

Total No. of Questions : 6]

SEAT No. :

P77

[Total No. of Pages : 2

APR-17/BE/Insem.-89
B.E. (Computer Engineering)
PROGRAMMING PARADIGMS FOR COMPLEX PROBLEMS-CASE
STUDIES IN PYTHON
(Semester - II) (2012 Pattern) (Open Elective(ii))

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Assume suitable data if necessary.*

- Q1)** a) With the help of suitable example, demonstrate the advantages of Declarative programming over Imperative Programming paradigm. [4]
- b) Relate importance of following concepts with respect to formal reasoning on programs [6]
- i) Predicates
 - ii) Predicates Post-conditions
 - iii) Concatenation of Predicates

OR

- Q2)** a) Describe mechanism of data organization using suitable examples. [4]
- b) Write a simple function to calculate square of a number. Using the function square, design a function quad which raises its argument to the fourth power. [6]
- Q3)** a) With reference to λ calculus, Perform the following substitutions, renaming bound variables where necessary in order to follow the variable convention [6]
- i) $(xyz)[y/z]$.
 - ii) $(\lambda x.x)[y/z]$.
 - iii) $(\lambda y.xy)[zz/x]$.

P.T.O.

- iv) $(\lambda y.xy)[yy/x]$.
 - v) $C[z]$, where $C[X] \equiv \lambda z.Xz$.
 - vi) $C[zy]$, where $C[X] \equiv \lambda xy.yXy$.
- b) Describe the importance of Reductions and Consistency. [4]

OR

- Q4)** a) What is type checking? Why it is important? What are type checking rules? [6]
- b) Check the syntax of following statements with respect to GOFER. [4]
- i) ? [1,2] ++ [3,4,5]
 - ii) ? and [1<2, 2<3, 1= = 0]
 - iii) ? take 3 [2...10]
 - iv) ? map fac [1,2,3,4,5]

- Q5)** a) Explain following terms with suitable examples [6]
- i) Value Semantics
 - ii) Referential Transparency
- b) What are properties of value objects? [4]

OR

- Q6)** a) Write a program in python using functional paradigm for generating two sub- lists of vowels and consonants from given list of words, Count number of vowels and consonants for each word. [6]
- b) Write a short note on applications of Data driven programming. [4]

