

QP Code : NP-19791

(3 Hours)

[Total Marks : 80

- N.B. : (1) Question No. 1 is compulsory.
(2) Solve any **Three** questions out of remaining questions.
(3) Each question carry 20 marks



1. Attempt the following :
- (a) Explain block diagram of programmable logic controller.
 - (b) Compare the characteristics of ideal OPAMP with practical characteristics.
 - (c) Discuss the advantages of solid state relay over electromagnetic relay.
 - (d) Compare squirrel cage induction motor with slip ring induction motor.
2. (a) A 250 V shunt motor has an armature current of 20A when running at 1000 rpm against full load torque. The armature resistance is 0.5Ω . What resistance must be inserted in series with armature to reduce the speed to 500 r.p.m. at same torque. What will be the speed if load torque is halved, with this resistance in the ckt. Neglect brush contact drop. 10
- (b) Explain the differentiator circuit using operational amplifier. If square wave signal is applied to it, draw the input and output waveform. 10
3. (a) Explain the SCR controlled resistance welding. 10
- (b) A 25 KVA, 2200/220 V, 1 phase transformer, has a primary resistance of 1Ω and secondary resistance of 0.01Ω . Find the equivalent secondary resistance and the full load efficiency of 0.8 p.f. if the iron loss of transformer is 80% of the full load copper loss. 10
4. (a) Explain any two industrial applications of microcontroller in detail. 10
- (b) Explain working principle of AC commutator and its industrial applications. 10
5. (a) Explain architecture of 8085 microprocessor with function of different pins? 10
- (b) Explain equivalent circuit of transformer in detail. 10
6. Write short note on the following (any three) :- 20
- (a) Speed control of DC motor.
 - (b) Timer and their applications.
 - (c) Overload protection device.
 - (d) Circuit Breaker.
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