

IE<sup>o</sup> S.E - mech - sem IV: old

(OLD COURSE)

08/6/15

Q.P. Code : 3990

(3 Hours)

[Total Marks : 100

- (1) Question no.1 is compulsory
- (2) Solve any four questions from the remaining
- (3) Assume suitable data wherever necessary and justify the same

1. Solve any five of the following 20
  - (a) SCR is a semi controlled device-Justify
  - (b) Explain the meaning of following instructions (1)LDA address(2) MVI M,12H
  - (c) Show that NOR gate is a universal building block
  - (d) Compare Series inverter with Parallel inverter
  - (e) Explain important characteristics of an ideal op-amp.
  - (f) Discuss the overload protection for the DC Motor
2. (a) Explain 1 $\phi$  Full wave controlled Bridge Rectifier( Asymmetrical Configuration) with the help of circuit diagram and waveforms , hence Derive Output Voltage Equation 10  
(b) Explain how intensity of light is controlled using Diac-Triac Circuit 10
3. (a) Explain 555 timer as monostable multivibrator with waveforms 10  
(b) Explain Op-amp as an Integrator & Differentiator, Derive Output Voltage Equation 10
4. (a) Explain with circuit diagram ,the armature voltage control method for speed control of DC Shunt Motor for 1 $\phi$ , 50Hz a.c 10  
(b) Realize Ex-OR gate by (1) Basic gates (2) NAND gate 10
5. (a) Explain the architecture of 8085 Microprocessor with block diagram 10  
(b) State and prove De-Morgan's Theorem 5  
(c) Using K-Map reduce following Boolean function and implement it using NAND gates 5  
 $F(A,B,C)=\sum m (0,1,3,4,5,6)$
6. (a) Explain the working of Modified Series Inverter with circuit diagram and waveforms 10  
(b) What is the function of chopper.Explain in detail Jones Chopper 10
7. Write Short Notes on any two 20
  - (a) Speed Control of 3-Phase Induction Motor
  - (b) Commutaion of thyristor
  - (c) Explain Various interrupts of 8085