

SECOND SEMESTER M.A. DEGREE EXAMINATION, JUNE 2014

Economics

QUANTITATIVE TECHNIQUES—II

Three Hours

Maximum : 36 Weightage

Part A

Answer all the questions. Weightage 1

1. Multiple correlation lies between

a) -1 and +1	b) 0 and 1
c) 0 and ∞	d) -1 and 0

2. If the correlation coefficient $r=1$, then the two regression lines

a) are collinear	b) are perpendicular
c) meet at ∞	d) meet at $-\infty$

3. For any two events A and B , $P(A \cap \bar{B})$ is

a) $P(B) - P(A)$	b) $P(B) - P(AB)$
c) $P(A) - P(AB)$	d) $P(B) - P(\bar{A}B)$

4. If A and B are mutually exclusive events, then $P(A \cup B)$ is

a) $P(A) - P(B) - P(A \cap B)$	b) $P(A) + P(B)$
c) $P(A) - P(B) + P(A).P(B)$	d) $P(A) - P(B)$

5. If $F(x)$ is the cumulative density function of a discrete random variable X , Then

a) $F(+\infty) = 1$	b) $F(+\infty) = \infty$
c) $F(+\infty) = 0$	d) $F(+\infty)$ does not exist

6. For a binomial distribution mean is 6 and variance is 2 then n is

a) 12	b) 9
c) 3	d) 6

7. Standard error of sample mean is

a) $\frac{\sigma}{\sqrt{n}}$	b) $\frac{\sigma^2}{\sqrt{n}}$
c) $\frac{\sigma^2}{n}$	d) $\frac{\sigma^2}{2n}$

Turn over

8. The error committed by rejecting a true null hypothesis is
- Type-I error
 - Type-II error
 - Level of significance
 - power of the test
9. In ANOVA we test
- the equality of several variances
 - the equality of several means
 - significance of mean
 - significance of variance
10. To test the significance of proportion, we use
- t-test
 - F-test
 - normal test
 - chi-square test

Part B

Answer any eight questions. Weightage 2

11. Define the terms equally likely events and mutually exclusive events. Give examples for each of them?
12. A bag contains 6 white balls, 4 red balls and 10 blue balls. Two balls are drawn at random. Find the probability that they are (i) white and red, (ii) both are red, and (iii) both are blue
13. Define mathematical expectation. The probability that there is at least one error in an accounts statement prepared by A is 0.4 and for B and C they are 0.3 and 0.6 respectively. A, B and C prepared 10, 16 and 20 statements respectively. Find the expected number of correct statements in all.
14. For a Binomial distribution mean is 12 and variance is 3. Find (i) p , (ii) n , and (iii) $P(\text{at least one success})$.
15. Define log normal distribution and Pareto distribution. Give their applications in Economics.
16. Define exponential distribution and discrete uniform distribution.
17. Define chi-square test for goodness of fit.
18. Define law of large numbers and central limit theorem.
19. Define point estimation and interval estimation.

20. Distinguish between (i) null hypothesis and alternative hypothesis, (ii) Level of significance and power.
21. A random sample of size 28 has 54 as mean. The sum of the squared deviations from the mean is 108. Can the sample be regarded as taken from the population having 50 as mean. Also find probable limits in which the mean is expected to lie.
22. Give the procedure for testing the equality of population proportions?

Part C

Answer any two questions. Weightage 4

23. Distinguish between correlation and regression. From the following data obtain the regression line of X on Y and Y on X. Also find Y when X=100.

X: 63	62	72	74	75	82	85	87
Y: 64	65	76	85	78	86	85	88

24. Describe Normal distribution. Give its properties and importance.
25. (a) Explain (i) chi-square test for independence of attributes, (ii) Test for equality of population variance.
- (b) In an anti malarial campaign in a certain area, quinine was administered to 812 persons out of a total population of 3248. the number of fever cases is shown below.

Treatment	Fever	No fever
Quinine	20	792
No quinine	220	2,216

Discuss the usefulness of quinine in checking malaria.

26. Explain one way ANOVA. From the following data test whether the three items are homogeneous.

Item 1 : 23	22	26	24	25	28	20	27		
Item 2 : 24	23	27	25	28	23	25	26	29	30
Item 3 : 28	20	24	20	28	20	22	16	16	