

**2008-RAJASTHAN UNIVERSITY**  
**II B.TECH IV SEMESTER DEGREE EXAMINATION**  
**OBJECT ORIENTED PROGRAMMING**  
**(INFORMATION TECHNOLOGY)**

TIME-3HOUR  
MARKS-80

ANSWER ALL QUESTIONS

1 (a) Highlight the main features of following programming paradigm:

- (i) Interactive Programming
- (ii) Object-Oriented Programming
- (iii) Functional Programming
- (iv) Logic Programming

(b) Write a grammar for If-then-else statements which does not have any ambiguity and eliminates 'dangling else' problem.

OR

1 (a) Describe the following properties of good programming language

:

- (i) Abstraction
- (ii) Orthogonality
- (iii) Clarity about binding
- (iv) Reliability and support

(b) Consider the expression  $x+y/z$  in the language C. How many different meanings does this expression have, depending on the types of  $x$  and  $y$ ?

(c) Write a regular grammar for following regular expression:  $(111+100)^*0$

2 (a) There is an equivalence of arrays and pointers in C/C++. Explain

(b) Describe the implementation of structures and unions.

OR

2 (a) Describe the implementation of character string in programming languages.

(b) Describe type conversion and type equivalence roles used for programming language.

3 (a) Consider the following C-like program:

```
void swap(int [] list, int i, int j)
{
int temp=list[i];
list[i]=list[j];
list[j]=temp;
}
void main()
{
int x[3]={5,2,4};
swap(x,1,2);
}
```

What is the final value of the array  $x$  for each of the following parameter passing assumptions?

(i) Argument  $x$  is passed by value

- (ii) Argument x is passed by reference
- (iii) Argument x is passed by value-result.

(b) What is exception? How these exceptions are handled and propagated to other programs?

OR

3 (a) Describe sequence control methods for recursive subprograms?

(b) What are activation records? How are they useful in subprogram calls?

4 (a) Explain implementation of dynamic arrays.

(b) Discuss the problem of garbage, dangling references, and fragmentation that results with each of these possible implementations of 'new' and 'dispose' (free).

OR

4 (a) Discuss all the elements of a program which require storage. Explain how references counts help in garbage collection and recovery?

(b) Explain following terms in object-oriented programming, abstract data types, visibility and information hiding, templates.

5 (a) Describe life cycle of a Thread. Describe the Thread synchronization mechanism in **JAVA**.

(b) What do you mean by race conditions and deadlocks. Explain a mechanism for synchronizing access to the shared

OR

5 (a) Write monitor constructs for solving synchronization problem of producer-consumer problem.

(b) Explain message passing mechanism for synchronization. Write a protocol using message passing for solving producer-consumer problem.

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