

FOURTH SEMESTER B.A DEGREE EXAMINATION, APRIL 2020

(CUCBCSS-UG)

(Regular/Supplementary/Improvement)

CC15U ECO4 B05 - QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS II

(Economics - Core Course)

(2015 Admission onwards)

Time: Three Hours

Maximum: 80 Marks

Section A (Objective type questions)Answer **all** questions. Each question carries ½ mark.

1. $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \dots$
 - a) 0
 - b) 2
 - c) 4
 - d) ∞
2. The derivative of $y = 3x^3 + 4$ is _____
 - a) $6x + 4$
 - b) $9x + 4$
 - c) $9x^2 + 4$
 - d) $9x^2$
3. The procedure of combining two or more overlapping series of index numbers into one continuous series is called _____
 - a) Splicing
 - b) deflating
 - c) Base shifting
 - d) None these
4. Fisher's is the _____ of Laspeyre's and Paasche's Index number
 - a) Harmonic mean
 - b) Arithmetic mean
 - c) Geometric mean
 - d) None
5. Variation due to unpredictable forces in time series is called
 - a) Trend
 - b) Seasonal Variation
 - c) Cyclical Variation
 - d) Irregular Variation
6. Probability of a sample space is equal to _____
 - a) 0
 - b) 1
 - c) $0 \leq P(s) \leq 1$
 - d) None of these
7. Weight used in the paasche's index number is _____
 - a) Base Year Quantity
 - b) Current Year Quantity
 - c) Current Year Price
 - d) Base Year Price
8. _____ is used for comparison of mortality of two population.
 - a) Crude Death Rate
 - b) Specific Death Rate
 - c) Standardized Death Rate
 - d) None of these
9. Which of the following index numbers is used for estimating real wages of workers?
 - a) Simple index number
 - b) Fisher's index number
 - c) Consumer Price Index number
 - d) None of these

10. If A and B are Mutually Exclusive events then addition theorem of probability states that

- a) $P(A \cup B) = P(A) + P(B)$ b) $P(A \cup B) = P(A) + P(B) + P(A \cap B)$
 c) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ d) None of these

11. Find the total cost of producing 10 units for the cost function $c(x) = 1 + 5x + 3x^2$

- a) 4 b) 65 c) 351 d) 33

12. Find the Probability that a throw of an unbiased die results in an even number

- a) 1/6 b) 1/3 c) 1/2 d) 1/4

(12 x 1/2 = 6 Marks)

Section B (Very Short Answer Type)

Answer any *ten* questions not exceeding one paragraph. Each question carries 5 marks.

13. Define vital statistics.
14. Find the derivative of $y = (2x + 5)^2$ with respect to x.
15. Define Continuity of a function
16. Define additive model of time series.
17. What are the utility of time series?
18. Define Irregular Variation.
19. Define General Fertility Rate.
20. Define Infant mortality rate
21. Define Laspeyre's Index Number
22. Define Event.
23. Define mutually exclusive events.
24. Explain Statistical Regularity.

(10 x 2 = 20 Marks)

Section C (Short Answer Type)

Answer any *six* questions not exceeding one page. Each question carries 5 marks.

25. Find the partial derivatives of $x^2 + 2xy + y^2$?
26. Differentiate $y = x \log x$ with respect to x.
27. Distinguish between seasonal variation and cyclical variation.
28. Find the maxima and minima of $y = 2x^3 - 3x^2 - 12x + 4$?
29. What are the limitations of index number?
30. What are the different methods for collecting vital statistics?

31. Three Coins are tossed. Find the probability of getting at least one head and at most one head?

32. Given $P(A) = \frac{1}{3}, P(B) = \frac{3}{4}$ and $P(A \cup B) = \frac{11}{12}$ Find $P(A/B)$ and $P(A \cap B^c)$

(6 x 5 = 30 Marks)

Section D (Essay Type Questions)

Answer any *two* questions not exceeding three pages. Each question carries 12 marks.

33. Calculate Fisher's index number for the following data and show that it satisfy time reversal test and factor reversal test.

Commodities	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	22	55	28	60
B	18	48	20	40
C	10	57	16	55
D	14	38	16	47

34. Find the trend values by Four yearly moving average for the following time series

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Value	464	515	518	467	502	540	557	571	586	612

35. Calculate Crude Death Rate and Standardised Death Rate from the following Data.

Age (Years)	Population	No of Deaths	Standard population (% age distribution)
0-9	23000	443	19
10-19	19000	286	17
20-39	27000	293	28
40-59	22000	320	20
60-79	13000	272	11
Above 80	6000	396	5

36. A can solve 30% of the problems in a text. B can Solve 40% and C can Solve 50% of them. If a randomly selected Problem is given to them, what is the probability that it is solved?

(2 x 12 = 24 Marks)
