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EDUCATION

(Major)

Paper : 5.5

(Statistics in Education)

Full Marks : 60

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. *(a)* Fill in the blanks :   1×4=4

   (i) —— is the most unstable measure of central tendency.

   (ii) —— is the square root of the mean of the squared deviation of the scores from the arithmetic mean of the scores.

   (iii) In a normal distribution, $\pm 1\sigma$ includes —— % of total cases.

(Turn Over)

(iv) The ranks according to two attributes in a sample are given below :

Variable—A :   1   2   3   4   5   6

Variable—B :   1   2   3   4   5   6

Here, rank coefficient of correlation is ——. (No need to use formula.)

(b) Give very short answer :   1×3=3

   (i) What is variability?

   (ii) Why is histogram called continuous bar graph?

   (iii) The mean of 10 numbers is 28. If one number is excluded, their mean is 25. Find the excluded number.

2. *(a)* Mention two uses of Statistics in education.   2

   (b) Write two differences between histogram and polygon.   2

   (c) What is median? Write the formula for finding out median from grouped data.   2

   (d) State two merits of rank difference method of finding out coefficient of correlation.   2

         (Continued)

3. Answer any *three* of the following questions :

$5 \times 3 = 15$

(a) What is a frequency distribution table? Write the uses of a frequency distribution table. $2+3=5$

(b) What is central tendency? Explain the advantages of measuring central tendency. $2+3=5$

(c) In distribution A, $N = 120$, $M = 10$ and $\sigma = 8$, in distribution B, $N = 80$, $M = 12$ and $\sigma = 10$. Find out the combined standard deviation of the distributions A and B.   5

(d) What are the advantages of graphical representation of data? Mention the general principles of drawing a graph. $2+3=5$

(e) What is coefficient of correlation? State the extreme values of coefficient of correlation and interpret them. $2+3=5$

(f) Explain the concept of skewness. Draw the sketch of different types of skewness and locate roughly the relative position of mean, median and mode. $3+2=5$

4. Write two merits and two demerits of mean. Calculate the mean of the following frequency distribution table using 'assumed mean method' : 4+6=10

Class Interval	Frequency
150–154	2
145–149	5
140–144	8
135–139	7
130–134	9
125–129	13
120–124	9
115–119	4
110–114	4
105–109	3
100–104	2
	$N = 66$

Or

What is quartile deviation? Find out quartile deviation of the above frequency distribution table. 2+8=10

5. Determine the correlation between the marks of 10 students in Science and English using Karl Pearson formula (r) and interpret the result : 8+2=10

Science : 61 54 45 60 72 84 38 40 66 56

English : 46 44 56 47 70 65 42 44 68 45

Or

(a) Distinguish between percentile point and percentile rank with example. 4

(b) The rank of a student in Mathematics in a class of 40 students is 6th and rank of another student in Science in a class of 60 students is 8th. Compare their PR in two subjects. 3

(c) What would be the rank of the students in Mathematics need to be equal to the rank of the student in Science? 3

6. (a) Draw an ogive of the following distribution : 6

Class Interval	Frequency
70–79	3
60–69	3
50–59	5
40–49	7
30–39	10
20–29	8
10–19	3
0–9	2

(Turn Over)

(b) Determine the values of median and Q_3 from the graph. 4

Or

In a normal distribution of 500 cases, the mean is 70 and SD is 12. From this data, determine the following : 4+3+3=10

(i) Number of cases between 55 and 85

(ii) Number of cases below 52

(iii) The limit of the middle 60% cases

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