ECE - I

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 40215

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 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 the difference between ideal transformer and practical transformer?

2. Define voltage regulation of a transformer.

3. How DC machine can be operated as a motor and as a generator?

4. In what way brushless DC motor is advantageous than a DC motor.

5. Classify the types of single-phase induction motor.

6. Name any two starting methods of synchronous motor.

7. What are the functional elements of DC instrument?

8. Where current transformer and potential transformer is used?

9. Mention the transmission and distribution voltages in India.

10. List the protecting devices used in power system.

PART B — (5 × 13 = 65 marks)

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

Or

(b) Write short notes on the followings: (4+5+4)

(i) Efficiency of a transformer.

(ii) Testing methods of three-phase transformer.

(iii) Auto transformer.

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

Or

(b) Write short notes on the followings: (4+5+4)

(i) EMF equation of DC generator.

(ii) Speed control of DC motor.

(iii) Stepper motor.

13. (a) Draw the construction of three-phase induction motor and explain its working principle. (6+7)

Or

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

14. (a) Distinguish between moving coil and moving iron meters with their salient features. (6+7)

Or

(b) Draw and explain the functions of instrument transformers with neat diagrams. (6+7)

15. (a) Draw the structure of power system and illustrate with various voltage levels of generation, transmission and distribution. (5+5+3)

Or

(b) Explain the working principle of miniature circuit breaker and earth leakage circuit breaker. (6+7)

PART C — (1 × 15 = 15 marks)

16. (a) Draw and explain phasor diagram and equivalent circuit of a transformer. (7+8)

Or

(b) Draw the construction of synchronous motor and explain its working principle. (8+7)