R16

SET - 1

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is Compulsory
3. Answer any **FOUR** Questions from **Part-B**
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PART –A

1. a) What is the basic principle of speed control in the dc motor?   (2M)

    b) What is the principle of operation of three phase induction motor?   (2M)

    c) What is meant by controlling torque in the measuring instrument?   (2M)

    d) Define IP and BP of an IC engine.   (2M)

    e) What is a black body?   (2M)

    f) How are gears classified?   (2M)

PART -B

2. a) Explain step by step procedure to obtain Open Circuit Characteristics of dc   (7M)
        generator.
    b) State the principle of operation of a transformer and derive the expression for the (7M)
        e.m.f. induced.

3. a) Explain the synchronous impedance method of determining the voltage regulation (10M)
        of an alternator. What are the merits and limitations of this method?
    b) Draw and explain torque-slip characteristics of three phase induction motor.   (4M)

4. a) Explain the construction and working principle of moving iron type voltmeter.   (7M)

    b) Describe constructional details and working principle of cathode ray oscilloscope. (7M)

5. a) With a neat sketch explain the working of four stroke petrol engine.   (7M)

    b) Differentiate between renewable and non renewable energy resources. Discuss   (7M)
        about any one renewable energy resource.

6. a) A 0.5 cm thick and 4 cm long fin has its base on a plane plate which is maintained (7M)
        at 110^0c. The ambient air temperature is 20^0C. The conductivity of the fin material
        is 60 W/m-K and the heat transfer coefficient h= 150 W/m^2–K. Assume that the
        tip of the fin is insulated. Determine:
        (i) Temperature at the end of the fin
        (ii) Temperature at the middle of the fin
        (iii) Total heat dissipated by the fin
    b) With a neat sketch explain different boundary-layer flow regimes on a flat plate. (7M)

7. a) With a neat sketch explain the metal extrusion principle. Write the applications of (7M)
        metal extrusion process.
    b) Derive the expression to find the length of open belt drive.   (7M)