

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022
(Sixth Semester)

Branch – COMPUTER TECHNOLOGY

DISCIPLINE SPECIFIC ELECTIVE - II: PARALLEL COMPUTING

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 x 1 = 10)

1. A _____ algorithm may perform multiple operations in a single step.
(i) Sequential (ii) Parallel
(iii) Serial (iv) Batch
2. A _____ model is a model of parallel computation that builds on the RAM model of computation.
(i) Sequential (ii) multiprocessor
(iii) (i) & (ii) (iv) None
3. MIMD stands for _____.
(i) Multiple Instruction Multiple Data (ii) Multiple Instruction Memory Data
(iii) Memory Instruction Multiple Data (iv) Multiple Information Memory Data
4. A single sequential flow of control within a program is _____.
(i) Process (ii) Task
(iii) Thread (iv) Structure
5. Which of the following command is used to run MPI program?
(i) mpiexec (ii) mpicc
(iii) mpexec (iv) mpcc
6. Which of the following command determines the size of the group associated with a communicator?
(i) mpi_comm_world (ii) mpi_comm_size
(iii) mpi_comm-rank (iv) mpi_comm_group
7. MPI is native to
(i) C (ii) C++
(iii) Java (iv) Fortran
8. Which one of the following is point-to-point routines and can be used in either blocking or non-blocking mode.
(i) TCP (ii) IP
(iii) MIMD (iv) MPI
9. What is GPU?
(i) Grouped Processing Unit (ii) Graphics Processing Unit
(iii) Graphical Performance Utility (iv) Graphical Portable Unit
10. Which one of the following in OpenCL is actually a thread in terms of its control flow and its memory model?
(i) work-group (ii) work-memory
(iii) work-unit (iv) work-item

Cont...

SECTION - B (25 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 x 5 = 25)

11 a Explain Interconnection networks.

OR

b Discuss about the overview of Bus and Hypercube topology.

12 a State the concept of shared memory programming model.

OR

b Outline the features of parallel loops and reduction.

13 a Describe about running and configuring MPI processes in a single computer.

OR

b Briefly discuss on i) MPI Error handling ii) computer ready for using MPI

14 a Narrate about operation of Collective MPI communication.

OR

b Summarize the features of message passing.

15 a Explain openCL memory model.

OR

b Bring out the steps to measure the execution time of OpenCL kernel execution time.

SECTION -C (40 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 x 8 = 40)

16 a Examine the process of PRAM Model.

OR

b Highlight the performance of any 5 topologies of interconnection networks.

17 a Enumerate briefly about openMP to write multithreaded program.

OR

b Describe about Parallel tasks.

18 a Highlight the basic MPI operations.

OR

b Explain MPI data types in detail.

19 a Identify the MPI process - Communication modes. Explain.

OR

b Identify the Sources of deadlock.

20 a Elucidate series of calls to OpenCL API within the host code.

OR

b Discuss about tiled matrix multiplication in openCL.

Z-Z-Z

END