

C 41469

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Name.....

Reg. No.....

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, MARCH 2013

(CCSS)

Statistics

APPLIED STATISTICS

Time : Three Hours

Maximum : 30 Weightage

Part A

Answer all questions.

1. For a positive skewed frequency curve, the inequality that holds is :
 - (a) $Q_1 + Q_3 > 2Q_2$.
 - (b) $Q_1 + Q_2 > 2Q_3$.
 - (c) $Q_1 + Q_3 > Q_2$.
 - (d) $Q_3 - Q_1 > Q_2$.
2. If $R_{1,23}$ is the multiple correlation coefficient then :
 - (a) $-1 \leq R_{1,23} \leq 1$.
 - (b) $0 \leq R_{1,23} \leq 1$.
 - (c) $0 < R_{1,23} < 1$.
 - (d) $0 < R_{1,23} \leq 1$.
3. The lines of regression intersect at the point :
 - (a) (\bar{x}, \bar{y}) .
 - (b) (x, y) .
 - (c) $(0, 0)$.
 - (d) $(1, 1)$.
4. The two regression coefficients b_{XY} and b_{YX} are of :
 - (a) Same sign.
 - (b) Opposite sign.
 - (c) Any one of these two.
 - (d) Nothing can be said.
5. Number of components of a time series are :
 - (a) Two.
 - (b) Four.
 - (c) Three.
 - (d) Cannot be stated.
6. The best method for finding seasonal variation is :
 - (a) Simple average method.
 - (b) Ratio to moving average method.
 - (c) Ratio to trend method.
 - (d) None of these.

Turn over

7. Control chart consists of :
- (a) Three control limits. (b) Upper and lower control limits.
(c) The level of the process. (d) All the above.
8. The relation between expected value of R and S.D. σ with usual constant factors is :
- (a) $E(R) = d_1\sigma$. (b) $E(R) = d_2\sigma$.
(c) $E(R) = D_1\sigma$. (d) $E(R) = D_2\sigma$.
9. The faults due to assignable causes :
- (a) Can be removed. (b) Cannot be removed.
(c) Can sometimes be removed. (d) All the above.
10. \bar{X} chart indicates :
- (a) Consistency of the process. (b) Variability.
(c) Proportion of defectives. (d) Centering of the process.
11. The basic purpose of the Analysis of variance is to test the :
- (a) Homogeneity of experimental plots.
(b) Homogeneity of variances.
(c) Homogeneity of several means.
(d) None of these.
12. Analysis of variance was introduced by :
- (a) Karl Pearson. (b) G.E.P. Box.
(c) E.S. Pearson. (d) R.A. Fisher.

(12 × ¼ = 3 weightage)

Part B

Answer all questions.

13. State the positions of mean, mode and median in positively skewed and negatively skewed distributions.
14. If S.D. = 4, $\mu_4 = 64$ find a measure of Kurtosis.
15. What is a scatter diagram ?
16. What do you mean by regression ?

17. What is meant by perfect correlation ?
18. What are the merits of semi-Average method ?
19. Define Assignable causes.
20. Give control limits of C-chart.
21. Give the simple definition of Analysis of variance.

(9 × 1 = 9 weightage)

Part C

Answer any five questions.

22. In a distribution, the difference between two quartiles is 15, their sum is 35. Q_2 is 20. Find the coefficient of skewness.
23. Compute the correlation coefficient between the price and demand :

Price (in Rs.)	:	80	75	60	90	70
Demand (kgs)	:	12	15	13	9	14
24. Distinguish between partial and multiple correlation.
25. What do you mean by components of a time series.
26. Discuss the theoretical basis of np -chart.
27. State the objectives of \bar{X} and R charts.
28. Define the terms :
 - (a) Secular trend.
 - (b) Seasonal variations.
 - (c) Cyclical variations.

(5 × 2 = 10 weightage)

Part D

Answer any two questions.

29. (a) Distinguish between Correlation and Regression.
- (b) Find the coefficient of correlation from the following :

x :	12	20	15	22	18	24	20	12	15	22
y :	30	35	28	36	29	39	30	25	30	38

Turn over

30. (a) The data below give the average quarterly prices of a commodity for four years :

Year	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
1980	40.3	44.8	46.0	48.0
1981	50.1	53.1	55.3	59.5
1982	47.2	50.1	52.1	55.2
1983	55.4	59.0	61.6	65.3

- (b) What are the merits and demerits of Ratio to Trend method ?
31. (a) Explain the construction of a control chart for \bar{X} when the standards for μ and σ are specified as μ' and σ' respectively.
- (b) Prepare an \bar{X} and R chart using the following results obtained from sample of size 5 each.

Sample Number	:	1	2	3	4	5
Average	:	2.5	2.6	2.7	2.7	2.4
Range	:	0.2	0.2	0.3	0.4	0.3

$$[A_2 = 0.58, D_4 = 2.11]$$

(2 × 4 = 8 weightage)