

KAMARAJ COLLEGE (Autonomous)

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(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

THOOTHUKUDI – 628 003

(8 Pages)

Reg. No:

Question. Code No : 25E00102

Sub Code : 24UMEC22

UG Degree - End Semester Examinations, April 2025

Second Semester

B.A ECONOMICS

Major - Statistics for Economic Analysis and Practices

(For those who joined in July 2024 onwards)

Time : 3 Hours

Maximum : 75 Marks

PART - A (10 × 1 = 10 Marks)

Answer ALL Questions

Choose the correct answer:

1. The circular test is satisfied by:

(a) Simple aggregative Index (b) Passche's Index

(c) Fisher's Index (d) Kelly's Index

2. The best average in the construction of index number is _____

- (a) Median (b) Geometric mean
(c) Mode (d) Arithmetic mean
3. Trend refers to a long-term tendency to
- (a) Decrease Only
(b) Either increase or decrease
(c) Increase Only
(d) None of the these
4. Which of the following components is used for short-term forecast?
- (a) Cyclical (b) Trend
(c) Seasonal (d) None of these
5. The probability of drawing a spade from a pack of cards is:
- (a) $1/52$ (b) $1/13$
(c) $4/13$ (d) $1/4$
6. If the outcome of one event does not influence another event, then the two events are :
- (a) Mutually exclusive (b) Dependent
(c) Independent (d) None of these
7. Large sample theory is applicable when:
- (a) $N > 30$ (b) $N < 30$
(c) $N = 30$ (d) None of these
8. When a null hypothesis is rejected, then it is possible that :

- (a) Type II error has been made
- (b) Correct decision has been made
- (c) Type I error has been made
- (d) None of these

9. The X^2 test was devised by:

- (a) Fisher
- (b) Gauss
- (c) Laplace
- (d) Karl Pearson

10. The number of degrees of freedom in a 3 x 3 contingency table is:

- (a) 8
- (b) 3
- (c) 4
- (d) 9

PART - B (5X5=25 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 250 words.

11. (a) What is Index Numbers? Discuss briefly the merits of Index Numbers?

(OR)

(b) An enquiry into the budgets of middle-class families in a certain city gave the following information:

| | | | | | |
|---------------|--------|-------|----------|-------|---------------|
| Expenses | Food | Fuel | Clothing | Rent | Miscellaneous |
| | 35% | 10% | 20% | 15% | 20% |
| Prices (2014) | Rs.150 | Rs.25 | Rs.75 | Rs.30 | Rs.40 |
| Prices (2015) | Rs.145 | Rs.23 | Rs.65 | Rs.30 | Rs.45 |

What is the cost-of-living index number of 2015 as compared with that of 2014?

12. (a) What is moving average? What are its uses in time series?

(OR)

(b) The following figures relate to the profits of a commercial concern for 8 years

| | | | | | | | | |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
| (Profits Rs.) | 15,420 | 14,470 | 15,520 | 21,020 | 26,120 | 31,950 | 35,370 | 34,670 |

Find the trend of profits by the method of moving averages.

13. (a) In how many ways can 3 girls and 5 boys be arranged in a row so that all the 3 girls are together?

(OR)

- (b) Critically evaluate the classical definition of probability
14. (a) Explain the term random sampling and Stratified random sampling

(OR)

- (b) State the difference between standard deviation and standard error
15. (a) What is X^2 test? What are its various applications

(OR)

- (b) Three teachers use different teaching methods. The average test scores of students taught by each teacher are given below. Use One-way ANOVA to test whether there is a significant difference in their teaching methods.

| Teacher -A | Teacher -B | Teacher -C |
|------------|------------|------------|
| 60 | 55 | 70 |
| 65 | 50 | 75 |
| 70 | 60 | 80 |

PART - C (5 X 8 = 40 Marks)

**Answer ALL Questions choosing either (a) or (b).
Answer should not exceed 500 words.**

16. (a) Explain how a cost-of-living index number is constructed

and examine critically the formula used to construct such an index number.

(OR)

- (b) Calculate the index number by the application of Laspeyre's formula and Paasche's formula from the following data.

| Commodity | Units Consumed | | Price Per Unit | |
|-----------|----------------|------|----------------|------|
| | 2010 | 2015 | 2010 | 2015 |
| A | 20 | 16 | 1.2 | 2.0 |
| B | 35 | 38 | 2.1 | 2.4 |
| C | 10 | 9 | 3.0 | 4.1 |
| D | 45 | 50 | 0.8 | 1.2 |

17. (a) What is time series? What are the main objectives of constructing a time series?

(OR)

- (b) Use the method of least squares to fit a straight line trend to the following data:

| Year | Sales (in'000 Rs.) | Year | Sales (in'000 Rs.) |
|------|-----------------------|------|-----------------------|
| 2005 | 25 | 2011 | 42 |
| 2006 | 29 | 2012 | 48 |

| | | | |
|------|----|------|----|
| 2007 | 28 | 2013 | 45 |
| 2008 | 36 | 2014 | 49 |
| 2009 | 37 | 2015 | 52 |
| 2010 | 42 | | |

Obtain the trend values and estimate the sale in 2017.

18. (a) Define probability and explain the importance of this concept in statistics

(OR)

- (b) An urn contains 8 white and 3 red balls. If two balls are drawn at random, find the probability that (a) both are white, (b) are red and (c) one is of each colour.

19. (a) Explain the concept of statistical significance. What is meant by the statement “the sample mean is significant at the 5% level of significance?”

(OR)

- (b) Distinguish between a census and a sample enquiry

20. (a) What is χ^2 test of goodness fit? What cautions are necessary while applying this test?

(OR)

(b) Given the following test scores of students taught by three different teaching methods:

Method A: 85, 90, 88, 75, 95

Method B: 78, 82, 84, 80, 76

Method C: 92, 88, 85, 91, 89

Test at 5% level of significance whether the teaching methods differ in their effectiveness by using One Way ANOVA.