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Question Paper Code : 80041

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Second Semester

Electronics and Communication Engineering

BE 8254 — BASIC ELECTRICAL AND INSTRUMENTATION ENGINEERING

(Common to: Computer and Communication Engineering/ Electronics and Telecommunication Engineering)

(Regulation 2017)

Time : Three hours   •   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write any two advantages of three phase power system.

2. Define power factor.

3. Why the transformer rating in KVA?

4. Define all efficiency of transformer.

5. List the types of DC generator.

6. What you mean by Universal motor?

7. Compare salient pole alternator with non-salient pole alternator.

8. List any two applications of stepper motor.

9. Define repeatability of an instrument.

10. Name the types of transducer.

PART B — (5 × 13 = 65 marks)

11. (a) Describe the star to delta and Delta to star conversion with suitable sketch and necessary relations. (13)

Or

(b) (i) Explain the difference between overhead and underground system. (7)

(ii) Draw the single line diagram of the power system network from the generating station to utilization. (6)

12. (a) Illustrate the equivalent circuit of transformer and its circuit model referred to primary side indicating the necessary variables. (13)

Or

(b) (i) Explain the operation of three phase core and shell type transformer with suitable sketch. (7)

(ii) Write a technical note on Auto transformers. (6)

13. (a) Explain the construction and working principle of a DC generator with suitable sketch. (13)

Or

(b) Describe the methods used to control the speed of DC shunt and DC series motors. (13)

14. (a) Step by step, develop the equivalent circuit of an three phase induction motor. (13)

Or

(b) (i) With required sketch describe the working principle of synchronous motor. (7)

(ii) Elucidate the working principle of permanent magnet stepper motor. (6)

15. (a) List the various errors in an instrument and also explain the same with suitable examples.

Or

(b) Explain the construction and operation of Inductive and Capacitive Transducer with neat sketches.

PART C — (1 × 15 = 15 marks)

16. (a) (i) Determine the three phase power supplied to a delta connected circuit with an impedance of $4 + j6\,\Omega$ in each phase, when a three phase, 415 V, 50 Hz is applied to it. (8)

(ii) Derive the expression for EMF induced in a DC Generator. (7)

Or

(b) Illustrate the different types of transducers or sensors used in the smart phone and explain their significance. (15)

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