SECOND SEMESTER M.A. DEGREE EXAMINATION, JUNE 2016

(CCSS)

Economics

ECO 2C 08—QUANTITATIVE METHODS FOR ECONOMICS

(2015 Admissions)

Time : Three Hours

Maximum : 36 Weightage

Part A

*Answer **all** the questions.*
Weightage 1.

1. For a continuous random variable, $P(a < x \le b)$ is :

   (a) $F(b) - F(a)$.

   (b) $F(a) - F(b)$.

   (c) $F(b + h) - F(a - h)$.

   (d) $F(b + h) - F(a + h)$.

2. A distribution for which mean greater than variance :

   (a) Geometric.

   (b) Binomial.

   (c) Poisson.

   (d) Exponential.

3. If X follow standard normal then 2X + 3 follows :

   (a) F-distribution.

   (b) Chi-square distribution.

   (c) Normal distribution.

   (d) t-distribution.

4. If X and Y are independent normal variates with mean 1 and 1 and standard deviations 3 and 4 respectively. Then Z = X – Y is normal with :

   (a) Mean 0 and standard deviation 7.

   (b) Mean 0 and standard deviation 5.

   (c) Mean 0 and standard deviation –1.

   (d) Mean 2 and standard deviation 7.

5. Sampling variance of mean based on a sample of size n is :

   (a) $\dfrac{\sigma}{\sqrt{n}}$.

   (b) $\dfrac{\sigma^2}{\sqrt{n}}$.

   (c) $\dfrac{\sigma^2}{n}$.

   (d) $\dfrac{\sigma^2}{2n}$.

Turn over

6. Precision is the reciprocal of :

    (a) Arithmetic mean.
    (b) Median.
    (c) Variance.
    (d) Correlation coefficient.

7. Type I error is :

    (a) Accepting a false null hypothesis.
    (b) Accepting a true null hypothesis.
    (c) Rejecting a false null hypothesis.
    (d) Rejecting a true null hypothesis.

8. When population variance is unknown and sample size is small, to test the significance of the mean, we use :

    (a) *t*-test.
    (b) F-test.
    (c) Normal test.
    (d) Chi-square test.

9. To test the significance of proportion, we use :

    (a) F-test.
    (b) *t*-test.
    (c) Normal test.
    (d) Chi-square test.

10. To test the equality of variances, the test used is :

    (a) *t*-test.
    (b) F-test.
    (c) Paired *t*-test.
    (d) Chi-square test.

(10 × 1 = 10 weightage)

Part B

*Answer any **eight** questions.*
Weightage 2.

11. For a Poisson distribution mean is 4 and standard deviation is 2. Find (i) P (X = 1), (ii) P (at least one success) ; and (iii) skewness.

12. Define log normal distribution and Pareto distribution. Give their applications in Economics.

13. What is meant by sampling distribution and standard error ? Give the sampling distribution of sample mean. What is the standard error of sample mean ?

14. Distinguish between (i) Null hypothesis and alternative hypothesis, (ii) Level of significance and power.

15. Distinguish between large sample tests and small sample tests.

16. Define normal distribution. Give its importance.

17. Define central limit theorem. What is the limiting distribution sample mean ?

18. Explain the terms unbiasedness and efficiency.

19. Distinguish between (i) Simple hypothesis and composite hypothesis ; (ii) One tailed and two tailed test.

20. Explain the procedure of testing of significance of mean.

21. Explain Chi-square test for goodness of fit.

22. A random sample of size 16 has 54 as mean. The sum of the squared deviations from the mean is 135. Can the sample be regarded as taken from the population having 52 as mean.

$(8 \times 2 = 16$ weightage)

Part C

Answer any **two** *questions.*

Weightage 5.

23. (a) Define t, F and Chi-square distributions and give their applications in testing of hypothesis.

    (b) Explain the procedure of testing the equality of proportions.

24. Two samples are drawn from two normal populations. From the following data test whether the two samples have the same variance.

| Sample 1 | : | 63 | 62 | 72 | 74 | 75 | 82 | 85 | 87 | |
| Sample 2 | : | 64 | 63 | 67 | 85 | 78 | 63 | 85 | 86 | 89 |

25. A survey of 800 families with 5 children each revealed the following distribution :

No. of boys	:	0	1	2	3	4
No. of girls	:	4	3	2	1	0
No. of families	:	40	170	290	240	60

Test whether male and female births are equally probable.

Turn over

26. Test whether the given varieties are homogeneous.

Variety 1	:	68	62	72	74	75	74	80	82	
Variety 2	:	64	63	68	75	78	73	78	76	79
Variety 3	:	68	66	62	72	70	76	72	75	78

(2 × 5 = 10 weightage)