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M.E./M.Tech. Degree Examinations, January 2017

First Semester

APPLIED ELECTRONICS

AL16102 – ADVANCED MICROPROCESSOR AND MICROCONTROLLER

(Regulation 2016)

QP Code:873808

Time: Three hours

Maximum : 100 marks

Answer **ALL** questions

PART A - (10 X 2 = 20 Marks)

1. What is the need for segmentation?
2. What are the advantages of pipelining?
3. Explain the roles of BIU and EU.
4. What is an exception?
5. Sketch the ARM CPSR register format.
6. Give examples for multiple register load and store ARM instructions.
7. List the features of 68HC11 microcontroller.
8. Distinguish between memory mapped I/O with I/O mapped I/O.
9. What is a watchdog timer in PIC microcontroller?
10. Draw the PIC INTCON register and name the bits.

PART B - (5 X16 = 80 Marks)

11. (a) (i) Draw the Memory hierarchy in microprocessor and explain each block. **(8)**
(ii) Compare CISC and RISC architectures. **(8)**
(OR)
(b) (i) Explain the Concept of Virtual Memory. **(8)**
(ii) Explain the techniques used to overcome various pipeline hazards. **(8)**
12. (a) Describe the Programming model of Pentium Processor with a suitable diagram. **(16)**

(OR)

(b) Explain the various addressing modes of Pentium processor with examples. **(16)**

13. (a) Draw and explain different register organization available in ARM Processors. **(16)**

(OR)

(b) Draw and explain the organization of five stage pipeline ARM Processor. **(16)**

14. (a) (i) Explain the various operating modes of Motorola 68HC11 microcontroller. **(8)**

(ii) Describe the M68HC11 CPU registers. **(8)**

(OR)

(b) (i) Explain the addressing modes of 68HC11 microcontroller with suitable examples. **(8)**

(ii) Explain the UART interface with Motorola microcontroller. **(8)**

15. (a) Sketch and explain the architecture of PIC16C74A microcontroller. **(16)**

(OR)

(b) (i) Explain interrupt handling in PIC microcontroller. **(8)**

(ii) Write a PIC program to turn on and off LEDs connected to RB0 to RB3 at intervals of 100ms. **(8)**