

N.B. : (1) Question No. 1 is **compulsory**.

(2) Solve any **four** questions from the **remaining**.

(3) Assume **suitable** data wherever necessary and justify the **same**.

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| 1. | | 20 |
| (a) | Draw the V-I characteristics of SCR with and without gate control and mark holding current and latching current? Explain the difference between holding current and latching current | |
| (b) | Explain why cyclo converters are suitable only for low frequency application? | |
| (c) | Explain the meaning of following instructions
a) LDA address b)MVI M,12H | |
| (d) | Realize EX-OR gate by NAND gate | |
| (e) | Why RC triggering is preferred over Resistance triggering process? | |
| 2. | (a) Explain single phase full wave fully controlled bridge rectifier with the help of circuit diagram and waveforms. | 10 |
| | (b) Explain the UJT relaxation circuit to trigger SCR along with appropriate waveform. | 10 |
| 3. | (a) Explain with block diagram the armature control method for speed control of a DC shunt motor. | 10 |
| | (b) What is the difference between Natural and Forced commutation? Explain any two forced commutation techniques of SCR with waveforms. | 10 |
| 4. | (a) Explain any two circuits using SCR for the speed control of single phase induction motor. | 10 |
| | (b) Draw the circuit diagram and explain the working of Jones chopper | 10 |
| 5. | (a) Discuss the thyristered over load and over voltage protection of DC Motor. | 10 |
| | (b) Explain important characteristics of OPAMP | 05 |
| | (c) Draw a neat schematic diagram for OP-AMP in inverting and non-inverting mode | 05 |
| 6. | (a) Which gates are called as Universal gates? Why?
Using K-map reduce following Boolean function and implement it using NAND gates
$f(A,B,C)=\sum m(0,1,3,4,5,6)$ | 10 |
| | (b) Explain the various interepts of 8085 | 05 |
| | (c) Explain DeMorgan's theorem. | 05 |
| 7. | (a) Explain the architecture of 8085 Microprocessor with block diagram. | 10 |
| | (b) Explain 555 timer as astable multivibrator | 10 |
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