Total No. of Questions—8]   [Total No. of Printed Pages—3

Seat
No.   **[4957]-1077**

S.E. (Computer) (II Semester) EXAMINATION, 2016
OBJECT ORIENTED AND MULTICORE PROGRAMMING
(2012 PATTERN)

Time : Two Hours   **Maximum Marks : 50**

N.B. :— (*i*)   Neat diagrams must be drawn wherever necessary.

(*ii*)   Figures to the right indicate full marks.

(*iii*)   Use of Calculator is allowed.

(*iv*)   Assume suitable data, if necessary.

1.   (*a*)   Write a short note on :   [6]

(*i*)   Reference variable with example.

(*ii*)   Virtual destructor.

(*b*)   Write a short note on types of inheritance with respect to
following :   [6]

(*i*)   Single

(*ii*)   Multiple

(*iii*)   Hierarchical.

Or

2.   (*a*)   Explain array of objects with example.   [6]

(*b*)   Write a C++ program for vector addition using operator
overloading. Vector consists of 2 attributes ax, ay for magnitude
and direction (both int). Create 3 vectors v1, v2, v3 with v1
(3, 4) and v2 (7, 5). After performing v3 = v1 + v2;
user should be able to print v3's ax and ay values to
10 and 9 resp.   [6]

P.T.O.

3. (*a*) A warehouse management system requires taking user input and displaying items which are present. Use any STL (vector, list, etc) to implement the system. Item consist of 3 attributes (name, code both strings and price in float). Write menu driven C++ program to accept and display items. [6]

(*b*) Explain system processes and user processes. [6]

Or

4. (*a*) Write a short note on following with the help of examples : [6]

   (*i*) Multiple exception handling

   (*ii*) Namespaces.

(*b*) Create child processes using posix_spawn( ) function. Use object oriented approach for process management. Write menu driven C++ program to create *n* processes (where *n* is any +ve integer given by user) and display their pid's on console. All n child processes will execute the ps utility, which resides in "/bin/ps". [6]

5. (*a*) Differentiate between threads and processes. [7]

(*b*) Write a detailed note on termination of threads. [6]

Or

6. (*a*) What are the similarities between threads and processes ? [6]

(*b*) Explain architecture of thread with the help of diagram. [7]

7. (*a*) What is persistence of an object ? Explain persistence with respect to IPC. [4]

(*b*) Write a short note on IPC mechanism using : [6]

(*i*) Files

(*ii*) Pipes.

(*c*) What are the types of synchronization ? [3]

Or

8. (*a*) Explain following : [9]

(*i*) Basic semaphore operations with P( ) and V( )

(*ii*) Mutex semaphores in POSIX

(*iii*) Delegation model for threaded application.

(*b*) Explain PRAM model used for synchronization. [4]