

Total No. of Questions : 8]

SEAT No. :

P6101

[Total No. of Pages : 3

[5559]-120

**S.E. (Mechanical/Mechanical Sandwich/Automobile)
ELECTRICAL AND ELECTRONICS ENGINEERING
(2015 Pattern)**

Time : 2 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Use of electronic pocket calculator is allowed.*
- 5) *Assume suitable data, if necessary.*

Q1) a) Draw the schematic of three point starter used for DC shunt motor. Indicate following components of three point starter and write their functions during operation. [6]

- i) No - Volt Coil
- ii) Overload release

b) The power input to a three phase induction motor is 40 KW. The stator losses are 1 KW and the friction and windage losses are 2 KW. If the motor operates at slip of 4%, find [7]

- i) Mechanical power developed
- ii) Rotor copper loss per phase and
- iii) Efficiency of motor

OR

Q2) a) Explain the operation of star - delta starter used for three phase induction motor with the help of neat schematic. [6]

b) A 250 V DC shunt motor has armature resistance of 0.25 Ω . It takes an armature current of 50A on certain load while running at 750 rpm. If the flux of the motor is reduced by 10% without changing the load torque, find the new speed of the motor. [7]

P.T.O.

- Q3) a)** Describe construction and working of Universal motor with the help of suitable diagrams and state its any two applications in practice. [6]
- b) State any six features of Arduino IDE. [6]

OR

- Q4) a)** Describe construction and working of shaded pole Induction motor with the help of suitable sketches and state its any two applications in practice. [6]
- b) Draw the block diagram of Data Acquisition system and briefly explain the function of each block. [6]

- Q5) a)** Explain the following functions along with their syntax. [6]
- i) Serial. print ()
 - ii) Serial . print ln ()
 - iii) Serial. read ()
- b) Draw a neat sketch showing the interfacing of Atmega 328P based Arduino board with 16×2 Liquid crystal display (LCD) and write algorithmic steps to continuously blink the message written on the display on two rows with a delay of 1 second. [6]

OR

- Q6) a)** Explain the following functions used to handle GPIO in ATmega 328P based Arduino board with the help of syntax. [6]
- i) Pin Mode ()
 - ii) Digital Read ()
 - iii) Digital Write ()
- b) It is desired to blink three LEDs simultaneously for ON/OFF period of 10 msec. The LEDs are connected to digital pins 3, 5 and 7 of port B of ATmega 328P based Arduino board. Draw the interfacing diagram and write the algorithmic steps to execute program. [6]

Q7) a) Explain the principle of operation of LVDT and draw the interfacing diagram of LVDT with Arduino board. [6]

b) Explain the following characteristics of analog to digital converters (ADC) briefly and specify these in case of ADC in ATmega 328P based Arduino board. [7]

- i) Resolution
- ii) Absolute accuracy
- iii) Conversion time
- iv) Data rate

OR

Q8) a) Explain the concept of Pulse Width modulation (PWM). Draw the interfacing circuit showing DC motor interface with Arduino. [6]

b) What is LM 35? How can LM 35 be interfaced with ATmega 328P based Arduino board? Draw relevant interfacing diagram. [7]

