

**B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025**  
 Fourth Semester  
**Electrical and Electronics Engineering**  
**20EPC403 - MEASUREMENTS AND INSTRUMENTATION**  
 Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

**PART - A (MCQ) (10 × 1 = 10 Marks)**

Answer ALL Questions

	<i>Marks</i>	<i>K- Level</i>	<i>CO</i>
1. Which error is also termed as measurement error? (a) Static errors (b) Dynamic errors (c) Systematic errors (d) Statics error	1	K1	CO1
2. Which method can reduce dynamic error? (a) By increasing accuracy (b) By increasing precession (c) By reducing sensitivity (d) By reducing time lag	1	K1	CO1
3. The use of _____ instrument is merely confined within laboratories as standardizing instruments. (a) absolute (b) indicating (c) recording (d) integrating	1	K1	CO2
4. _____ Instruments are those which measure the total quantity of electricity delivered in a particular time. (a) Absolute (b) Indicating (c) Recording (d) Integrating	1	K1	CO2
5. Standardization of potentiometer is done in order that they become (a) Accurate (b) Precise (c) Accurate and Direct Reading (d) Accurate and precise	1	K1	CO3
6. The relation between ratio of resistance arms and ratio of resistance arms of second bridge is _____ (a) unequal (b) equal (c) twice (d) one forth	1	K1	CO3
7. Induced Low voltage on metal equipment which causes low shock can be prevented using _____ Phase Line (b) earthing (c) Neutral (d) Insulated Footwear	1	K1	CO4
8. The Pipe earthing can be regulated by _____ (a) Replacing the conductor (b) adding the copper rod (c) adding salt and water (d) replacing the earthing rod	1	K1	CO4
9. What does CRT stand for? (a) Cathode Ray Transistor (b) Cathode Ray Tube (c) Central Ray Tube (d) Cathode Ray Terminal	1	K1	CO5
10. In a smart sensor _____ block allows building operators to monitor & control system equipment. (a) Analog to Digital Converter (b) Local User Interface (c) Conditioning Unit (d) Sensing Unit	1	K1	CO6

**PART - B (12 × 2 = 24 Marks)**

Answer ALL Questions

11. Define resolution.	2	K1	CO1
12. List the type of measurement standards.	2	K1	CO1
13. Illustrate the term of creeping.	2	K2	CO2
14. How the CT and PT are connected in the circuits?	2	K2	CO2
15. List various detectors used in AC Bridge.	2	K1	CO3
16. Write the applications of DC potentiometer.	2	K1	CO3
17. What are the sources of electromagnetic interference?	2	K2	CO4
18. List the various grounding techniques.	2	K1	CO4

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| 19. Compare LED and LCD.   | 2 | K2 | CO5 |
| 20. List the functions of data loggers.                                | 2 | K1 | CO5 |
| 21. Define piezoelectric effect.                                       | 2 | K2 | CO6 |
| 22. Outline the factors to be considered for selection of transducers. | 2 | K2 | CO6 |

**PART - C (6 × 11 = 66 Marks)**

Answer ALL Questions

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| 23. a) | Explain the functional elements of an instrument with a neat block diagram and example. | 11 | K2 | CO1 |
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| b) | A circuit was tuned for resonance by eight different students and the values of resonant frequency in KHZ were recorded as 532, 548, 543, 535, 546, 531, 543, and 536. Calculate (1) Arithmetic mean (2) Deviation (3) Average Deviation (4) Standard deviation. | 11 | K2 | CO1 |
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| 24. a) | With circuit and phasor diagram, explain the working of single-phase ac energy meter. | 11 | K2 | CO2 |
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| b) | With a neat diagram explain the construction and its working principle of single-phase electrodynamicometer type wattmeter. Also derive its torque equation. | 11 | K2 | CO2 |
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| 25. a) | Construct the Wheatstone bridge, explain its operation and derive the equation for the unknown resistance. | 11 | K3 | CO3 |
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| b) | Make use of maxwell's bridge to determine inductance in terms of known inductance. Derive the condition for balance and draw the phasor diagram. | 11 | K3 | CO3 |
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| 26. a) | Explain the different types of interferences and their screening methods to reduce them. | 11 | K2 | CO4 |
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| b) | Explain about the various grounding techniques. | 11 | K2 | CO4 |
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| 27. a) | Draw and explain the block diagrams of digital CRO. What are its advantages over analog CRO? | 11 | K2 | CO5 |
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| b) (i) | Explain the components and functions of data logger. | 6 | K2 | CO5 |
| (ii)   | Describe the working of LED display device.          | 5 | K2 | CO5 |

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| 28. a) | Write in detail about the construction and working of LVDT. List the applications of LVDT. | 11 | K2 | CO6 |
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**OR**

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| b) (i) | Explain the working of hall effect transducer.   | 5 | K2 | CO6 |
| (ii)   | Explain the working of piezoelectric transducer. | 6 | K2 | CO6 |