

Con. 5600-09.

(REVISED COURSE)

SP-7765

(3 Hours)

[ Total Marks : 100

- N.B. : (1) Question No. 1 is compulsory.  
 (2) Attempt any **four** questions from remaining **six** questions.  
 (3) **Figures** to the **right** indicate **full** marks.

1. Attempt any **four** of the following :- 20
  - (a) Explain the necessity of starter for D.C. motor.
  - (b) Explain 'critical resistance for shunt generator'.
  - (c) Explain open circuit test for transformer.
  - (d) Compare inverting and non-inverting configurations of an Op-Amp.
  - (e) Explain various interrupts used in 8085 microprocessor.
  
2. (a) Explain the torque-speed and torque-slip characteristics for 3- $\phi$  induction motor. 10  
 (b) Explain the motor characteristics for D.C. shunt motor. State its applications. 10
  
3. (a) A 220 V d.c. shunt motor runs at 500 rpm when the armature current is 50 Amp. Calculate the speed if the torque is doubled. Assume that  $R_a = 0.2 \Omega$ . 10  
 (b) A 120 KVA, 6000/400 V, Y/Y, 3-phase, 50 Hz transformer has iron loss of 1600 watt. The maximum efficiency occurs at 3/4 full load. Find the efficiency of transformer at - 10
  - (i) full load and 0.8 p.f.
  - (ii) the maximum efficiency
  - (iii) half load and unity power factor.
  
4. (a) Write short note on applications of Op-Amp as - 10
  - (i) Integrator
  - (ii) Differentiator.
 (b) Draw the circuit diagram of IC 555 timer and explain its working. 10
  
5. (a) With the help of circuit diagram, explain the operation of speed control of d.c. series motor using SCR. 10  
 (b) Write a short notes on - 10
  - (i) Linear and digital IC's
  - (ii) Multiplexer and De-multiplexer.
  
6. (a) Draw and explain the block diagram of 8085 microprocessor. 10  
 (b) Explain the meaning of following instructions in case of 8085 microprocessor. 10
  - (i) MOV  $r_1, r_2$
  - (ii) CMC
  - (iii) DAD  $rp$
  - (iv) LDA  $addr.$
  - (v) JNZ  $addr.$
  
7. Write short notes on -

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  - (iv) LDA addr.
  - (v) JNZ addr.
  
7. Write short notes on -
  - (a) Resistance welding 5
  - (b) Relays 5
  - (c) AC and DC motor drives. 10