MA ECONOMICS
SECOND SEMESTER [REPEAT]
STATISTICS
MEC – 203
[USE OMR SHEET FOR OBJECTIVE PART]

SET
A

Duration: 3 hrs.

Full Marks: 70

Objective

Time: 30 mins.

Marks: 20

Choose the correct answer from the following:

$1 \times 20 = 20$

1. What is the probability of impossible event?
   - a. 1
   - b. -1
   - c. 0
   - d. 2

2. If A and B are mutually exclusive event then P(AUB) Is
   - a. $P(A) + P(B)$
   - b. $P(A) + P(B) – P(AB)$
   - c. $P(A) – P(B)$
   - d. $P(A)P(B)$

3. When a correlation between two variables are said to be perfectly negative?
   - a. $r = -1$
   - b. $r = 1$
   - c. $r = 0$
   - d. $r = 0$

4. Which one is the correct statement of regression coefficients(b_{xy} and b_{yx}) ?
   - a. $b_{xy} = 1.5$ & $b_{yx} = 1.7$
   - b. $b_{xy} = 1.9$ & $b_{yx} = -0.7$
   - c. $b_{xy} = -1.5$ & $b_{yx} = 0.7$
   - d. $b_{xy} = -1.9$ & $b_{yx} = -0.7$

5. Match the items of List-II with the items of List-I and denote the code of correct matching

List-I		List-II
(a)	Testing the goodness of fit of a distribution	(i) Z-test
(j)	Testing the significance of the differences among the average performance of more than two sample groups	(ii) Chi-square test
(k)	Testing the significance of the difference between the average performance of two sample groups (large-sized)	(iii) F-test

   - a. (a) - (iii), (b) - (i), (c) - (ii)
   - b. (a) - (ii), (b) - (iii), (c) - (i)
   - c. (a) - (ii), (b) - (i), (c) - (iii)
   - d. (a) - (i), (b) - (ii), (c) - (iii)

6. In this ___ method, a desired number of sample units is selected deliberately depending upon the object of the enquiry
   - a. Judgement sampling.
   - b. Probability sampling.
   - c. Mixed sampling
   - d. Quota sampling.

7. If we measure more than two variables on each unit of a distribution, it is called
   - a. Bivariate distribution.
   - b. Multivariate distribution.
   - c. Covaraiation
   - d. Correlation

8. When the relationship is of a quantitative nature, the appropriate statistical tool for measuring the relationship and expressing it in a brief formula is known as-
   a. Regression
   b. Covariance
   c. Variance
   d. Correlation

9. Quota sampling is a special form of -
   a. Convenience sampling.
   b. Random sampling.
   c. Multistage sampling.
   d. Stratified sampling.

10. The modern theory of probability is based on the
    a. Classical approach
    b. Both Axiomatic approach & Classical approach
    c. Empirical approach
    d. Axiomatic approach

11. Regression coefficients are independent of change of-
    a. Origin but not of scale
    b. Both origin and scale
    c. Origin
    d. Scale

12. The value of coefficient of correlation always lie between-
    a. 0 and 1
    b. + 1 and -1
    c. -1   and 0
    d. 1

13. Which one of the following is caused by careless handling of experimental set up
    a. Systematic error
    b. Standard error
    c. Type I error
    d. Gross error

14. Goodness of fit of a distribution is tested by
    a. Chi square test
    b. Z test
    c. F test
    d. Student- t test

15. The values obtained from the study of a sample are known as-
    a. Statistic
    b. Census
    c. Parameter
    d. Population

16. Judgement Sampling is a probability sampling-
    a. True
    b. False
    c. Both a and b
    d. None of the above

17. The hypothesis is true but our test rejects it-
    a. Type II error
    b. Type I error
    c. None of the above
    d. Both of the above

18. The Null Hypothesis is denoted by
    a. H_1
    b. H_A
    c. H_O
    d. N_A

19. A portion of the area under the probability curve of the sampling distribution of the test statistic is called-
    a. Critical region
    b. Degrees of freedom
    c. Level of significance
    d. Two tailed test

20. The concept of Inverse probability introduced by-
    a. Thomas Bayes
    b. Jerome Cardan
    c. Blaise Pascal
    d. A.N.Kolmogorov

-- --- --

Time : 2 Hr. 30 Mins.   Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. a) Two sets of candidates are competing for the positions on the Board of Directors of a company. The probabilities that the first and second sets will win are 0.6 and 0.4 respectively. If the first set wins, the probability of introducing a new product is 0.8, and the corresponding probability if the second set wins is 0.3. What is the probability that the product will be introduced.   5+5=10

   b) A bag contains 7 black and 9white balls. Two balls are drawn from this bag one after the other without replacement. What is the probability that the two balls are black.

2. (i) Define Rank Correlation.   5+5=10

   (ii) A test in Mathematics was taken by 7students. The teacher ranked his pupils according to their academic achievement. The order of achievement from high to low, together with family income for each pupil is-

   A (Rs.8,500), B(Rs.4200), C(Rs.5700), D(8200),D(Rs.25,000),
   E(Rs18,000) and F(Rs 17500)

   Calculate the Spearman's rank correlation between academic achievement and family income

3. From the following data set   5+5=10
   i.   Calculate the two regression equations.
   ii. Estimate the value of Y when X is 30

x	y
11	7
7	5
9	3
5	2
8	6
6	4
10	8

4. (a) Calculate Karl Pearson's Coefficient of correlation from the following data: 8+2=10

X:	9	8	7	6	5	4	3	2	1
Y:	15	16	14	13	11	12	10	8	9

   (b) Distinguish between Correlation and Regression Analysis

5. Define the followings   10
   (a) Null hypothesis & alternative hypothesis
   (b) Type I & Type II error

6. Compute Chi-square from the following data -   10
   O: 40   440   1584   4432
   E: 120   360   1504   4512

7. What is a hypothesis? Explain the various steps in testing a hypothesis.   2+8=10

8. Explain hypothesis. Describe the types and errors of hypothesis.   5+5=10

== == *** == ==