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Question Paper Code : 60454

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Fifth Semester

Electronics and Communication Engineering

EC 2303/EC 53/10144 EC 605 – COMPUTER ARCHITECTURE AND ORGANIZATION

(Common to Sixth Semester Biomedical Engineering)

(Regulations 2008/2010)

(Also common to PTEC 2303 – Computer Architecture and Organization for B.E. (Part-Time) Fourth Semester – Electronics and Communication Engineering – Regulations 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write any two types of instruction.
2. Let $X = 1010100$ and $Y = 1000011$. Perform
 - (a) $X - Y$ and
 - (b) $Y - X$ using 2's complement.
3. What is pipelining and state its advantages?
4. What is Ripple-Carry Adder (RCA)?
5. What is pipelining?
6. What is microinstruction and microprogram?
7. Define static memory.
8. What is the use of virtual memory?
9. What is the role of a coprocessor?
10. What is the advantage of a Booth Algorithm?

PART B — (5 × 16 = 80 marks)

11. (a) What are the different types of CPU organization? Explain with relevant diagrams. (16)

Or

- (b) (i) With examples explain the different types of instruction formats. (6)
(ii) Explain the different types of Addressing modes with suitable examples. (10)
12. (a) (i) Design a 4-bit adder-subtractor circuit using full adder and explain. (8)
(ii) Illustrate non-restoring division algorithm with an example. (8)

Or

- (b) (i) Explain the IEEE standard for floating-point numbers in detail. (8)
(ii) Design a 16-bit-carry-lookahead adder using 4-bit adders and explain. (8)
13. (a) Explain micro programmed control signal generation with a neat block diagram and compare it with the hardwired control. (16)

Or

- (b) What do you mean by hazard? Explain the different types of hazards with the ways and means of solving them. (16)
14. (a) (i) Explain in detail about the replacement policies of memory organization systems. (8)
(ii) Give the structure of semiconductor RAM memories. Explain the read and write operations in details. (8)

Or

- (b) Explain in detail about the cache memory organization, cache operation and address mapping. (16)
15. (a) Stacks and subroutines need passing parameters through registers. Justify this statement using suitable calling program and subroutine. How I/O operations display few characters or line of characters. What are the various formats for it?

Or

- (b) How the different generations evolved paving way to the present generation? What are the features of RISC and CISC processors? How do Dual and Quad processing evolved?