FYUG Even Semester Exam., 2024

PHILOSOPHY

(2nd Semester)

Course No. : PHISEC-151T

Logic—II (Modern Logic)

Full Marks : 50
Pass Marks : 20

Time : 2 hours

The figures in the margin indicate full marks for the questions

SECTION—A

Answer any *fifteen* of the following questions : 1×15=15

1. "In a valid/invalid argument, if the premises are true conclusion must be true." Is the statement true?

2. "Symbolic logic is also known as formal logic." Is the statement true?

3. State any one characteristic of symbolic logic.

4. "Verbal symbols are used in symbolic logic." Is it true?

5. In indirect proof, what do we assume?

6. State the rule of Addition (Add).

7. State the rule of double negation (DN).

8. State the rule of transposition (Trans).

9. "One of the important decision procedure is the 'shorter truth table method'." Is it true?

10. "Indirect truth table method is also known shorter truth table method." Is it true?

11. What do we assume in indirect truth table method?

12. Give an example of an argument form.

13. 'Something is expensive' can be symbolized as $(\exists x)Ex$. Is it correct?

14. Mention two ways of obtaining propositions from propositional functions.

15. Name a logician who is chiefly connected to quantification.

16. Name the rule which permits us to drop universal quantifier.

17. "The difference between hypothesis and induction is one of degree." Is the statement true?

18. How many kinds of hypothesis are there?

19. Mention any one form of hypothesis.

20. Mention any one stage of hypothesis.

SECTION—B

Answer any *five* of the following questions : 2×5=10

21. What is decision procedure?

22. What is variable?

23. What is indirect proof?

24. What is formal proof of validity?

25. What is the meaning of 'Reductio ad Absurdum'?

26. What is the shorter truth table method?

27. In symbolising universal proposition, why do we use universal quantifier (x)?

28. What is existential quantifier?

29. What is working hypothesis?

30. What is hypothesis?

SECTION—C

Answer any *five* of the following questions : 5×5=25

31. Use truth table to determine the validity or invalidity of the following argument :

$$(A \supset \sim B) \supset (B \vee \sim A)$$
$$\sim (B \vee \sim A)$$
$$\therefore \sim (A \supset \sim B)$$

32. Explain with truth tables three main basic truth functions.

33. Construct formal proof of validity :

$$H \supset (I \vee J)$$
$$\sim I \qquad /\therefore H \supset J$$

34. Use conditional proof to prove the validity of the following argument :

$$A \supset (B \cdot C)$$
$$(B \vee C) \supset I \quad /\therefore A \supset I$$

35. Prove the invalidity of the following by the shorter truth table method : 2½+2½=5

(i) $Z \supset Y$
$X \supset W$
$Z \vee W$
$\therefore Y \vee X$

(iii) $A \supset B$
$B \cdot C$
$C \vee D$
$\therefore \sim A \vee D$

36. Test the following argument form by the indirect truth table method : 2½+2½=5

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

(ii) $p \supset q$
$q \supset r$
$\therefore p \supset r$

37. Symbolise the following by quantifiers : 1×5=5

(a) Some politicians are honest.

(b) All flowers are beautiful.

(c) No dolphins are fish.

(d) All mathematicians are philosophers.

(e) All artists are not philosophers.

38. Construct formal proof of validity by quantifier rules :

$(x)\ (Nx \supset kx)$
$(\exists x)\ (Nx \cdot Hx)$
$/ \therefore (\exists x)(Hx \cdot kx)$

39. Write a short note on 'legitimate conditions of hypothesis'.

40. Define probability. Distinguish between chance and probability. 2+3=5

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