23135089

QP CODE: 23135089

Reg No : .....

Name : .....

B.A DEGREE (CBCS) REGULAR / REAPPEARANCE EXAMINATIONS, OCTOBER 2023

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

DB6D7743

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*

Part A

Answer any ***ten*** *questions.*

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

1. Define parameters.
2. Define Simultaneous Equations.
3. Briefly explain the properties of Exponents.
4. Distinguish between finite and infinite sequences.
5. What are derivatives?
6. Differentiate (a) $y = e^x$ (b) $y = e^{2x}$
7. Find the second order derivative of the following function

   $Y = (2x+1)(3x^2-1)$
8. State the difference between finite and infinite set.
9. If A = {1,2} and B = {a, b} . Find A * B
10. Define linear equations.
11. What are the basic principles of Axiomatic approach of probability?

12. Define sample space.

(10×2=20)

Part B

*Answer any **six** questions.*

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

13. Briefly explain the application of Progression in Economics.

14. The present value of a machine is Rs. 80000. It is know that the value of the machine depreciates 10% annually. Find its value 3 years ago.

15. Determine the maximum and minimum values of the function $f(X) = x^3-6x^2+9x-5$

16. Explain venn diagram.

17. Explain the following concepts:
1. exponential function 2. logarithmic function 3. monotone function 4. linear function

18. Find BA if $A = \begin{bmatrix} 2 & 1 \\ -1 & 0 \\ 3 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$

19. Explain the addition and multiplication theorem of probability.

20. One hundred investigators are asked to take samples of 10 persons each to determine whether they are vegetarians. How many invetigators would you expect to report 2 or less are vegetarians assuming that 40 percent of the people are vegetarians?

21. Mean salary of 500 workers in afactory is Rs.6810 with a standard deviation of Rs.330. How many workers in the factory would you expect a salary greater than Rs.7200 assuming that the distribution is normal?

(6×5=30)

Part C

*Answer any **two** questions.*

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

22. Elaborate on the different types of numbers on the real number system with its mathematical properties.

23. Give an account of the applications of derivatives in economics.

24. Find inverse of matrix given below if it exists:

a. $\begin{bmatrix} 0 & 2 & 4 \\ 2 & 4 & 6 \\ 6 & 2 & 2 \end{bmatrix}$

b. $\begin{bmatrix} 4 & 2 & 4 \\ 2 & 0 & 2 \\ 8 & 2 & 8 \end{bmatrix}$

c. $\begin{bmatrix} 2 & 2 & 2 \\ 4 & 4 & 6 \\ 2 & 8 & 18 \end{bmatrix}$

25. Explain the properties of a normal curve.

(2×15=30)