Q 8294

M.E. DEGREE EXAMINATION, MAY/JUNE 2006.

Second Semester

Power Electronics and Drives

PE 1654 — EMBEDDED CONTROL OF ELECTRICAL DRIVES

(Regulation 2005)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the function of pulse accumulator counter?

2. Mention the different addressing modes of MC 68 HC 11.

3. What is Serial Peripheral Interface (SPI)?

4. What are the features of ADC unit in 68 CH 11?

5. What is MPASM assembler?

6. Mention the parameters. Which characterise the interrupt source.

7. What are registers to be initialised to select reference voltage when ADC in use?

8. What is framing error?

9. Draw the block diagram of AC load control using microcontroller MC 68 HC 11.

10. What is PID control?

PART B — (5 × 16 = 80 marks)

11. (i) Describe 68 HC 11 architecture. List innovative features with respect to the 8051 architecture. (10)

(ii) Explain branch, conditional branch, call and return instructions in 68 HC 11. (6)

12. (a) (i) Explain I/O ports in single chip mode and the port multiplexing signals in expanded mode. (8)

(ii) Explain 68 HC 11 – family real time clock interrupts. (8)

Or

(b) (i) Draw 68 HC 11 memory map. List innovative map features with respect to the 8051 architecture. (8)

(ii) Describe functioning of input captures and output compares in 68 HC 11. (8)

13. (a) (i) Explain the memory organisation in PIC 16C7X microcontroller. (8)

(ii) Discuss the various addressing modes in PIC 16C7X. (8)

Or

(b) (i) Briefly discuss the various instructions used in PIC 16C7X. (8)

(ii) Show that code to decrement a 16-bit variable and test the result for zero, branching to both zero if the result is zero. (8)

14. (a) (i) Explain briefly the I^2C bus subroutines. (8)

(ii) Discuss how A/D converter is implemented in PIC 16C7X microcontroller. (8)

Or

(b) (i) With neat block diagram, discuss PIC's VART interface to a PC. (8)

(ii) Explain, how Timer 1 can be used as external event counter. (8)

15. (a) Explain the interfacing of LCD display to a microcontroller with neat diagram, flow chart. Also discuss what are the subroutines used for this interfacing. (16)

Or

(b) Explain the operation of a stepper motor control using microcontroller with neat block diagram for (i) Full step sequence (ii) Half step sequence. (8 + 8)
