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Question Paper Code : 50198

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024

Second Semester

Electronics and Communication Engineering

BE 3254 – ELECTRICAL AND INSTRUMENTATION ENGINEERING

(Common to : Electronics and Telecommunication Engineering)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is voltage Regulation of Transformer?
2. What are advantages of auto transformer?
3. Distinguish between a motor and a generator.
4. Name any two speed control methods of DC motor.
5. What are the types of windings in a single-phase induction motor?
6. Mention the starting methods of Alternator.
7. Which type of meter is used to measure DC quantities?
8. How high voltage and high current are measured in power system?
9. Why earth rod is essential in power system applications?
10. What is the use of circuit breaker?

PART B — (5 × 13 = 65 marks)

11. (a) Draw the construction of single-phase transformer and explain its working principle. (6+7)

Or

- (b) Write short notes on the following: (5+5+3)
 - (i) Phase diagram
 - (ii) Voltage regulation
 - (iii) Harmonics

12. (a) Draw the construction of a DC generator and explain its working principle. (6+7)

Or

- (b) Derive the EMF equation of a DC generator.

13. (a) Explain any two speed control methods of three-phase induction motor. (6+7)

Or

- (b) Draw the construction of an alternator and explain its working principle. (6+7)

14. (a) Compare moving coil and moving iron meters in terms of construction, working principle and applications. (6+7)

Or

- (b) Draw the block diagram of Digital Storage Oscilloscope and explain the functions of each block. (6+7)

15. (a) Explain the generation, transmission and distribution of electrical power system. (5+5+3)

Or

- (b) Explain the working principle of any two circuit breakers used in electrical power system application. (6+7)

PART C — (1 × 15 = 15 marks)

16. (a) Draw the internal of structure of three-phase transformer and explain its power system applications. (10+5)

Or

- (b) Describe in detail about the safety precautions in electrical power system maintenance work and knowledge of First Aid treatment. (8+7)