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16542(D) - 0 DEC 2016

MCA 2nd Semester Examination

Computer Architecture (NS)

MCA-204

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C and D of the question paper and all the subparts of the question in section E.

SECTION - A

1. Explain the role of different components of a digital computer. (12)
2. Write short notes on the following:
 - (a) Register transfer language
 - (b) Instruction cycle
 - (c) I-O interrupt (3×4=12)

SECTION - B

3. Discuss in detail the stack organization and explain how expressions are evaluated using stack organization? (12)
4. Explain the various instruction formats for evaluating the following expression:
 $X=X+B/(C-D)$ (12)

SECTION - C

5. Explain the following giving examples:
 - (a) Arithmetic pipeline

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- (b) Instruction pipeline
 - (c) RISC pipeline (3×4=12)
6. Explain the algorithms for division and multiplication. (12)

SECTION - D

7. Write short notes on the following:
 - (a) Asynchronous data transfer
 - (b) Priority interrupt
 - (c) DMA
 - (d) Cache memory (4×3=12)
8. What do you mean by parallel processing? What are the different types of parallel processors? Explain. (12)

SECTION - E

9. Attempt all questions:
 - (a) What is the difference between memory mapped I/O and Isolated I/O?
 - (b) What do you mean by interrupt cycle?
 - (c) Determine the number of clock cycles that it takes to process 200 tasks in a six segment pipeline.
 - (d) What is the difference between Hand Shaking and Strobe control?
 - (e) What is the purpose of program counter?
 - (f) How memory mapping is done in relative addressing mode? Briefly discuss.
 - (g) What are the overlapped windows? Discuss briefly.
 - (h) What do you mean by micro-programmed control?
 - (i) Briefly discuss the programmed I/O mode.
 - (j) What do you mean by priority interrupt?
 - (k) What do you mean by associative memory? Explain the hardware organization of associative memory.
 - (l) What is a high impedance state? (12×1=12)