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Reg. No.....

Name.....

B.A. DEGREE (C.B.C.S.S.) EXAMINATION, NOVEMBER 2022

Fourth Semester

Branch : Economics (Model II)

Core Course—QUANTITATIVE ECONOMICS

(2013—2016 Admissions)

Time : Three Hours Maximum Marks : 80

Part A

Answer **all** *questions.*
Each question carries 1 *mark.*

1. The price of a share for a six-day week is fluctuated as follows :
   Rs. 156, Rs. 165, Rs. 148, Rs. 151, Rs. 147, Rs. 162
   Calculate range and its coefficient
   DEFINE THE FOLLOWING.
2. Equally Likely events.
3. Dispersion.
4. Distinguish central moment and raw moment.
5. Scatter diagram.
6. Geometric Mean.
7. Sample space.
8. Symmetric distribution.
9. What are the uses of regression analysis.
10. Mesokurtic.

(10 × 1 = 10)

Part B

Answer any **eight** *questions.*
Each question carries 2 *marks.*

11. In a frequency distribution mean = 30 kgs, mode = 212 kg find Median.
12. Marks obtained for an exam is given below :
    24, 10, 85, 9, 23, 25, 29, 8, 45, 16, 10 Find interquartile range.

Turn over

13. Find first and second order derivatives :

    a) $x^2 + 3x + 2$

    b) x^{20}

    c) $\sqrt[2]{x} + 1/2\,x^2$

    d) e^{2x}

14. Find mean deviation about mean for the following values 25, 60, 88, 70, 67, 65, 88, 28, 30, 12.

15. Write a note about skewness.

16. Distinguish correlation and regression.

17. A bag contains 3 white, 4 red and 2 green balls. One ball is selected at random. Find the probability that the selected ball is 1) white 2) non-white.

18. If the third quartile is 178 and the median is 160, find the coefficient of quartile deviation assuming the distribution to be symmetrical.

19. Explain probability distribution.

20. A card is drawn from a pack of well shuffled playing cards. What is the probability that it is either a queen or diamond ?

21. Define Points of inflexion.

22. Explain Statistical regularity.

(8 × 2 = 16)

Part C

Answer any **six** *questions.*
Each question carries 4 *marks.*

23. The first four moments of a distribution are 1, 4, 10 and 46 respectively. Compute the first four central moments and beta constraints. Comment upon the nature of distribution.

24. Define Arithmetic Mean. Why Arithmetic mean is considered as the best measure of central tendency ?

25. With suitable illustrations from Economics, explain the term correlation. What are the important methods of detecting the correlation between two variables ?

26. Calculate Bowleys coefficient of skewness for the following data and comment on the result :

Class	:	0-10	10-20	20-30	30-40	40-50
Frequency	:	8	15	24	21	12

27. In swimming race the odds that A will win are 2 to 3 and the odds that B will win are 1 to 4.Find the probability and odds that A or B wins the race.

28. The probability that a student passes statistics test is 2/3 and the probability that he passes both statistics and mathematics test is 14/45. The probability that he passes at least one test is 4/5. What is the probability that he passes mathematics test ?

29. Examine whether the following function is concave or convex at $x = 3$

1) $y = -2x^3 + x^2 + 9x - 15$

2) $y = \left(5x^2 - 8\right)^2$.

30. Explain the purposes of measuring variation. Discuss the merits and demerits of standard deviation

31. Find the median of the following data :

Midpoints	:	5	15	25	35	45
Frequency	:	3	9	8	5	3

(6 × 4 = 24)

Part D

Answer any **two** *questions.*
Each question carries 15 *marks.*

32. Prices of a particular commodity in 5 years in 2 cities are given below :

Price in City A : 22 24 19 21 17

Price in City B : 18 20 18 15 19

Which city has more stable price ?

33. Nine students obtained the following percentage of marks in college test (x)and in the final University examinations(Y). Calculate the correlation coefficient :

X	:	51	63	73	46	50	60	47	36	60
Y	:	49	72	74	44	58	66	50	30	35

Turn over

34. Given the following data

Variance of $x = 9$

Regression equations

$2x + 3y - 70 = 0$ and

$3x + 2y - 80 = 0$

FIND

1) the mean value of x and y.

2) coefficient of correlation between X and Y

3) Standard deviation of y.

35) Suppose the equation connecting the profit P in rupees and the number of units n produced in a single lot of a factory is given by $P = 247 + 1243n - 0.025n^2$. Determine the optimum lot size of the factory.

$(2 \times 15 = 30)$