

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

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**THIRD SEMESTER B.TECH DEGREE EXAMINATION (S), FEBRUARY 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. Mention various classifications of errors in measurement.
2. What is the principle of operation of a shunt and multiplier in ammeters and voltmeters respectively?
3. Draw the diagram of a single-phase energy meter.
4. Differentiate between current and potential transformers.
5. What is a sphere gap arrangement?
6. Wheatstone's bridge is not used for measurement of low valued resistors. Justify the statement.
7. Which are the different types of temperature sensors in instrumentation?
8. What do you mean by luminous intensity? How luminous intensity can be measured?
9. Draw the block diagram of a Digital Multi Meter?
10. What are the advantages of DSO?

**PART B*****(Answer one full question from each module, each question carries 14 marks)*****MODULE I**

11. a) Explain the different types of torque in indicating instruments. (4)  
b) With neat diagrams, explain the construction and working of moving coil meters. (10)

**OR**

12. a) Discuss the different standards of measurements. (4)  
b) What are the various classifications of secondary instruments? (10)

**MODULE II**

13. Explain the construction and working of dynamometer type wattmeter. (14)

**OR**

14. Derive an expression for ratio error and phase angle error of potential transformer. (14)

**MODULE III**

15. a) Explain the working of Maxwell's inductance - capacitance bridge? (10)  
b) What is the principle of operation of a Hall effect sensor? (4)

**OR**

16. a) Explain how Wien bridge is used for measurement of frequency? (7)  
b) Describe a method for measurement of high resistance. (7)

**MODULE IV**

17. a) With neat diagrams, explain the construction and working of a flux meter. (10)  
b) What do you mean by hysteresis loop? (4)

**OR**

18. a) What do you mean by thermistors with negative temperature coefficient of resistance? (4)  
b) What is RTD? How it is used to measure temperature? (10)

**MODULE V**

19. a) What is a clamp on meter? (4)  
b) Define a transducer? Classify the transducer. Draw and explain the setup to measure weight using appropriate transducer. (10)

**OR**

20. a) Explain principle of operation of a sweep generator. (6)  
b) Explain the block diagram of a CRO. (8)

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