TB214230W

Reg. No: .....
Name: .....

B. A. DEGREE (C.B.C.S) EXAMINATION, MARCH 2023

(2021Admission Regular, 2020 Admission Supplementary/Improvement,2019&2018 Admission Supplementary)

SEMESTER IV- COMPLEMENTARY COURSE (ECONOMICS)
EC4C03B18 - SYMBOLIC LOGIC

Time: Three Hours **Maximum Marks: 80**

PART A

I Answer any Ten questions. Each question carries two marks (10x2=20)

1. Write a short note on advantages of using symbols in logic
2. What is the validity of an argument?
3. Symbolic expression of 'a if and only if b'
4. Name the statement form only with false substitution instances
5. What is the difference between variables and constants?
6. Which function of language is used for expressing emotions and feelings?
7. Define conjunction
8. Define universal instantiation
9. What is reductio ad absurdum?
10. Symbolize the statement 'All snakes are reptiles' by using quantification
11. What is the relation between logic and language
12. Identify the given rule from the nine rules of inference

    a). $p \supset q$
    $\sim q$
    $\therefore \sim p$

PART B

II.Answer any six questions. Each question carries 5 marks (6x5=30)

13. Give an account of statement forms with truth tables
14. Explain preliminary rules of quantification
15. Determine the validity/invalidity of following argument using shorter truth table method

    a) $A \supset B$
    $C \supset D$
    $A \vee D$

    $\therefore B \vee C$

16. Write a note on bi-conditional statements
17. Explain three functions of language
18. Discuss truth and validity in symbolic logic
19. If A,B,C are true and X,Y,Z are false, find out the truth/falsehood of following statements

    a) $[(A \supset B) \vee C] \equiv (X \supset A)$

b) $(A \supset \sim B) \vee \sim C$

20. Symbolize the given argument and determine the validity/invalidity by using truth table method
    a) If John is healthy (h), then he is active(a)
       He is healthy
       ∴ John is active
21. Find out whether the following statement are tautology or contradictory or contingent
    a) $[(p \supset q).(q \supset r) \supset [(p.q) \vee \sim r]$

PART C

III. Answer any two questions. Each questions carries 15 marks (2x15=30)

22. Explain the truth functionally compound statements with its truth tables
23. Determine the validity/invalidity of following argument using shorter truth table method

a). $(p \supset q) \supset r$
$p \vee r$
$\therefore q \vee r$

b). $p \supset (q \supset r)$
$p \supset q$
$\therefore p \supset r$

c). $p \supset q$
$q \supset r$
$\sim p$
$\therefore \sim r$

24. Explain truth table method and determine the validity/invalidity of given argument using truth table method

$P \supset q$
$r \supset s$
$p \cdot r$
$\therefore q \cdot s$

25. Construct formal proof of validity (with rules of inference) of following argument

a). $M \supset N$
$N \supset O$
$(M \supset O) \supset (N \supset P)$
$(M \supset P) \supset Q$
$\therefore Q$

b). $A \supset B$
$C \supset D$
$A \cdot D$
$\therefore B \cdot D$