B.A DEGREE (CBCS) EXAMINATION, FEBRUARY 2021

Fifth Semester

Core Course - EC5CRT07 - QUANTITATIVE TECHNIQUES

B.A Economics Model I,B.A Economics Model II Foreign Trade,B.A Economics Model II Insurance

2017 Admission Onwards

21732507

Time: 3 Hours

Max. Marks : 80

Part A

*Answer any **ten** questions.*

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

1. Define Variables.

2. Define Quadratic Equations.

3. Define Exponent.

4. Define Arithmetic Progression.

5. Find the second order derivative of the following function: $y = x^3+4x^2+2x+3$

6. Find the subset of set S ={1,3,5,7}. Also find the total number of subsets possible.

7. Define Venn diagram.

8. If A = {1,2} and B = {a, b} . Find A * B

9. Define a triangular matrix.

10. What are the basic principles of Axiomatic approach of probability?

11. State the Multiplication theorem of probability.

12. Define partially overlapping events.

(10×2=20)

Part B

*Answer any **six** questions.*

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

13. One borrows Rs. 20,000 at 12% compound rate of interest. How much money he has to

pay back at the end of 4 years? Also find the interest for the period.

14. Explain the mathematical properties of real numbers.

15. Differentiate $y=x(1+x^2)$

16. Examine the following functions for its maxima or minima and determine its value
    $C = 2x^2-12x+40$

17. Derive a TR curve from a firm's demand function P= 80- 2x

18. If P = $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$ and Q= $\begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix}$. Then show that PQ not equal to QP

19. Find $\begin{vmatrix} 1 & -3 & 2 \\ 4 & -1 & 2 \\ 3 & 5 & 2 \end{vmatrix}$

20. Find the probability of drawing an ace or a spade from the pack of cards.

21. State the properties of binomial distribution.

$(6\times5=30)$

Part C

*Answer any **two** questions.*

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

22. What is meant by differentiation. State the important rules of differentiation.

23. The demand function of a monopolist is $p=15-2x$ and the cost function is $c=x^2 +2x$ find the
    1. marginal cost
    2. marginal revenue
    3. equlibrium output
    4. average cost
    5. average cost when output is 4 units

24. Solve the system of equation : 12 x- 16 y+20z = -24 , 4x+4y-8z = -4 and 8x+12y +4z = 20

25. In an intelligence test administered to 1000 students the average score was 42 and SD 24. Find the number of students (a) exceeding a score 50, (b) scoring between 30 and 54. Also find (c) the value exceeded by the top 100.

$(2\times15=30)$