

MODULE - I

- 1. (a) State and explain Kirchoff's current law, Kirchoff's voltage law and Ohms law with suitable examples. [7M]
 - (b) Find the value of R if $i_1 = 0.24$ A for the circuit shown in Figure 1.



Figure 1

$\mathbf{MODULE}-\mathbf{II}$

2. (a) Explain the steps in calculating the Thevenin's voltage. State the application of Thevenin's theorem.
[7M]

(b) Find out the current flowing in 3Ω resistor in the circuit shown in Figure 2. using Nortons theorem. [7M]



Figure 2

[7M]

$\mathbf{MODULE}-\mathbf{III}$

- 3. (a) State the principle of DC generator. Explain the working of DC generators with neat diagrams.
 - [7M]
 - (b) A DC shunt generator with supply voltage of 200V is generating a load current of 10 A, armature resistance is 0.5 ohm, shunt field resistance is 100 Ohm. If brush drop is 1 V/brush, find out emf generated. [7M]
- 4. (a) What is back EMF? Explain its significance. Determine the torque equation of DC motor. [7M]
 - (b) A 500 V DC motor drives a 50KW load 600rpm. The shunt field resistance is 100Ω and armature resistance is 0.15Ω. If the motor efficiency is 80%, calculate the speed at no load and speed regulation. [7M]

$\mathbf{MODULE}-\mathbf{IV}$

- 5. (a) Describe the method to perform OC and SC test on a transformer.Discuss about different types of losses in transformer. [7M]
 - (b) Calculate the load parameter I_m , I_w , $R_0 \& X_0$ of a single phase 50KVA, 440/220V transformer taking no load current 0.6A with a power factor 0.65 (lagging). [7M]
- 6. (a) Explain the working of single phase transformer. Describe the shell type transformer with neat sketch. [7M]
 - (b) A 2400V/400V single phase transformer take a load current of 0.5A and has a core loss of 350W. Determine the values of the magnetizing and core loss components of the no load current. [7M]

$\mathbf{MODULE}-\mathbf{V}$

7. (a) Explain working principle of induction motor. Why is induction motor so significant? [7M]

- (b) A 3-phase, 6-pole induction motor is supplied from a 50 Hz, 400 V supply. Calculate the i) Synchronous speed
 - ii) Speed of the rotor when slip is 4 percentage.
- 8. (a) What is an alternator? Explain its construction. Why is the stator core of alternator laminated?
 - (b) A three phase, 6 pole star connected alternator has 48 slots and 12 conductors per slot on armature. If rotor rotates at 1200rpm and flux per pole is 0.3Wb, calculate the emf induced in the armature. The coils are full pitched and winding factor is 0.95. [7M]

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[7M]

[7M]