

Reg. No. :

Name :

Final Year B.A. Degree Examination, April 2021

Economics

Part III : Paper V : QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS
(2005 Admission Onwards)

Time : 3 Hours

Max. Marks : 100

Answer may be written in English or in Malayalam.

I. Choose the correct answer, write only the alphabet :

1. For a function $y = f(x)$, the sufficient condition for minima is

(a) $\frac{dy}{dx} = 0$

(b) $\frac{d^2y}{dx^2} > 0$

(c) $\frac{dy}{dx} = 1$

(d) $\frac{d^2y}{dx^2} < 1$

2. $\log_{10} 100$ is

(a) 1000

(b) 2

(c) 10

(d) 3

P.T.O.

3. Which of the following is not a measure of central tendency

- (a) Arithmetic mean
- (b) Harmonic mean
- (c) Range
- (d) Geometric mean

4. If mean > median, the distribution is,

- (a) Positively skewed
- (b) Negatively skewed
- (c) Normally distributed
- (d) None of the above

5. A matrix 'H' is symmetric matrix if,

- (a) $H = H^2$
- (b) $H = -H$
- (c) $H = -H^T$
- (d) $H = H^T$

(5 × 1 = 5 Marks)

II. State True or False :

- 6. The minimum value of probability for an event to occur is one.
- 7. The base of common logarithm is 10.
- 8. Seasonal variation is a component of time series.
- 9. Positive correlation between income and consumption is most often spurious.
- 10. The proportion 3 : 12 is equal to proportion 4 : 18

(5 × 1 = 5 Marks)

III. Fill in the blanks :

11. The formula for calculating Co-efficient of variation is _____.
12. In the case of mutually exclusive events A and B , $P(A \cup B)$ is _____.
13. The value of the function $y = 3x^2$ when $x = 4$ is _____.
14. The sum of the leading diagonal elements of a square matrix is called _____.
15. The measure of peakedness of a distribution is called _____.

(5 × 1 = 5 Marks)

IV. Define any four of the following :

16. Consumer Price Index.
17. Mathematical expectation.
18. Intercept in regression.
19. Quartile deviation.
20. Exogenous variable.

(4 × 1 = 4 Marks)

V. Answer any seven of the following in not exceeding half a page :

21. Find the marginal revenue, given the demand function $P = 10 - 3q$.
22. For two independent events A and B , $P(A) = 2/7$ and $P(B) = 2/3$. Calculate the probability for both A and B to happen.
23. Solve the quadratic equation $x^2 - 2x - 15 = 0$.
24. List out any three limitations of Range as a measure of dispersion.

25. Find the price elasticity of demand for the function $Qd = 15 - P^2 - P$ when $p = 3$.
26. Distinguish between Geometric Mean and Harmonic Mean.
27. What are the features of Binomial Distribution?
28. Write a note of standard deviation.
29. What is meant by irregular variations in time series? Give any two examples.
30. Evaluate $\int 6x - 2$.

(7 × 3 = 21 Marks)

VI. Answer any six of the following not exceeding one page each :

31. The marks obtained in Physics and Chemistry by 5 students is given below. Obtain Spearman's Rank correlation co-efficient.

Marks in Physics :	56	49	72	83	73
Marks in Chemistry :	63	64	66	62	76

32. Derive the intercept and slope terms in simple linear regression equation using normal equations.
33. Solve the quadratic equation $x^2 + 5x + 6 = 0$ using formula.
34. Write a note on various marginal concepts.
35. Explain the properties of determinants.
36. Distinguish between skewness and kurtosis.
37. Prove that the function $y = 3x^3 + 2x^2y + xy^2 + y^3$ is homogeneous and find out the degree of homogeneity.

38. $A = \{3, 6, 9\}$ and $B = \{5, 4, 1\}$ Obtain the Cartesian product $A \times B$.
39. Distinguish between exogenous and endogenous variables and provide examples for both.
40. Comment on the usefulness of time series analysis.

(6 × 5 = 30 Marks)

VII. Answer any three of the following not exceeding 3 pages :

41. Fit a regression of Y on X for the given data using ordinary least squares principle and interpret your result.

X	28	36	40	18	25	37	48	22	19	26
Y	9	8	12	15	21	20	17	12	9	10

42. Calculate Fisher's index numbers for the given data :

Commodity	P_0	Q_0	P_1	Q_1
A	25	200	23	220
B	20	155	18	180
C	18	78	12	60
D	30	90	34	88
E	25	50	28	45

43. Find AB given $A = \begin{bmatrix} 3 & -4 & 7 \\ 6 & 0 & 5 \\ 0 & -1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 1 & -2 \\ 4 & 3 & 5 \\ -9 & 6 & -1 \end{bmatrix}$

44. Describe in detail the properties and applications of normal distribution.

45. Solve the system of Equations

$$2X - Y + Z = -2$$

$$X + 5Y + 2Z = 9$$

$$X + Y + Z = 2$$

46. Write an essay on various measures of central tendency.

(3 × 10 = 30 Marks)
