Total No of Questions: [8] *SEAT NO. :* [ ]

[Total No. of Pages : 2]

S.E. 2012 (Mechanical, Mechanical Sandwich, Automobile)

Electronics and Electrical Engineering

203152 (Semester - II)

Time: 2 Hours *Max. Marks : 50*

Instructions to the candidates:

1) *Answer Question 1 or 2, 3 or 4, 5 or 6, 7 or 8.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right side indicate full marks.*
4) *Use of Calculator is allowed.*
5) *Assume Suitable data if necessary*

Q1) a) Explain following instructions of 8051 microcontroller quoting suitable examples. [6]

(i) ORL A, #data (ii) RRC A (iii) RET

b) Differentiate between asynchronous and synchronous data transfer. [6]

OR

Q2) a) Explain the use of following registers associated with 8051 microcontroller. [6]

i) DPTR ii) Program Counter iii) Accumulator

b) What are Timer0 (T0) and Timer1 (T1) registers supported by 8051 microcontroller? How are these started and stopped? [6]

Q3) a) Draw and explain characteristics of DC shunt and series motors. [7]

b) A 50 Hz, 8 pole, 3 phase induction motor has full load slip of 4%. The rotor resistance is 0.001 ohm/phase and standstill reactance is 0.005 ohm/phase. Find i) the ratio of maximum torque to full load torque ii) the speed at which maximum torque occurs. [6]

OR

Q4) a) A 230V DC shunt motor has armature resistance of 0.2 Ohm and field resistance of 115 Ohm. It runs at 1500 rpm and draws a current of 50 A on full load. Calculate its speed at half load condition. [7]

b) Distinguish between squirrel cage and slip ring induction motors. [6]

Q5) a) Compare analog voltmeter and digital voltmeter. [6]

b) Explain working of CRO with the help of schematic showing its various parts. [6]

OR

Q6) a) Explain working of digital frequency counter with the help of block diagram. [6]

b) State advantages of digital multimeter. Mention typical specifications of digital multimeter. [6]

Q7) a) Explain the sphere gap method used for measurement of peak value of voltage. [7]

b) Two-wattmeter method is used for measurement of input power of a three phase induction motor. If two wattmeter readings are 1700 watts and 1100 watts; determine i) input power to motor ii) power factor of the motor iii) input current drawn from 440 V, 3 phase AC supply. [6]

OR

Q8) a) What is Wien's Bridge? Derive expression for frequency of Wien's Bridge. [7]

b) Explain one wattmeter method used for measuring reactive power of a three phase balanced load with the help of connection diagram and phasor diagram. [6]