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B.Tech. IV semester (Main/Back) Examination May - 2018
Computer Science and Engineering
4CS6A Principles of Programming Languages
CS, IT

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 26

Instructions to Candidates:

*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.*

Unit - I

1. a) Explain Any Four features of a good programming language. **(8)**

    b) Explain the four basic computational models that describe most programming languages by giving examples of each. **(8)**

    OR

1. a) Explain the most common functions of the semantic analyzers in language translation process. **(8)**

    b) Explain the six major features of a computer system from which languages are designed. **(8)**

Unit - II

2. a) What are elementary data types? Explain the implementation of elementary data types. **(8)**

    b) What is type checking? Explain its types with their advantages and disadvantages. **(8)**

    OR

2. a) What are arrays? Derive formulae to compute l - value of a component in one - dimensional and two - dimensional arrays. **(8)**

    b) What are sequential access files? Explan major operations on sequential access files. **(8)**

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Unit - III

3. (a) What is sequence control? Explain implicit and explicit sequence control structures. (4)

(b) Explain the precedence and associativity rules of operators with examples. (4)

(c) What are exceptions? Explain exception handling mechanism with giving example in C++. (8)

OR

3. a) What are subprogram definition and activation? Construct the structure of the subprogram activation for the following 'C' subprogram : (8)

float sub (float x, int y)

{ const int val = 2,

define final 10

float A[10], Int n;

n = val;

if (n>final) {...}

return (20*x+A[n]; }

b) What is recursive sub program? Explain its specifications and implementation.

(8)

Unit - IV

4. (a) Explain the static and dynamic scope of an identifier with their rules. (8)

b) Explain the Retention and Deletion approaches to local environment of a subprogram with their advantages and disadvantages. (8)

OR

4. a) Consider the following subprograms, where P is calling subprogram and Q is called subprogram, what values are printed when P is executed.

```
P ( )                           Q (int i, int *j)
{ int c[4];                     { i = i + 10;
int m,                          *j = *j + 10;
c[1]=6; c[2] = 7; c[3] = 8;     printf ("%d %d\n", i, *j);
Q (c[1], & c[2]);               }
for (m = 1; m< = 3, m++)
printf ("%d\n", c[m]);
}
```
(4)

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b) What are tasks? Explain the different approaches of storage management in tasks. (8)

c) Explain the concept of block structure. (4)

Unit - V

5. a) Write short notes on :

   i) Abstract data type

   ii) Type definition (2×4=8)

   b) Explain static storage management with its advantages and disadvantages. (8)

OR

5. a) What are garbage and dangling references? Write 'C' codes that create garbage and dangling reference. http://www.rtuonline.com (4)

   b) Explain the phases of variable size heap storage management. (12)

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