Total No. of Questions : 10]

SEAT No. :

P2346

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[5254]- 680 - B

B.E. (Computer Engineering)

PROGRAMMING PARADIGMS FOR COMPLEX PROBLEMS-CASE STUDIES IN PYTHON

(2012 Pattern)(Open Elective) (Semester - II)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Attempt questions Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8 and Q9 or Q10.***

2) ***Assume suitable data, if necessary. Neat diagrams must be drawn wherever necessary.***

Q1) a) Describe the general structure of Python Program. What are generalized rules of compound expression evaluation? **[6]**

b) Create a collection called as dictionary named participant_table that contains mobile number as keys, and their current password as values. Write a function that generates a temporary new password for a given user and updates it in the table. **[4]**

OR

Q2) a) Describe sequences as a type of data structures along with corresponding operations. **[6]**

b) Describe following type of GOFER statements and comment on feature of functional programming covered in the statement. **[4]**

i) Expression Statement.

ii) Assignment Statement.

Q3) a) What are scripts? How these are helpful while writing programs? **[6]**

b) Write a python function to calculate square of a number, using same design a function quad which raises its argument to the fourth power.**[4]**

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OR

Q4) a) What are features of imperative programming paradigms? **[4]**

b) How type systems are good for detecting errors? **[6]**

Q5) a) Give a recursive definition of exponentiation calculations. Prove the same with mathematical induction. **[9]**

b) Using the recursive definitions of addition and multiplication of natural numbers, prove the following properties of arithmetic. **[9]**

i) m + n = n = n + m

ii) K* (m + n) = (K*m) + (K*n)

iii) K * (m * n) = (K * m) * n

OR

Q6) a) Describe following evaluation policies for program defined functions.**[9]**

i) Substitute

ii) Lazy Evaluation

b) What is Tail recursion? Describe factorial calculation using tail recursion. **[9]**

Q7) a) What are pure functions? List and explain advantages of pure functions. **[8]**

b) What is meaning of callable methods of class? Describe Assessors and operators with respect to class. **[8]**

OR

Q8) a) Describe following measures of a tree. **[8]**

i) Size

ii) Depth

b) With suitable examples, describe following object oriented concepts using python. **[8]**

i) Binding

ii) Encapsulation

iii) Destructor

iv) Polymorphism

Q9) a) What happens during a python module import? **[8]**

b) How processing of modules takes place with respect to python? **[8]**

OR

Q10)a) What is role of fabric for application development? **[8]**

b) What are the roles of module? **[8]**