

HERAMB COACHING CLASSES

FYBCOM/ Mathematics

Marks: 100

Duration: 3 Hrs

Date: 09/11/17

PART ONE

Q.1. Attempt any two of the following:

(10)

1. Shares of a company are available at a premium of Rs.40 (par value Rs.100). What is the market price of one share? How many shares can be bought for Rs.16, 000.
2. . Mr. Khan buy 500 ten rupee shares of a company at Rs.15 each from the stock market. The company pays 14% dividend annually. If the brokerage is paid at 1% on the share bought. Find (i) total investment (ii) total annual income (iii) the rate of return.
3. Market value of Rs.10 share is Rs.18 Rajesh buys 400 shares. Find (i) his investment (ii) the total dividend if company paid 15% dividend (iii) the rate of return (iv) the no. of shares he can buy for Rs.2700

Q.2. Attempt any two of the following:

(10)

1. A sum of Rs.15, 000 was invested in purchasing 1500 units of Kotak Life Style Mutual Fund with dividend payable option. On 1st April 2006. There was no entry load. NAV on 12th Dec. 2006 was 14.12 and the short term gain tax applicable at 10% of profit. Find his net profit.
2. Find the NAV for (i) No. of units 10,000
(ii) Market value of investment in corporate bond is Rs.1 lakh
(iii) Market value of investment in government securities is Rs.1 lakh
(iv) Other assets of the fund is Rs.20,000
(v) Liabilities of the fund Rs.25,000
(vi) Payable by the fund Rs.5000.
3. . Manisha invested Rs.20,000 on 2nd of every month for 6 month in SIP with NAV's Rs.53.12, Rs.56.26, Rs.48.86 , Rs.50.44 , Rs.54.82 and Rs. 50. The entry load was 2.25% find the no. of units purchase and average price for each unit.

Q.3. Attempt any two of the following:

(10)

1. How many 4-letter word with or without meaning, can be formed using the letters of the word RUCHIKA, if (i) repetition is not allowed (ii) repetition is allowed.
2. Find the distinct permutation of the letters of the words (i) DIVIJA (ii) SARASWATI (iii) INDIA (iv) COMBINATION (v) MATHEMATICS.
3. A group consists of 8 men and 5 women. Find the number of committee of 5 people that can be formed, if committee consists of 2 women.

Q.4. Attempt any two of the following:

(10)

1. A manufacturing company has two best-selling toys, A and B. To produce one toy of type A it requires 3 hours on machine I and 2 hours on machine II and it yields a profit of Rs.14 per unit. On the other hand, to produce one unit of type B it requires 2 hours on machine I and 4 hours on machine II. The toy B gives a profit of Rs.12 per unit. How many of each should the company produce in order to maximise its profits, if no machine can be used for more than 8 hours per day. Frame a Linear Programming Problem.

2. Maximise $Z = 5x + 10y$ subject to

$$5x + 8y \leq 40$$

$$3x + y \leq 12$$

$$x, y > 0$$

3. Maximise $Z = 4x + 5y$ subject to

$$x + 2y \leq 10$$

$$3x + y \geq 12$$

$$x, y \geq 0$$

PART TWO

Q.1. Attempt any two of the following:

(10)

1. Find the Combined Mean of the following data :

$$\bar{x}_1 = 210; \quad n_1 = 150; \quad \bar{x}_2 = 150; \quad n_2 = 100$$

2. Calculate the median age for the following distribution:

Age (years)	:	20-25	25-30	30-35	35-40	40-45
No. of Persons	:	70	80	180	150	20

3. Calculate the modal wages for the following distribution:

Wage (Rs.)	:	10-15	15-20	20-25	25-30	30-35	35-40
No. of Employees	:	3	5	15	20	8	7

Q.2. Attempt any two of the following:

(10)

1. Calculate quartile deviation and coefficient of Q.D. for the following distribution:

Class Interval	:	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	:	5	15	20	30	25	10

2. Calculate the mean deviation from mode for the following distribution:

Marks in Economics	:	0-20	20-40	40-60	60-80	80-100
No. of Students	:	5	23	32	21	9

3. Find the Standard Deviation for the following data:

Weekly wages (Rs.)	:	0-10	10-20	20-30	30-40	40-50
No. of Workers	:	5	8	15	16	6

Q.3. Attempt any two of the following:

(10)

1. From a box containing 7 yellow, 4 red, 5 white balls. One ball is drawn at random. Find the probability that it is (1) red (2) not white (3) either yellow or white.

2. From a pack of 52 cards, 1 card is drawn. Find the probability that : It is not (i) a King (ii) a spade.

3. A random variable X has the following probability distribution:

x	:	4	5	6	7
Probability	:	0.1	0.3	0.4	0.2

Find the expectation and standard deviation of X.

Q.4. Attempt any two of the following:

(10)

1. Suppose that a decision-maker faced with three decision alternatives (Acts) and three states of nature (events) construct the following pay-off table:

Acts \ Pay-Off	State of nature		
	E ₁	E ₂	E ₃
A ₁	- 20	200	400
A ₂	- 50	- 100	600
A ₃	200	- 50	300

Assuming the decision maker has no knowledge about the probabilities of occurrence of events find the decisions to be recommended under each of the following criteria: (i) Maximir(ii) Minimax regret.

2. In the following matrix, the elements indicate the pay-offs to four available actions under each of five possible states of nature. Obtain the regret table. Determine best decisions using (i) maximin (ii) minimax criteria.

Acts \ Pay-Off	State of nature				
	S ₁	S ₂	S ₃	S ₄	S ₅
A ₁	24	20	11	20	16

A ₂	24	20	32	28	18
A ₃	16	20	16	16	18
A ₄	20	20	16	16	16

3. A Pizza Shopkeeper promises its customers to deliver within thirty minutes. Daily demand for pizzas is as follows:

Pizzas	90	100	110	120
Probability	0.1	0.2	0.4	0.3

The cost of each pizza is Rs. 100 and sells them for Rs. 150. All unsold pizzas are thrown away. How many pizzas should the shopkeeper make to maximize his profit? What is the optimum expected profit?

Q.5. Attempt any two of the following:

(10)

1. Draw decision-tree for the following problem and by applying an appropriate decision criterion suggest a best course of action.

Acts	States of Economy		
	Fair	Good	Best
	Probability 0.5	0.3	0.2
P	900	2900	5900
Q	400	4400	6700
K	0	5000	7900

2. A committee of 5 is to be formed from a group of 8 boys and 7 girls. Find the probability that the committee consists of 3 boys and 2 girls.

3. 3 Coins are tossed together. Find the probability of:

(a) 2 Heads and 1 Tail appears.

(b) All tails appear.

(c) Middle coin shows head.

Q.6. Attempt any two of the following:

(10)

1. Calculate Standard Deviation and Coefficient of Variation from the following distribution:

Class	: 0-100	100-200	200-300	300-400	400-500
Frequency	: 8	13	17	15	10

2. Calculate quartile deviation deviation and coefficient of quartile deviation for the following distribution:

Class	: 0-20	20-40	40-60	60-80	80-100	100-120
Frequency	: 11	15	19	35	20	10

3. The following table gives the distribution of daily wages of 100 employees of a company. Find the average wages.

Wages (Rs.)	: 50-55	55-60	60-65	65-70	70-80	80-100
No. of Employees:	10	22	30	20	12	6