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Reg. No. : .....

Code No. : 41159 E **Sub. Code : JNMA 3 B/ JNMC 3 B/SNMA 3 B**

U.G. (CBCS) DEGREE EXAMINATION, NOVEMBER 2018.

Third Semester

Mathematics/Mathematics with CA

Non–Major — Elective – FUNDAMENTALS OF STATISTICS — I

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Chronological classification data are classified on the basis of ————.

   (a) time (b) location

   (c) attributes (d) class interval.

2. Diagrams and graphs are tools of

   (a) analysis (b) collection of data

   (c) presentation (d) summarisation.

3. Which of the following is the most unstable average?

   (a) Mode (b) Median

   (c) Geometric mean (d) Harmonic mean.

4. The sum of deviations taken from arithmetic mean is

   (a) minimum (b) zero

   (c) maximum (d) none.

5. The range of 4, 11, 3, 9, 20, 18, 1 7, 6 is

   (a) 12 (b) 7

   (c) 2 (d) 17.

6. Ideal measures of dispersion is

   (a) Range (b) Quartile deviation

   (c) Mean deviation (d) Standard deviation.

7. If two variables are uncorrelated, then their correlation coefficient is

   (a) 1 (b) –1

   (c) 0 (d) ±1.

8. If $r^2 = 0.81$, then coefficient of correlation is

   (a) 0.81 (b) 0.9

   (c) 0.09 (d) 9.

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9. If 2, 1/4 are regression coefficients, then the coefficient of correlation is

(a) $\frac{1}{2}$ (b) $-\frac{1}{2}$

(c) $\frac{1}{\sqrt{2}}$ (d) 1.

10. If $3x + 2y = 26$, $6x + y = 31$ are regression lines, then $\bar{x}$ and $\bar{y}$ respectively are

(a) 4, 7 (b) 7, 4

(c) 5, 6 (d) 6, 5.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Construct a frequency table with 10 class intervals for the marks obtained by 50 students are given below :

45, 34, 54, 10, 21, 51, 52, 12, 43, 48, 36, 22, 39, 26, 34, 19, 25, 48, 10, 17, 47, 38, 13, 30, 30, 60, 59, 15, 7, 18, 40, 49, 40, 43, 51, 55, 32, 41, 22, 30, 35, 53, 25, 14, 18, 19, 40, 43, 4, 17.

Or

(b) The data given below gives the yearly profits of two companies *A* and *B*. Represent the data by means of a suitable bar diagram.

Year	Profit	
	A	*B*
2005	10,000	15,000
2006	8,000	13,000
2007	13,000	14,000

12. (a) Find the Arithmetic mean for the following data :

Class interval :	0 – 9	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59
Frequency :	2	15	10	9	3	1

Or

(b) Find the median for the following frequency table.

x :	1	2	3	4	5	6
f :	8	12	20	5	3	2

13. (a) Find the quartile deviation of 40, 90, 61, 68, 72, 43, 50, 84, 75, 33.

Or

(b) Find the standard deviation for the following data :

Class :	0 – 20	20 – 40	40 – 60	60 – 80	80 – 100
Frequency :	8	12	30	20	10

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14. (a) Compute the coefficient of correlation between X and Y for the following data :

X :	12	15	18	21	24	27
Y :	17	16	18	19	21	20

Or

(b) Calculate the rank correlation coefficient for the data :

P :	35	56	50	65	44	38	15	26
Q :	50	35	70	25	45	58	55	60

15. (a) Prices of rice at Chennai and Madurai are given below :

	Chennai	Madurai
Mean	19.5	17.75
Standard deviation	1.75	2.5

The coefficient between the two is 0.8, then what is the price at Chennai corresponding to the price of 18 at Madurai.

Or

(b) If two lines of regression are $8x - 10y + 66 = 0$ and $40x - 18y - 214 = 0$. Find the correlation between the values of x and y.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

16. (a) Write the types of classifications with examples.

Or

(b) Explain the types of diagram.

17. (a) Find Arithmetic mean and median for the following :

Age :	13	14	15	16	17	18	19	20	21	22	23	24	25
Women :	37	162	343	390	256	433	161	355	65	85	49	46	40

Or

(b) Find the mode for the following data :

Marks	No. of Students
0 – 9	6
10 – 19	29
20 – 29	87
30 – 39	181
40 – 49	247
50 – 59	263
60 – 69	133
70 – 79	43
80 – 89	9
90 – 99	2

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18. (a) Find the standard deviation for the following data :

Marks :	10	9	8	7	6	5	4	3	2	1
Frequency :	1	5	11	15	12	7	3	3	0	1

Or

(b) The mean and the standard deviation of a set of 100 items were worked out as 40 and 5 respectively. But by mistake a value 50 was taken in the place of 40 for one item. Recalculate the correct mean and standard deviation.

19. (a) Find the correlation coefficient for the following table :

Height of father :	65	66	67	67	68	69	71	73
Height of son :	67	68	64	68	72	70	69	70

Or

(b) From the following data of marks obtained by 10 students in Mathematics and Chemistry, calculate the rank correlation coefficient.

Mathematics (M) :	35	56	50	65	44	38	44	50	15	26
Chemistry (C) :	50	35	70	25	35	58	75	60	55	35

20. (a) Obtain the lines of regression for the following data :

A :	25	28	30	32	35	36	38	39	42	45
B :	20	26	29	30	25	18	26	35	35	46

Or

(b) If the two lines of regression are $3x + 2y - 26 = 0$; $6x + y - 31 = 0$, then find the following :

(i) γ_{xy}.

(ii) if $\sigma_x^2 = 25$, find σ_y.

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