

HERAMB COACHING CLASSES

FYBCOM/ MATHEMATICS

Marks: 100

Duration: 3 Hours

Date: 20/11/2018

Q.1 Attempt any 8 from following:

(40)

1. Mr. Raj invest Rs.34,000 in buying shares of a company which pays a 13% dividend annually on Rs.100 shares selling at a premium of Rs.70. Find (i) the number of shares bought (ii) his annual income .
2. Poonam purchased 1600 units of DWS Investment Opportunity Fund on 20th April 2006 by investing Rs.16,000 . She decided to sell the units on 10th Dec. 2006 at NAV of Rs.18.38 with 0.5% exit load. Find profit
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.
4. Axis Bank has declared a right issue shares for its existing shareholders such that they will issue one share for every five share held by them at Rs.1300 against its market price of Rs.2300 .Mr. Smarath holds 60 shares. Find how much amount to be invested in order to subscribe this right issue completely. Calculate average price for each share after right issue shares.
5. How many arrangement of the letters of the word COMRADE can be made, if the relative positions of vowels and consonant are not changed.
6. Find the distinct permutation of the letters of the words (i) DIVIJA (ii) SARASWATI (iii) INDIA (iv) COMBINATION (v) MATHEMATICS.
7. How many different words can be formed with the letters of the word DIPAWALI? In how many of these (i) P and D are never together (ii) vowels are always together.
8. Minimise $Z = 6x + 7y$ subject to
$$2x + 3y \leq 12$$
$$2x + y \geq 8 \quad x, y \geq 0$$
9. Maximise $Z = 3x - 5y$ subject to
$$2x + y \leq 9$$
$$3x + 2y \leq 15$$
$$x, y \leq 0$$
10. Solve the following L.P.P. graphically,
Maximise $Z = 5x + 3y$
Subject to the constraints
$$x + y \leq 10$$
$$x + 4y \leq 20$$
$$x, y \geq 0.$$

Q.2 Attempt any 12 from following:**(60)**

1. Find the arithmetic mean for the following data representing marks of 80 students.

| | | | | | | |
|-----------------|---|-------|--------|--------|--------|-------|
| Marks | : | 0-10, | 10-20, | 20-30, | 30-40, | 40-50 |
| No. of Students | : | 12, | 13, | 21, | 19, | 15 |

2. The mean salary of 96 workers of a firm was found to be Rs.300/-. It was later discovered that the frequency of the class 200-220 was wrongly taken as 38 instead of 42. Find the correct mean salary.

3. For the following distribution of weights of 60 students find the median weight.

| | | | | | | | | |
|-----------------|---|-------|-------|-------|-------|-------|-------|-------|
| Weight (Kg.) | : | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 |
| No. of Students | : | 3 | 5 | 12 | 18 | 14 | 6 | 2 |

4. Calculate the mode from the following data:

| | | | | | | | |
|-----------------|---|------|-------|-------|-------|-------|-------|
| Marks | : | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 |
| No. of Students | : | 7 | 9 | 16 | 31 | 40 | 2 |

5. Calculate quartile 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 |

6. Calculate Mean Deviation from Z for the following:

| | | | | | |
|----------------|---|---------|---------|---------|---------|
| Wages | : | 200-300 | 300-400 | 400-500 | 500-600 |
| No. of Workers | : | 23 | 36 | 40 | 11 |

7. From the following information of a certain distribution, calculate standard deviation

| | | |
|-------------------------------|---|--------|
| No. of Observations | = | 10 |
| Sum of square of observations | = | 24,270 |
| Sum of Observations | = | 452 |

8. Calculate the coefficient of variation for the following age distribution of 125 persons.

| | | | | | | | | | |
|---------------------|---|----|----|----|----|-----|-----|-----|-----|
| Age (yrs) less than | : | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 |
| No. of Persons | : | 15 | 30 | 53 | 75 | 100 | 110 | 115 | 125 |

9. The following data refers to the weight distribution of 100 students in a class:-

| | Number | Mean Weight (kg) | S.D. of Weight (kg) |
|-------|--------|------------------|---------------------|
| BOYS | 55 | 61 | 8 |
| GIRLS | 45 | 51 | 6 |

10. From a pack of 52 cards, 1 card is selected. Find the probability that it is: (a) a spade card, (b) king, (c) face card, (d) with no. 3 or 4, (e) red (f) king of hearts

11. A random variable X has the following probability distribution.

| | | | | |
|---|-------------|--------------|-----|-----|
| Find: (i) Probability of $x = 6, x > 4$ | (ii) $E(x)$ | (iii) $V(x)$ | | |
| x : | 4 | 6 | 7 | 10 |
| $P(x)$: | 0.2 | - | 0.3 | 0.1 |

12. 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) Maximin(ii) Minimax regret.

13. Construct the opportunity loss or regret table and find the best act using minimax regret criterion from the following pay-off table.

| Acts \ Pay-Off | State of nature | | | |
|----------------|-----------------|-------|-------|-------|
| | S_1 | S_2 | S_3 | S_4 |
| A_1 | 20 | 14 | 16 | 11 |
| A_2 | 17 | 16 | 13 | 13 |
| A_3 | 15 | 18 | 19 | 18 |

14. For the following pay-off table calculate EMV demand.

| Acts \ Demand | High | Demand |
|---------------|--------|--------|
| | Expand | 4 |
| Not to Expand | 1 | 0 |
| Probability | 0.35 | 0.65 |

As a decision maker suggest the best act. Show this decision situation in the form of a decision tree.