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Reg. No. : ....

Name : ....

Sixth Semester B.A. Degree Examination, April 2022

First Degree Programme under CBCSS

Philosophy

Core Course

PL 1641 – SYMBOLIC LOGIC

(2018 & 2019 Admission)

Time : 3 Hours   Max. Marks : 80

PART – A

Answer **all** questions in **one** word or sentence. **Each** question carries **1** mark.

1. State the truth functional connectives for inclusive disjunction and conjunction.

2. Present the truth table for negation.

3. Define variable symbol.

4. What is compound proposition? Give example.

5. Give the symbolic representation of the statement 'it is false that all animals are cruel' by using the variable and constant symbols.

6. If p and q are false, state the truth values of the following : $p \supset q$, $p \equiv q$.

7. If a statement form contains only false substitution instances, what is it called?

8. State the rule of addition.

9. When does an argument become invalid?

10. Give the symbolic representation of Modus Ponens.

(10 × 1 = 10 Marks)

P.T.O.

PART – B

Answer **any eight** questions in a paragraph each. Each Question carries **2 marks**.

11. Write a note on tautology.

12. Draw the truth table for conjunction.

13. What are the basic constant symbols?

14. Bring out the distinction between proposition and sentence.

15. If P and Q are true and R is false find out whether the following statement is true or false. $(P \cdot Q) \vee R$.

16. Examine whether negation is a truth functional connective or not.

17. Define three bar symbol with the help of a truth table.

18. Use truth table to determine the validity / invalidity of the following argument form.

    $p \supset q$

    p

    $\therefore \sim q$

19. Define disjunctive syllogism and give its symbolic form.

20. Draw a valid conclusion from the following premises.

    If you get a job, you can live independently. You got a job.

21. Find out the rule used in the following inference.

    $(M \supset N) \cdot (O \supset P)$

    $\sim N \vee \sim P$

    $\therefore \sim M \vee \sim O$

22. If P and Q are false what is the truth value of $\sim P \vee Q$ and $P \cdot Q$.

23. Discuss about informative function of language.

24. Write a brief note on contingent statement form.

25. Differentiate between simple and compound statements.

26. Write a note on argument.

$(8 \times 2 = 16 \text{ Marks})$

PART – C

Answer **any six** questions in about **120** words each. Each Question carries **4 marks**

27. What are the two-fold paradoxes of material implication?

28. Briefly explain the relation between logic and language.

29. Symbolize and find out the truth value of the following compound propositions by using the given symbols and values in the bracket.

    (a) The car has either automatic gear or manual gear.(A-True, M-False)

    (b) If he is a computer expert then he will identify the software problem. (C-False, S-False)

30. Define material equivalence with the help of its truth table.

31. Determine the truth value of the following by using truth table method.

    $C \vee D$

    C

    $\therefore \sim D$

32. Differentiate between logical constants and propositional variables.

33. Check whether the given statement is tautology, contradictory or contingent.

    $\sim p \supset (p \supset q)$

34. Give formal proof of the following :

    (a) $A \supset (B \cdot C)$

    (b) $A / \therefore B$

35. If A and B are true and X and Y are false determine the truth value of the following Statements:

    (a) $(A \vee B) \cdot (X \vee B)$

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

36. Prove the validity of Disjunctive syllogism by truth table method.

37. Express the logical relation between 'p' and $\sim\sim p$ by means of the truth table.

38. How to construct a truth table? Describe.

(6 × 4 = 24 Marks)

PART D

Answer **any two** questions in about **600** words each. Each question carries **15** marks.

39. Examine the classification of statement forms with the aid of their truth tables.

40. Construct formal proof of validity for the following :

    (a) $A \supset B$

    $B \supset C$

    $(A \supset C) \supset (B \supset D)$

    $(A \supset D) \supset E / \therefore E$

    (b) $(p \lor q) \supset r$

    $s \lor p$

    $\sim s / \therefore r$

41. State and explain the three basic functions of language and examine the role of language in the thinking process.

42. Give a brief account about the development of symbolic logic from traditional logic.

43. Define truth table. Construct and describe the truth tables for truth functional connectives.

44. Differentiate between argument and argument forms. Convert the given argument into argument form and find out its validity by constructing truth table.

    Either Russia launched an attack on Ukraine or Ukraine launched an attack on Russia

    Ukraine did not launch an attack on Russia.

    Therefore Russia launched an attack on Ukraine.

(2 × 15 = 30 Marks)

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