

Total No. of Questions—8]

[Total No. of Printed Pages—3

Seat No.	
-------------	--

[4857]-1020

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 and Q. No. 7 or Q. No. 8.

(ii) Figures to the right indicate full marks.

(iii) Neat diagrams must be drawn wherever necessary.

(iv) Use of non-programmable scientific calculator is allowed.

(v) Assume suitable data wherever necessary and state the same clearly.

1. (a) Write the function of each register in the register set of 8051 microcontroller. [6]
- (b) Explain the function of TMOD register along with significance of mode bits. [6]

Or

2. (a) Distinguish between serial and parallel data transfer schemes. State special function registers used for such communication in 8051 microcontroller. [6]
- (b) Draw architectural block diagram of 8051 microcontroller. [6]

P.T.O.

3. (a) Derive the expression for torque developed by three phase induction motor. [6]
- (b) A 250 V DC shunt motor has armature resistance of 0.25Ω . It takes armature current of 50 A while running at 750 rpm on certain load. If the flux of the motor is reduced by 10% without changing the load torque, find the new speed of the motor. [7]

Or

4. (a) Explain the working of three point starter for DC Shunt motor with the help of neat schematic. [6]
- (b) Deduce the relationship between : [7]
- (i) Rotor copper loss and rotor input
 - (ii) Rotor gross output and rotor input
 - (iii) Rotor copper loss and rotor gross output in case of three phase induction motor.
5. (a) Explain the operation of basic digital multimeter with the help of block diagram. [6]
- (b) Describe the measurement of frequency and phase by using cathode ray oscilloscope. [6]

Or

6. (a) Explain the working of audio signal generator with the help of block diagram. [6]
- (b) Mention typical specifications of the following instruments used in electronics and electrical engineering laboratories : [6]
- (i) Digital voltmeter
 - (ii) Frequency counter.

7. (a) Obtain the condition of bridge balance for frequency measurement using Wien's Bridge. [6]
- (b) Discuss two wattmeter method for the measurement of active power drawn by three phase star connected balanced inductive load with the help of connection diagram and phasor diagram. [7]

Or

8. (a) Describe measurement of peak value of voltage using Sphere Gap with the help of neat schematic. [6]
- (b) Three choke coils each with a resistance of $10\ \Omega$ and a reactance of $10\ \Omega$ are connected in star across a 3-phase, 400 V, ac supply. Calculate line current and readings of the two wattmeters connected to measure the power. What is the total power drawn by the load ? [7]