Register No.: ..... Name: .....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

THIRD SEMESTER B.TECH DEGREE EXAMINATION (R,S), DECEMBER 2023
ELECTRICAL AND ELECTRONICS ENGINEERING
(2020 SCHEME)

Course Code : 20EET203

Course Name: Measurements and Instrumentation

Max. Marks : 100 **Duration: 3 Hours**

PART A

(Answer all questions. Each question carries 3 marks)

1. Define the following terms in measurement i) Accuracy ii) Sensitivity iii) Precision.
2. Classify electrical measuring instruments.
3. Discuss the purpose of TOD meter.
4. Explain the three phase power measurements using two-watt meter method.
5. Propose an AC bridge for the measurement of frequency.
6. Illustrate the calibration of voltmeter using DC potentiometer.
7. Why ring specimen is preferred over bar specimen for magnetic measurements.
8. What is Llyod Fischer Square?
9. Illustrate the working of ultrasonic flowmeter.
10. Interpret the function of a sweep generator.

PART B

(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. a) A moving coil instrument has a resistance of 10Ω and gives a full scale deflection when carrying 50mA. Show how it can be adopted to measure voltage up to 750V and current 100A. (7)
    b) Explain with the help of neat sketches, the construction and working of attraction type moving iron instruments. (7)

OR

12. a) Explain the different methods for producing controlling torque in an analog instrument. (7)
    b) Recall the operating principle of a shunt and multiplier. (7)

MODULE II

13. a) Summarize the construction of an energy meter. (7)
    b) Discuss construction and working dynamometer type wattmeter. (7)

OR

14. a) Develop the expression for ratio and phase angle errors in Current transformer. (7)

b) Outline the modifications to be done in an LPF wattmeter. (7)

MODULE III

15. a) With a neat sketch describe a method for measurement of earth resistance. (7)

b) Interpret ammeter voltmeter method for the measurement of low resistance. (7)

OR

16. a) Develop the circuit and phasor diagram of Schering bridge for the measurement of capacitance, derive the expression for unknown capacitance. (7)

b) List the advantages and disadvantages of Maxwell's capacitance bridge. (7)

MODULE IV

17. a) Propose an experiment for obtaining flux density in a specimen of magnetic material with the help of ballistic galvanometer. (7)

b) Discuss a method for the determination of B-H curve of magnetic material. (7)

OR

18. a) Explain the principle of temperature measurement in thermistors and thermocouples. (7)

b) Illustrate the working of RTD. (7)

MODULE V

19. a) Summarize the working of LVDT with the help of a neat sketch. Also draw its characteristics. (7)

b) Interpret the function of PMU. (7)

OR

20. a) With a neat diagram, explain the working of digital storage oscilloscope. (7)

b) Demonstrate the working of Load cell and strain gauge. (7)

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