## MPYE-001 : LOGIC

Time : 3 hours

5

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Maximum Marks : 100

- Note: (i) Answer all the five questions. (ii) All the questions carry equal marks. (iii) Answers to question no. 1 and 2 should be in about 500 words each.
- 1. State and explain the rules and fallacies of 20 Categorical Syllogism.

## OR

Describe five kinds of compound propositions 20 with truth-tables in detail.

Explain the salient aspects of the rule of strengthened conditional proof. Construct formal proof for the following argument using the rule of strengthened proof.

$$(P \Rightarrow Q) \lor R$$
$$(R \Rightarrow S)$$
$$\neg S / \therefore Q \Rightarrow \neg P$$
$$OR$$

What is Quantification ? Give an account of **20** the rules of quantification.

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<ul> <li>(a) Distinguish between deduction and 10 induction with suitable examples.</li> <li>(b) Test the validity or invalidity of the following argument by Venn Diagram method. <ul> <li>"Some philosophers are mathematicians; Some scientists are philosophers,</li> <li>∴ All scientists are philosophers,</li> <li>∴ All scientists are mathematicians"</li> </ul> </li> <li>(c) What is fallacy? Distinguish between 10 formal and informal fallacies.</li> <li>(d) Explain how truth is related to validity. 10</li> </ul> 4. Answer any four of the following questions in about 150 words each : <ul> <li>(a) Explain various classes of terms.</li> <li>(b) Describe the structure of Disjunctive 5 Syllogism.</li> <li>(c) Elucidate tautology, contradictory and contingent sentence forms.</li> <li>(d) Write a note on the role of truth-table in 5 Symbolic Logic.</li> <li>(e) Construct formal proof for the following 5 argument.</li> <ul> <li>(a) [Qx ⇒ Rx]</li> <ul> <li>(∃x) (Qx)</li> <li>∴ (∃x) (Rx)</li> </ul> <li>(f) Test the validity or invalidity of the following argument by using truth - table.</li> </ul></ul>	3.	Answer <b>any two</b> of the following questions in about <b>250</b> words each :			
<ul> <li>(b) Test the validity or invalidity of the following argument by Venn Diagram method.</li> <li>"Some philosophers are mathematicians; Some scientists are philosophers,</li> <li>∴ All scientists are philosophers,</li> <li>∴ All scientists are mathematicians"</li> <li>(c) What is fallacy? Distinguish between 10 formal and informal fallacies.</li> <li>(d) Explain how truth is related to validity.</li> <li>4. Answer any four of the following questions in about 150 words each : <ul> <li>(a) Explain various classes of terms.</li> <li>(b) Describe the structure of Disjunctive 5 Syllogism.</li> <li>(c) Elucidate tautology, contradictory and contingent sentence forms.</li> <li>(d) Write a note on the role of truth-table in 5 Symbolic Logic.</li> <li>(e) Construct formal proof for the following 5 argument.</li> <li>(x) [Qx ⇒ Rx]</li> <li>(∃x) (Qx)</li> <li>∴ (∃x) (Rx)</li> </ul> </li> <li>(f) Test the validity or invalidity of the following argument by using truth - table.</li> </ul>		(a)	Distinguish between deduction and induction with suitable examples.	10	
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(x) $[Qx \Rightarrow Rx]$ $(\exists x) (Qx)$ $\therefore (\exists x) (Rx)$ (f) Test the validity or invalidity of the 5 following argument by using truth - table.		(e)	Construct formal proof for the following argument.	5	
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(f) Test the validity or invalidity of the 5 following argument by using truth - table.			∴ (∃x) (Rx)		
$\mathbf{P} \rightarrow \mathbf{O}$		(f)	Test the validity or invalidity of the following argument by using truth - table. $R \rightarrow O$	5	
$\Gamma \rightarrow Q$ $\Omega \Rightarrow R$			$ \begin{array}{c} \Gamma \rightarrow Q \\ \Omega \Rightarrow R \end{array} $		

 $\therefore P \Rightarrow R$ 

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5. Write a short note on **any five** of the following in about **100** words.

(a)	Proposition	4
(b)	Quantity and Quality	4
(c)	Argument form	4
(d)	Argumentum Ad Populum	4
(e)	Invalid Argument	4
(f)	Monadic and Dyadic Models	4
(g)	Fuzzy logic	4
(h)	Bound variable	4

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