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Question Paper Code : 71769

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Third Semester

Electronics and Communication Engineering

EE 6352 — ELECTRICAL ENGINEERING AND INSTRUMENTATION

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Draw the open circuit characteristics of DC Generator.
2. Mention the applications of DC series and Shunt motor.
3. Define all day efficiency of transformer.
4. Define regulation of a transformer.
5. State the condition for maximum torque under running conditions of three phase induction motor.
6. Is a single phase induction motor self starting? Why?
7. Define accuracy and precision.
8. State the principle of transducer.
9. List the advantages of digital storage oscilloscope.
10. Define resolution of DVM.

PART B — (5 × 13 = 65 marks)

11. (a) Describe the construction and principle of operation of DC generators. (13)
- Or
- (b) Mention the types of DC motors and explain their characteristics. (13)

12. (a) (i) Derive the EMF equation of transformer and also derive its voltage transformation ratio. (10)
(ii) Draw the equivalent circuit of transformer. (3)

Or

- (b) Explain operation of a transformer with necessary vector diagrams.
(i) On no load and
(ii) On load with UPF, Lagging power factors. (13)
13. (a) Describe the construction and working of three phase induction motor. (13)

Or

- (b) What are the different methods of starting synchronous motors? Explain them in detail. (13)
14. (a) Explain the working principle and operation of
(i) Strain Gauge. (7)
(ii) RTD. (6)

Or

- (b) Mention the static and dynamic characteristics of a measurement system and explain any eight static characteristics (13)
15. (a) Discuss in detail about any two types of DVM. (13)

Or

- (b) (i) Derive the balance condition for the low resistance measurement bridge. (10)
(ii) Draw the basic diagram of AC bridge and mention the conditions to be satisfied for AC bridge balance. (3)

PART C — (1 × 15 = 15 marks)

16. (a) (i) Develop the formula for induced EMF in an alternator. (8)
(ii) A 16 pole, 3-phase alternator has a star-connected winding with 144 slots and 10 conductors per slot. The flux per pole is 0.03 Wb distributed sinusoidally and the speed is 375 rpm. Find the line voltage, if the coil span is 150° dec. (7)

Or

- (b) Explain the operation of Schering bridge to determine the unknown capacitance. Derive the relevant equations and explain the computation procedure using phasor diagram. (15)