1	C_2	C_3
Low	100	98	82
Medium	9?	105	81
High	85	70	60

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

State of Nature	Probability	Course of Action.	
		A_1	A_2
S_1	0.7	45	25
S_2	0.3	5	20

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

State of Nature	Probability	Actions.	
		A_1	A_2
S_1	0.4	120	150
S_2	0.3	160	100
S_3	0.3	140	170

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

State of Nature	Probability	Action		
		A_1	A_2	A_3
S1	0.5	20	30	10
S2	0.3	60	40	30
S3	0.2	30	70	40