

Code: 9A05501

R09

B.Tech III Year I Semester (R09) Supplementary Examinations June 2016

PRINCIPLES OF PROGRAMMING LANGUAGES

(Common to CSE and ECC)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) With neat diagram, explain different phases of a compiler?
(b) What are three fundamental features of object oriented programming language?

- 2 (a) Prove that the following grammar is ambiguous:

$$\begin{aligned} S &\rightarrow A \\ A &\rightarrow A + A \mid id \\ id &\rightarrow a \mid b \mid c \end{aligned}$$

- (b) Describe in English, the language defined by the following grammar:

$$\begin{aligned} S &\rightarrow ABC \\ A &\rightarrow aA \mid a \\ B &\rightarrow aB \mid b \\ C &\rightarrow cC \mid c \end{aligned}$$

- 3 (a) Explain different implementation issues of character string types.
(b) What are design issues of enumeration data type?
- 4 (a) What is functional side Effect? Explain with examples.
(b) What is type conversion? Explain two kinds of type conversions.

- 5 (a) Consider the following program written in C:

```
void main ( )
{
    int value = 2, list[5] = {1, 3, 5, 7, 9};
    swap (value, list[0]);
    swap (list[0], list[1]);
    swap (value, list[value]);
}

void swap(int a, int b)
{
    int temp;
    temp = a;
    a = b;
    b = temp;
}
```

For each of the following parameter passing methods, what are all of the values of the variables **value** and **list** after each of the three calls to swap?

(i) Pass by value. (ii) Pass by reference. (iii) Pass by value result.

- (b) What are two fundamental design considerations for parameter passing methods?
- 6 (a) Explain user defined abstract data types with examples.
(b) What are abstract data types?
- 7 Explain in detail exception handling in C++ with example.

- 8 (a) Discuss in detail about the different data structures that are present in LISP with suitable examples.
(b) Explain with an example, the where clause in Prolog.
