B.A DEGREE (CBCS) REGULAR / REAPPEARANCE EXAMINATIONS, NOVEMBER 2022

Fifth Semester

CORE COURSE - EC5CRT07 - QUANTITATIVE TECHNIQUES

Common for B.A Economics Model I, B.A Economics Model II Foreign Trade & B.A Economics Model II Insurance

2017 Admission Onwards

05831CF7

Time: 3 Hours

Max. Marks : 80

Instructions to Private candidates only*: This question paper contains **two sections**. Answer **SECTION I** questions in the answer-book provided. **SECTION II**, Internal examination questions must be answered in the question paper itself. Follow the detailed instructions given under **SECTION II***

SECTION I

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. Define Variables.

2. Distinguish between finite and infinite sequences.

3. Explain the concept of Net Present Value.

4. Explain Integers.

5. What are derivatives?

6. Differentiate (a) $y = \sqrt{x}$ (b) $y = (1/x)$

7. What are the conditions for maximum.

8. Find A U B when A ={ 0,1,2} and B = {a,x,y}

9. Define quadratic equation.

10. let Z= $\begin{pmatrix} 1 & 2 & -1 \\ 3 & 2 & -1 \\ 0 & 0 & 1 \end{pmatrix}$. Write the order of the matrix and find Z_{13} and Z_{32}

11. A coin is tossed five times. What is the probability of getting heads in all the trials?

12. Define binomial frequency distribution.

$(10×2=20)$

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Briefly explain the properties of exponents.

14. Find the sum of first 15 terms of the GP : 32, 16, 8, 4, ...

15. The total revenue function of a firm selling a single commodity x is given as $R = 80x - 4x^2$ find MR at x=8

16. Explain venn diagram.

17. From the Indifference schedule for pen and paper given below. Draw Indifference curve:

    pen (units) : 1,2,3,4

    paper (units) : 30,20,12,10

18. Explain different types of matrices.

19. Explain the different approaches of Probability.

20. Explain the addition and multiplication theorem of probability.

21. Explain conditional probability. How is it calculated?

$(6×5=30)$

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. Solve the following equations   a. $x^2 + 4x - 21 = 0$ b. $2x^2 + 3x - 27 = 0$ c. $x^2 - 9x + 8 = 0$.

23. A company has examined the cost structure and has determined that C the total cost, R the total revenue, X the number of units produced are related as $C = 100 + 0.015X^2$ and R = 3x. Find the production rate X that will maximixe the profit of the company, Find that profit.

24. Solve following Equations using matrices a. inverse method b . Cramer's rule

    x+y+z = 7, x+2y +3z = 16, x+ 3y + 4z = 22

25. Mean salary of workers in a factory is Rs.5400 with a SD of Rs.480. If a worker is selected at randoam find the probability that his salary is (i) less that Rs.4800, (ii) between Rs.5000 and Rs.6000, (iii) exactly equal to Rs.5100 (iv) greater than Rs.5600

$(2×15=30)$