Total No. of Questions—8] [Total No. of Printed Pages—3

Seat No.	

[4757]-1016

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

(Second Semester) EXAMINATION, 2015

ELECTRONICS AND ELECTRICAL ENGINEERING

(2012 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N.B. :— (*i*) Answer Q. No. **1** *or* Q. No. **2,** Q. No. **3** *or* Q. No. **4**, Q. No. **5** *or* Q. No. **6**, Q. No. **7** *or* Q. No. **8.**

(*ii*) Figures to the right side indicate full marks.

(*iii*) Assume suitable data if necessary and state the same clearly.

(*iv*) Neat diagrams must be drawn wherever necessary.

(*v*) Use of electronic pocket calculator is allowed.

1. (*a*) Explain TMOD register and specify its operating modes. [6]

(*b*) Explain different addressing modes supported by 8051 microcontroller. [6]

Or

2. (*a*) What is Program Status Word (PSW) ? State the function of each flag in it. [6]

(*b*) Discuss asynchronous and synchronous data transfer formats. [6]

P.T.O.

3. (*a*) Derive the expression for the torque developed in a three-phase induction motor under running conditions. Hence state the equation for maximum torque developed. [6]

(*b*) A 200 V, 4 Pole, Lap wound DC shunt motor has 800 conductors on its armature. The resistance of armature winding is 0.5 Ω and that of shunt field winding is 200 Ω. The motor takes current of 21 A and flux per pole is 30 MWb. Find the speed and gross torque developed in armature. [7]

Or

4. (*a*) Explain V/f control method for controlling speed of three-phase induction motor. [6]

(*b*) Draw and explain characteristics of DC shunt and series motors. [7]

5. (*a*) Discuss advantages of digital voltmeters over analog voltmeters. Also mention its limitations. [6]

(*b*) Explain working of conventional standard signal generator with the help of neat diagram. [6]

Or

6. (*a*) Explain working of digital multimeter with the help of block diagram. [6]

(*b*) Enlist applications of Cathode Ray Oscilloscope (CRO) for measurement of various electrical quantities. [6]

7. (*a*) Explain two wattmeter method used for measuring three-phase power in a star connected balanced load supplied by symmetrical a.c. with the help of neat connection diagram and phasor diagram. [6]

(*b*) What is an AC bridge ? Enlist AC bridges. Derive the general equations for balance of an AC bridge. [7]

Or

8. (*a*) Two wattmeters are connected to measure total power in a three-phase circuit. One reads 4800 W while the other reads backwards. Over reversing the connections of the later, it reads 400 W. Find total power absorbed and power factor of circuit. [6]

(*b*) What is Wien's bridge ? Derive the expression for unknown frequency in terms of bridge parameters. [7]