

**ET803M - Advanced Computer Architecture**

P. Pages : 1



Time : Three Hours

**GUG/S/25/14356**

Max. Marks : 80

- Notes : 1. All questions carry equal marks.  
 2. Illustrate your answers wherever necessary with the help of neat sketches.  
 3. All questions are compulsory.

- 1.** a) Explain MIPS instruction set in detail. **8**  
 b) Analyze the need of Amdah's law. **8**

**OR**

- 2.** a) State and explain Von-Neumann architecture in detail. **8**  
 b) Differentiate between sequential and parallel computing. **8**

- 3.** a) Explain how pipeline hazards are classified in brief. **8**  
 b) Explain the 5-stage pipeline for a RISC processor. **8**

**OR**

- 4.** a) What are the techniques used for pipeline scheduling? **8**  
 b) Enumerate Operand forwarding with example. **8**

- 5.** a) Explain architecture of CUDA programming. **8**  
 b) Explain hardware based speculation. **8**

**OR**

- 6.** a) What is Super pipelining? Explain the pipeline structure and performance of MIPS. **8**  
 b) What is Multithreading? Explain benefits. **8**

- 7.** Explain Cache replacement algorithm in detail. **16**

**OR**

- 8.** a) Differentiate between Temporal locality and spatial locality. **8**  
 b) Explain average memory access time (AMAT). **8**

- 9.** a) What is crossbar switch in computer architecture. **8**  
 b) What is topology in computer architecture? What needs to be considered when designing topologies? **8**

**OR**

- 10.** a) Write a short note on virtual channels and deadlock? **8**  
 b) Write short note on Tiled Chip Multicore Processor (TCMP) **8**

\*\*\*\*\*