

(8 pages)

Reg. No. :

Code No. : 40355 E Sub. Code : JNMA 3 B/
JNMC 3 B/SNMA 3 B

U.G. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2019.

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. Which is the two-dimensional diagram?

- (a) sphere
- (b) cylinder
- (c) rectangle
- (d) cube.

2. A simple formula to obtain the estimate of appropriate class interval $i =$

- (a) $L + S$
- (b) $\frac{L - S}{k}$
- (c) $\frac{L + S}{k}$
- (d) $L - S$.

3. The geometric mean of numbers 2, 4, 8 is

- (a) 1
- (b) 2
- (c) 3
- (d) 4.

4. The mode of grouped frequency distribution is

- (a) $l + \frac{(\frac{N}{2} - m)h}{f_h}$
- (b) $l + \frac{hf_2}{f_1 + f_2}$
- (c) $l - \frac{hf_2}{f_1 + f_2}$
- (d) $l + \frac{hf_2}{f_1 - f_2}$.

5. Which is correct?

- (a) Q.D. = $\frac{1}{2} (Q_3 - Q_1)$
- (b) S.D. $\left[\frac{1}{N} \sum f_i (x_i + \bar{x})^2 \right]^{1/2}$
- (c) $\sigma^2 = s^2 + d^2$ where $d = \bar{x} - A$.
- (d) C.V. = $\frac{\bar{x}}{\sigma} \times 100$.

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6. The median of the numbers 2, 5, 4, 11, 8
 (a) 2 (b) 4
 (c) 5 (d) 8.
7. The range of the correlation coefficient is
 (a) -1, 0 (b) 0, 1
 (c) -1, 1 (d) 1, α .
8. The formula for finding the rank correlation
 (a) $1 - \frac{6\Sigma(x-y)^2}{n(n^2-1)}$ (b) $1 + \frac{6\Sigma(x-y)^2}{n(n^2-1)}$
 (c) $1 - \frac{6\Sigma(x+y)^2}{n(n^2-1)}$ (d) $1 - \frac{6\Sigma(x-y)^2}{n(n^2+1)}$.
9. The regression coefficient $b_{xy} =$
 (a) $r \frac{\sigma_y}{\sigma_x}$ (b) $r \frac{\sigma_x}{\sigma_y}$
 (c) $\frac{1}{r} \frac{\sigma_x}{\sigma_y}$ (d) $\frac{1}{r} \frac{\sigma_y}{\sigma_x}$.
10. If the regression coefficient of x on y is 0.4 and the regression coefficient of y on x is 0.9 then the correlation coefficient between x and y is
 (a) 0.06 (b) 0.36
 (c) 0.6 (d) 0.036.

PART B — (5 × 5 = 25 marks)

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

11. (a) Write down the objects of classification.

Or

- (b) The dividend given by Oswal Agro Mills Ltd. from 1983 to 1988 is given below :

Year :	1983	1984	1985	1986	1987	1988
Dividend (%) :	20	30	32	42	50	50

Represent the data by bar diagram.

12. (a) From the following data, compute the value of harmonic mean.

Marks :	10	20	25	40	50
No. of Students :	20	30	50	15	5

Or

- (b) The mean weight of 150 students in a certain class is 60 kg. The mean weight of boys in the class is 70 kg and that of girls in the class is 55 kg. Find the number of boys and girls in the class.

13. (a) Find (i) range (ii) standard deviation for the following marks of 10 students.

20, 22, 27, 30, 40, 48, 45, 32, 31, 35.

Or

- (b) Show that the variance of the first n natural numbers is $\frac{(n^2-1)}{12}$.



14. (a) Calculate Karl Pearsons coefficient of correlation from the following data :

Marks in Mathematics : 48 35 17 23 47

Marks in Statistics : 45 20 40 25 45

Or

- (b) Obtain the rank correlation coefficient for the following data :

x : 2 1 4 3 5 7 6

y : 1 3 2 4 5 6 7

15. (a) From the given equation to the two regression lines $3x + 2y - 26 = 0$ and $6x + y - 31 = 0$, find the correlation coefficient between x and y .

Or

- (b) Construct the two regression lines from the following data :

	x	y
Mean	10	90
Standard deviation	3	12

Correlation coefficient 0.8.

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PART C — (5 × 8 = 40 marks)

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

16. (a) Explain the types of Bar diagram.

Or

- (b) Draw a Pie diagram for the following data of sixth five year plan public sector outlays.

Agriculture and Rural development	12.9%
Irrigation etc	12.5%
Energy	27.2%
Industry and minerals	15.4%
Transport and Communication etc	15.9%
Social services and others	16.1%

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

Class :	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35
Frequency :	8	15	39	47	52
Class :	36 - 40	41 - 45	46 - 50	51 - 55	
Frequency :	41	28	16	4	

Or

- (b) Given that the mode of the following frequency distribution of the 70 students is 58.75. Find the missing frequencies f_1 and f_2 .

Class :	52 - 55	55 - 58	58 - 61	61 - 64
Frequency :	15	f_1	25	f_2

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18. (a) The following table gives the marks obtained by a group of 80 students in an examination. Calculate the variance.

Marks obtained :	10 - 14	14 - 18	18 - 22	22 - 26	26 - 30	30 - 34
No. of students :	2	4	4	8	12	16
Marks obtained :	34 - 38	38 - 42	42 - 46	46 - 50	50 - 54	54 - 56
No. of students :	10	8	4	6	2	4

Or

- (b) Compute Quartile Deviation from the following data :

x:	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
y:	12	19	5	10	9	6

19. (a) Calculate the correlation coefficient for the following heights in inches of fathers (X) and their sons (Y).

X:	65	66	67	67	68	69	70	72
Y:	67	68	65	68	72	72	69	71

Or

- (b) Find the rank correlation coefficient for the following data :

x:	68	64	75	50	64	80	75	40	55	64
y:	62	58	68	45	81	60	68	48	50	70

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20. (a) (i) Write short notes on regression lines.
(ii) Out of the two lines of regression given by $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$ which one is the regression line of x on y .

Or

- (b) Obtain the two regression equations from the following data :

x:	6	2	10	4	8
y:	9	11	5	8	7

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