Question Paper Code : 41004

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Fifth Semester

Electrical and Electronics Engineering

EE6502 – MICROPROCESSORS AND MICROCONTROLLERS

(Common to Electronics and Instrumentation Engineering/Instrumentation
and Control Engineering/Manufacturing Engineering/Robotics and
Automation Engineering)

(Regulations 2013)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   (10×2=20 Marks)

1. List the features of accumulator.

2. Write the difference between standard I/O and memory mapped I/O.

3. List the classification of instruction based on its size.

4. Define stack.

5. Compare microprocessor and microcontroller.

6. How the microcontrollers respond to any interrupt request ?

7. How the DMA operations perform in microprocessor ?

8. Write the modes of operation in 8254.

9. What is use of data pointer register ?

10. What is the advantage of closed loop control system for interfacing ?

PART – B   (5×13=65 Marks)

11. a) Draw and explain the building blocks and its signal of 8085 processor.   (13)

(OR)

   b) i) Describe the interrupts of 8085 and its types with service routine.   (7)

   ii) Draw the timing diagram of MOV A, M instruction and explain each machine
       cycle.   (6)

12. a) i) Explain the types of addressing modes in 8085 with suitable example. **(7)**

    ii) Write an 8085 program to find the greatest number among 10 numbers. **(6)**

(OR)

  b) i) Explain the types of instruction in 8085 with example. **(7)**

    ii) Write an 8085 program to find the average of 10 numbers and find the execution time of program. **(6)**

13. a) Draw and explain the architecture of 8051 microcontroller. **(13)**

(OR)

  b) Briefly discuss the ports of 8051, internal circuits and its functions in detail. **(13)**

14. a) Draw the functional diagram of 8255 and explain its control word, modes of operation. **(13)**

(OR)

  b) Draw the functional diagram of 8251 and explain its block in detail. **(13)**

15. a) Illustrate the keyboard and display interface with 8051 and write the program to get the input 45H from the external keyboard and display it on the external display device. **(13)**

(OR)

  b) Interface the stepper motor with 8051 and explain its operation of stepper motor with neat diagram and program to rotate in clockwise direction. **(13)**

PART – C   **(1×15=15 Marks)**

16. a) Design an 8085 based system with 512B RAM, 4KB ROM, external keyboard and seven segment display device. **(15)**

(OR)

  b) Design a microcontrolled based system to control the water level in the tank. **(15)**

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Question Paper Code : 42503

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Fifth Semester

Electrical and Electronics Engineering

EE 2302 – ELECTRICAL MACHINES – II

(Regulations 2008)

(Common to PTEE 2302 – Electrical Machines II for B.E. (Part-Time)
Fourth Semester – EEE – Regulations 2009)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   (10×2=20 Marks)

1. What is SCR ?

2. Write the necessity of parallel operation of alternators.

3. Why is synchronous motor not self starting ?

4. What is Synchronous condenser ? List its applications.

5. A 6 pole, 50 Hz induction motor runs with 5 percent slip , what is its speed ? What is the frequency of the rotor current ?

6. Why skewing of rotor slots is done in three phase induction motors ?

7. Why starters are necessary for starting induction motors ?

8. Mention the drawback of rotor resistance control of induction motor.

9. In which type of single phase induction motor having highest power factor at full load condition ?

10. List the applications of hysteresis motor ?

PART – B (5×16=80 Marks)

11. a) A 6600V, star connected three phase non-salient pole synchronous generator has the following open circuit characteristics (16)

Phase Voltage (V)	2600	3500	4130	4600	5000	5500
Field Current (A)	100	150	200	250	300	350

Full load current on short circuit is obtained with an excitation of 175A. Using the ampere turn method, determine the full load regulation when the power factor is 0.9 lagging. The resistance drop is negligible and the reactive drop is 10% on full load.

(OR)

b) Explain the two reaction theory applicable to salient pole synchronous machine. Derive the expression for induced e.m.f. and rotor displacement angle. (16)

12. a) A 6600V three phase star connected synchronous motor draws a full load current of 80A at 0.8 p.f leading. The armature resistance is 2.2Ω and synchronous reactance 22 Ω per phase. If the stray losses of the machine are 3200W, determine (i) the e.m.f. induced (ii) the output power (iii) the efficiency. (16)

(OR)

b) i) Derive an expression for the power developed by a salient pole synchronous motor. (8)

ii) Explain hunting of a synchronous machine with its causes and effects. What are the techniques used to reduce the hunting ? (8)

13. a) A 6 pole, 50Hz, three phase induction motor running on full load develops a useful torque of 150Nm at a rotor frequency of 1.5Hz. Calculate the shaft power output. If the mechanical torque lost in friction be 10 Nm, determine rotor copper loss, input to the motor and the efficiency. The total stator loss is 700W. (16)

(OR)

b) Derive the relationship for torque developed by a three phase induction motor. Draw a typical torque -slip characteristic and deduce the condition for maximum torque. (16)

14. a) It is desired to install a three phase cage induction motor restricting the maximum line current drawn from a 400V three phase supply to 120A. If the starting current is 6 times full load current, what is the maximum permissible full load KVA of the motor when (i) it is directly connected to the mains (ii) it is connected through an auto-transformer with a tapping of 60% (iii) it is designed for use with star-delta starter.   **(16)**

(OR)

b) i) Explain the stator voltage control of three phase induction motors.   **(8)**

ii) What is meant by slip energy recovery ? How this principle is used to control the speed of three phase induction motors ?   **(8)**

15. a) A 220V single phase induction motor gave the following test results :

Blocked rotor test : 120V, 9.6A, 460W; No-load Test : 220V, 4.6A, 125W

The stator winding resistance is 1.5Ω and during the blocked rotor test, the starting winding is open. Determine the equivalent circuit parameters. Also, find the core, friction and windage losses.   **(16)**

(OR)

b) i) Describe any two methods of starting single phase induction motors and list the applications for which these types would be suitable.   **(8)**

ii) Explain the construction and principle of operation a hysteresis motor with neat sketch.   **(8)**

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