

MPYE-001 Logic

Note:

i) Give answer of all five questions.

ii) All five questions carry equal marks.

iii) The answer of questions no. 1 and 2 should be in about 500 words.

iv) If any question has more than one part, attempt all parts.

1. a) What is Boolean algebra? Write a note on AND and OR Boolean Operators.

b) Write an essay on Logical gates, showing their graphical symbols and representation in Truth table. 20

Or

What is dilemma? How we can avoid dilemma? 20

2. What is venn diagram? Proof the validity/invalidity of the following using Venn Diagram method,

a) Some pens are pencils. Some pencils are blue. Therefore some pens are blue.

b) No scientist is musician. All musicians are poets. Therefore, Some Scientists are poets.

c) All dogs are animals. Some animals are wild animals. Therefore some dogs are not wild animals. 5+5+5+5= 20

Or

Discuss the rule of quantification in detail. How would you apply these quantification rules? Illustrate with examples. 20

3. Answer any **two** questions in about **250** words each. (Word limit is only for theory related questions) 2*10= 20

a) I) What is Quantification Theory? 5+5= 10

II) Apply quantification rules to prove the validity/invalidity of the following syllogistic arguments.

i) All substances have qualities. Some qualities have actions. Therefore, Some substances have actions.

ii) Some politicians are doctors. All doctors are good not orators. Therefore, Some Politicians are good orators.

b) Write an essay on the square of opposition. 10

- c) Describe 'Modus Ponens' and 'Modus Tollens' with an example. 10
- d) What is the difference between material implication and logical implication? Give some examples. 10
4. Answer any **four** questions in about **150** words each. (Word limit is only for theory related questions) $4 \times 5 = 20$
- a) Explain the significance of random variable. 5
- b) State the differences between monadic and dyadic models. 5
- c) Write a note on the problems of induction. 5
- d) Write an essay on the fallacy of presumption. 5
- e) Symbolize the followings using quantifiers. $1+1+1+1+1=5$
- i) Some artists are not scientists.
- ii) Some students of ignou are government employee.
- iii) All horses are not mammals.
- iv) Some pencils are not blue.
- v) Some dogs are cats.
- f) What are the factors which determine the mood of a syllogism? 5
5. Write short notes on any **five** in about **100** words. $5 \times 4 = 20$
- a) Denotation 4
- b) Conjunction 4
- c) Implication 4
- d) Contrary 4
- e) Tautology 4
- f) Digital Logic 4
- g) Fuzzy-genetic Algorithms 4
- h) Contradiction 4