SUBJECT CODE : MT/AO/ST33

B. Sc. DEGREE EXAMINATION, NOVEMBER 2007
BRANCH I - MATHEMATICS
THIRD SEMESTER

COURSE   : ALLIED – OPTIONAL
PAPER   : APPLIED STATISTICS
TIME   : 3 HOURS   MAX. MARKS : 100

SECTION – A   **(10 X 2 = 20)**

ANSWER ALL THE QUESTIONS

1.   Find the arithmetic mean of the following marks obtained by students of a class.

Marks	15	20	25	30	35	40
No. of Students	9	7	12	14	15	6

2.   (i) State the relationship between A.M., G.M. and H.M.
         (ii) Define median of a distribution.

3.   For a frequency distribution $Q_1 = 33.06$, $Q_3 = 38.75$, find the inter quartile range and coefficient of Quartile Deviations.

4.   (i) If $\beta_2 < 3$, then the curve is said to be _____
         (ii) Define skewness with reference to a frequency distribution.

5.   Calculate M.D. for the following data:

x	2	4	6	8	10
f	1	4	6	4	1

6.   Explain Scatter Diagram.

7.   From the following regression equation find the mean values of x and y.
         $8x - 10y + 66 = 0$, $40x - 18y = 214$.

8.   (i) State any two properties of correlation coefficient between Q variables
            X and Y.
         (ii) If $b_{xy} = -.2$ and $b_{yx} = -1.5$, find the value of correlation coefficient between the variables x and y.

9.   Define (i) mutually exclusive events   (ii) Independent events

10.   Two dice are thrown. Find the probability that the total of the numbers on the dice is 8.

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SECTION – B (5 X 8 = 40)

ANSWER ANY FIVE QUESTIONS

11. Prepare a histogram and a frequency polygon from the following data. Also locate mode graphically.

Class	0-6	6-12	12-18	18-24	24-30	30-36
Frequency	4	8	15	20	12	6

12. The median and mode of the following distribution are known to be 33.5 and 34 respectively. Three frequency values from the table are however running. Find he missing values.

Wages(Rs)	0-10	10-20	20-30	30-40	40-50	50-60	60-70	Total
Freq.	4	16	?	?	?	6	4	230

Hence find the mean of the distribution.

13. Draw a less than Ogive for the following Frequency distribution.

I.Q.	60-70	70-80	80-90	90-100	100-110	110-120	120-130
No. of Students	2	5	12	31	39	10	4

From the graph obtain the value of the median. Also verify by direct calculation.

14. From the data given below, state which series is more constistant?

Variable	Series A	Series B
10-20	10	18
20-30	18	22
30-40	32	40
40-50	40	32
50-60	22	18
60-70	18	10

15. Find the coefficient of skewness based on quartiles for the following data.

Income	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No. of Persons	8	24	48	68	30	13	9

16. From the following table calculate the rank correlation coefficient.

X	48	33	40	9	16	16	65	24	16	57
Y	13	13	24	6	15	4	20	9	6	19

17. Two cards are drawn at random from a well shuffled pack of 52 cards. What is the probability that (i) both are aces (i) both are red and (iii) at least one is an ace.

SECTION – C **(2 X 20 = 40)**

ANSWER ANY TWO QUESTIONS

18. a) The frequency distribution of weight in grams of mangoes of a given variety is given below. Calculate arithmetic mean, median & mode.

Weight (grams)	410-419	420-429	430-439	440-449	450-459	460-469	470-479
No. of Mangoes	14	20	42	54	45	18	7

   b) Mean of 100 items is found to be 30. If at the time of calculation 2 items are wrongly taken as 32 and 12 instead of 23 and 11. Find the correct mean.

(17+3)

19. a) A sample of 35 values has mean 80 and S.D 4. A second sample of 65 values has mean 70 and S.D 5. Find the SD of the combined sample of 100 values.

   b) From the data given below calculate Karl Pearson's coefficient of skewness.

Age	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60
No. of Persons	50	70	80	180	150	120	70	50

   [Hint: Obtain modal class using grouping table]   (6+14)

20. Obtain the two lines of regression from the following data:

Age of Husband	25	22	28	26	35	20	22	40	20	18
Age of Wife	18	15	20	17	22	14	16	21	15	14

Also find the value of correlation coefficient.
Estimate the (i) age of husband when the age of wife is 19.
      and (ii) age of wife when the age of husband in 30.

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