

- Note:** (1) Answer Any Two of the main questions.
(2) Figures to the right indicate full marks.
(3) Symbols have their usual meanings.

Q.1 Answer the following.

- (A) Translate the following natural language statements into predicate logic. (08)
Identify the predicates and quantifiers used in your translation.
(i) Every student who studies regularly and attends all classes will pass the exam.
(ii) No person who smokes can be healthy.
(iii) All citizens in the country are required to pay taxes unless they are exempted by law.
(iv) Some doctors specialize in either surgery or internal medicine, but not both.
- (B) Discuss how identifying premises and conclusions can help in debugging code, (07)
designing algorithms and writing logical codes?

Q.2 Answer the following.

- (A) Identify the type of fallacy in the following statement and explain why it is (08)
fallacious.
(i) If it's a car, it has wheels. This bicycle has wheels. Therefore, it is a car.
(ii) If a country has a strong military, it is safe from external threats. This country is safe from external threats. Therefore, it has a strong military.
(iii) If inflation rises, the cost of goods will increase. Inflation has not risen. Therefore, the cost of goods has not increased.
(iv) All fishes are creatures that live in water. All whales live in water. Therefore, all whales are fishes.
- (B) Explain Fallacies of Relevance with examples. (07)

Q.3 Write short notes on Any Three of the following. (15)

- (A) Inductive reasoning with examples.
(B) Logical equivalences in propositional logic.
(C) Write a short note on how fallacies of relevance can appear in a political debate on Health care policies.
(D) Write a short note on how validity and soundness apply in a legal trial process.

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