Total No. of Questions : 10]

SEAT No. :

P4838

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[5154]-690-B

B.E. (Computer Engineering) (Semester - II)

PROGRAMMING PARADIGMS FOR COMPLEX PROBLEMS-CASE STUDIES IN PYTHON

(2012 Pattern) (Open Elective)

Time : 2.30 Hours] *[Maximum 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 whenever necessary.***

Q1) a) What is a sequence? What is permutation of sequence? With suitable example discuss CONS and APPEND operation of sequence. **[6]**

b) Write assertion for program that computes intermediate results the quotient and remainder arising from dividing a non negative integer by a positive integer. **[4]**

OR

Q2) a) What is type system? How type system acts as tools for reasoning about programs. **[6]**

b) Specify Typing rules for Booleans with respect to typing relations. **[4]**

Q3) a) What do you mean by proof by induction? State AXIOM for principle of induction on NATURAL numbers. **[6]**

b) Specify Typing rules for numbers with respect to typing relations. **[4]**

OR

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

b) State and explain rule of substitution and transitivity with respect to proposition. **[6]**

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Q5) a) Give a recursive definition of fibonacci series 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) $0 + n = n = n + 0$

ii) $1 * n = n * 1$

iii) $K + (m + n) = (K + m) + n$

OR

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

i) Innermost Evaluation

ii) Outermost Evaluation

b) What are higher order functions? with suitable example demonstrate the significance of higher order functions. **[9]**

Q7) a) What are strict and Non-strict functions? Enlist advantages of the same. **[8]**

b) Describe role of List constructor and selector. **[8]**

OR

Q8) a) Describe functionality of following build-in functions **[8]**

i) itertools.chain ( )

ii) itertools.chain.from_iterable ( )

iii) zip ( )

iv) itertools.zip_longest ( )

b) What are curried functions? How curried functions are useful for expression evaluation? **[8]**

Q9) a) Discuss significance of FAB tool for execution of tasks. **[8]**

b) What are responsibilities of module developer during installing third party modules? **[8]**

OR

Q10) a) What is Relation between distribution and package? **[8]**

b) What is referential transparency? How it is important for expression evaluation? **[8]**

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