

NOTE: In MCQ, correct answer carries 3 marks, wrong is -1 (minus 1). MM=25.

1. The statement “Seeing some one has won lottery twice after every time offering parasada to Lord Shiva before buying lottery ticket, and concluding that I will also buy ticket after offering parasada” is which type reasoning? [3]  
 (A) Deductive reasoning (B) Inductive reasoning  
 (C) Abductive reasoning (D) Analogical Reasoning.  
**Ans. (C)**
  
2. “Doing preparation for the GATE exam assuming that it would be held on the scheduled date of 30th Jan. 2016, however we know that no one can be sure for any future event”, is which type of reasoning? [3]  
 (A) Monotonic reasoning (B) Nonmonotonic reasoning  
 (C) Model-based reasoning (D) Meta-level reasoning  
**Ans. (B)**
  
3. Following is *True* for Turing Test? [3]  
 (A) It does not take care of mathematical questions (B) It is only based on English Language  
 (C) It does not take care of current affairs (D) It is only symbol-based  
**Ans. (D)**
  
4. Given constants:  $a, b$ ; functions:  $f^1, g^2$ , predicates:  $p^1, r^2, q^3$ , which of the following are well-formed formulas/terms of predicate logic? [1x8]  
 (i)  $q(a)$ , (ii)  $p(y)$ , (iii)  $p(q(b))$ , (iv)  $\neg r(x, a)$ , (v)  $q(x, p(a), b)$   
 (vi)  $p(q(f(a), g(x, f(x))))$ , (vii)  $\exists x p(r(a, x))$ , (viii)  $\forall x(x, a)$   
**Ans. (ii), (iv), (v), (vii) are wff, and (i), (iii), (vi), (viii) are not.**
  
5. Reduce the following into CNF (conjunctive normal form):  $p \rightarrow (q \wedge r)$ . [2]  
**Ans:**  $(\neg p \vee q) \wedge (\neg p \vee r)$
  
6. How many models are there in the proposition:  $p \rightarrow q \rightarrow r$ ? [3]  
**Ans: 5**
  
7. Simplify the following expression using resolution principle:  $(p \wedge q) \rightarrow (p \vee q)$ . [3]  
**Ans.** The DNF equivalent of  $(p \wedge q) \rightarrow (p \vee q)$  is  $\neg p \neg q + \neg pq + p\neg q + pq$ . Since DNF is tautology, and all the four terms appear in it, there is no term in CNF, and CNF is simply TRUE. Since it is already “TRUE”, no reduction is possible by resolution..