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M.Tech I Semester Supplementary Examinations February/March 2018 ADVANCED COMPUTER ARCHITECTURE

(Common to DSCE, DECS & ES)

(For students admitted in 2012, 2013, 2014, 2015 & 2016 only)

Time: 3 hours

Max. Marks: 60

Answer any FIVE questions

All questions carry equal marks

- 1 (a) State and explain Amdahl's law.
 - (b) How to measure performance of a computer? Describe.
- 2 (a) List the major types of optimizations and then explain the same with examples.
 - (b) Describe with examples, the most common addressing modes.
- 3 (a) Draw and explain the basic structure of a MIPS floating point unit using Tomasulo's algorithm.
 - (b) What is a branch-prediction filter? Explain the states in a two-bit prediction scheme.
- 4 (a) Examine the use of compiler-based techniques for branch prediction.(b) Describe in detail the basic VLIW approach.
 - (b) Describe in detail the basic VLIW approach.
- 5 Brief out the five cache miss penalty reduction techniques.
- 6 (a) What is meant by multithreading? Explain the two main approaches to multithreading.
 - (b) What is a barrier? Develop a code for: (i) Simple barrier. (ii) Sense-reversing barrier.
- 7 (a) Draw and explain a typical interface of I/O devices and an I/O bus to the CPU memory. Also explain the main options for design of a bus.
 - (b) Define the following: (i) Module reliability. (ii) Module availability.
- 8 (a) Describe in detail any one example of cluster design.
 - (b) Explain the following practical in interconnection networks:(i) Connectivity. (ii) Standardization. (iii) Fault tolerance.
