**TDC (CBCS) Odd Semester Exam., 2020
held in March, 2021**

PHILOSOPHY

(5th Semester)

Course No. : PHPSEC–501T

(Logical Reasoning—II)

Full Marks : 50
Pass Marks : 20

Time : 3 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. What is the nerve of inference?

2. What are the constituents of inference in Indian logic?

3. What is Pakṣadharmatā?

4. What is Pakṣatā?

5. What is Liṅga?

6. What is Parāmarśa?

7. What are the different kinds of Hetvābhāsa?

8. What are the different varieties of Asiddha Hetu?

9. Define Viruddha Hetu.

10. Give an example of Viruddha Hetu.

11. Define Asiddha Hetu.

12. Define Bādhita.

13. Write the symbol of implication.

14. State one statement form using disjunctive sign.

15. What is meant by analytical reasoning?

16. What is tautologous statement form?

17. How many rows are necessary for four variables to construct a truth table?

18. Mention one use of symbol.

(_Turn Over_)

(_Continued_)

19. State the rule of material implication.

20. State the rule of Absorption.

21. State the rule of Exportation.

22. State the rule of Association.

23. State the rule of Transposition.

24. State the rule of Distribution.

25. What is set?

26. What is Null set?

27. What is family of set?

28. State one advantage of shorter truth table method.

29. State one disadvantage of shorter truth table method.

30. In between a complete truth table and shorter truth table, which one is more useful to prove invalidity of more extended argument?

SECTION—B

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

31. Distinguish between Pūrvavat and Śeṣavat Anumāna.

32. What is Sāmānyatodṛṣta Anumāna?

33. Define Hetvābhāsa.

34. What is Satpratipakṣa Hetu?

35. Symbolize any two statements using suggested notations in the brackets :

    (a) Mohon or Dipon will come but Sita will not come. (M, D, S)

    (b) Rakhi and Mona will do the work if Lipika does not work. (R, M, L)

    (c) Either Sri Lanka will win the match or India will. (S, I)

    (d) If China gets the gold medal, if Britain does not win the final game then Alaska wins the silver medal. (C, B, A)

36. What is truth table?

37. What is reductio ad absurdum?

38. How many rules of replacement are there?

39. What do you mean by shorter truth table method?

40. Distinguish between finite and infinite set.

SECTION—C

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

41. What is Anumāna? Distinguish between Svārthānumāna and Parārthānumāna.

42. What is Vyāpti? How can it be established?

43. Explain the different types of Asiddha Hetu.

44. Explain the different types of Savyabhicāra Hetu.

45. Construct truth table for any two statement forms and determine whether these are tautologous, contradictory or contingent :

   (a) $P \supset (P \lor q)$

   (b) $(P \supset q) \cdot (\sim q \lor r)$

   (c) $P \equiv (P \cdot q)$

(Turn Over)

46. Use truth table to determine the validity or invalidity of the following arguments (any *two*) :

   (a) Either the train is late or the watch is fast. The train is not late. Therefore, the watch is not fast. (T, W)

   (b) If rains are sufficient and fertilisers are used then crops are good. Either rains are not sufficient or fertilisers are used. Therefore, if fertilisers are not used then crops are not used. (R, F, C)

   (c) $A \supset (B \lor C)$
      $(B \lor C) \supset \sim A$
      ∴ $\sim A$

47. Use conditional proof to prove the validity (any *two*) :

   (a) $(A \lor B) \supset (C \cdot D)$
      $(D \lor E) \supset F$
      ∴ $A \supset F$

   (b) $A \supset (B \supset C)$
      $(B \supset C) \supset I$
      ∴ $A \supset I$

   (c) $A \supset B$
      $C \supset \sim B$
      ∴ $A \supset \sim C$

(Continued)

48. Construct an indirect proof of the following (any *two*) :

(a) A ⊃ (B ∨ C)
A ⊃ C
∴ C

(b) (D ∨ E) ⊃ (F ∨ G)
(∼G ∨ H) ⊃ (D ∨ F)
∴ G

(c) E ⊃ ∼F
F ∨ (E ⊃ G)
∼E
∴ G

49. Prove invalidity of the following argument by using shorter truth table method (any *two*) :

(a) A ⊃ B
C ⊃ D
B ∨ C
∴ A ∨ D

(b) P ⊃ L
L ⊃ M
∴ P ⊃ M

(c) A ⊃ B
B ⊃ C
∴ C ⊃ A

50. Answer any one question from the following :

(a) What are important laws of operation on sets?

(b) If

S = {a, b, c, d, e, f}
A = {a, b, c}
B = {d, e, f}

Say which of the following statements are true and those that are false :

(i) A ⊂ S

(ii) b ∈ A

(iii) B ⊂ S

(iv) ∅ ⊂ B

(c) What do you mean by power set? Explain with example.

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