Roll No. : _____          Total Printed Pages : 3

**4E2923**

B. Tech. (Sem. IV) (Main/Back) Examination, June/July - 2012
Computer Engg. & I.T.
4IT6.3 - Logic & Functional Programming

Time : **3** Hours]                                    [Total Marks : **80**
[Min. Passing Marks : **24**

*Attempt any **five** questions, selecting **one question** from each unit. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*
*Units of quantities used/calculated must be stated clearly.*

Use of following supporting material is permitted during examination.

*(Mentioned in form No. 205)*

1. _____ **Nil** _____          2. _____ **Nil** _____

## UNIT - I

1    Evaluate each prepositions given below into states given below -

$$S_1 = \{(P,T),(q,F),(r,F)\}$$
$$S_2 = \{(P,F),(q,F,),(r,T)\}$$

(a)    $P \wedge q \Rightarrow r$

(b)    $P \Rightarrow q \Leftrightarrow r$

(c)    $(P \vee q) \wedge (p \Rightarrow q) \wedge (q \Rightarrow p)$

(d)    $P \vee q \wedge r$

4×4=16

### OR

1    (a)    Explain "well formed formula" wff. Give truth table of logical operators in prepositions.

8

(b)    What do you mean by proposition, tautology, contradiction and contingency ?

2+2+2+2=8

4E2923]                                    1                          [Contd...

## UNIT - II

2  (a)  What is the syntatic form and usage of fact and rule statements in prolog.

8

   (b)  Explain merits and demerits of prolog ?

8

### OR

2  (a)  Explain how a query is processed in prolog ?

8

   (b)  Explain strength, application and weakness of prolog ?

8

## UNIT - III

3  (a)  **What are the data structure in prolog ?** rtuonline.com

8

   (b)  **Write the difference between DFS and DFID ?**

8

### OR

3  (a)  Explain the representation and implementation of state space in prolog ?

8

   (b)  Explain the following predicates with suitable example :
   (i)    CUT predicate
   (ii)   Fail predicate
   (iii)  NOT predicate

8

## UNIT - IV

4  (a)  Give comparison between functional and imperative language.

8

   (b)  Explain $\alpha, \beta$ and $\eta$ conversions with example.

8

### OR

4    (a)    Explain different functional forms.

                                                    8

     (b)    What is Lambda calculus and explain syntax and semanatics of Lambda calculus ?

                                                    8


## UNIT - V


5    (a)    What is Haskell ? Why Haskell is called functional language? How it is different from other programming language ?

                                                    10

     (b)    Explain Basic INPUT / OUTPUT functions in Haskell.

                                                    6

### OR

5    (a)    Write program in Haskell using structure.

                                                    10

     (b)    Write program in Haskell using type classes.

                                                    6

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