

Hall Ticket Number:

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Code No. : 14348

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD*Accredited by NAAC with A++ Grade***B.E. (E.E.E.) IV-Semester Main & Backlog Examinations; August-2022****Electrical Measurements and Instrumentation**

Time: 3 hours

Max. Marks: 60

*Note: Answer all questions from Part-A and any FIVE from Part-B**Part-A (10 × 2 = 20 Marks)*

Q. No.	Stem of the question	M	L	CO	PO
1.	Discuss briefly about Sensitivity of an instrument.	2	1	1	1,3
2.	Classify the sources of errors.	2	2	1	1,3
3.	Explain the method to overcome creeping in energy meter?	2	2	2	1,2
4.	Discuss briefly about the Lissajous pattern and its applications.	2	3	2	1,2
5.	Discuss the need for detector in an AC bridge?	2	2	3	1,2
6.	Draw the schematic diagram of Substitution method of resistance measurement.	2	3	3	1,2
7.	Why the secondary of a Current Transformer should not be left open?	2	2	4	1,2
8.	Discuss the use Volt Ratio Box along with the potentiometer application.	2	3	4	1,2
9.	Give the classification of Transducers.	2	1	5	1,2
10.	Draw the schematic diagram of Linear motion variable inductor.	2	3	5	1,2
Part-B (5 × 8 = 40 Marks)					
11. a)	With a neat sketch, describe the construction and working of Permanent Magnet Moving Coil instrument.	5	2	1	1,3
b)	A 2mA meter with an internal resistance of 100Ω is to be converted to 0-150 mA ammeter. Calculate the value of the shunt resistance required.	3	3	1	1,3
12. a)	Explain the construction and working of Weston type synchroscope with schematic diagram.	5	1	2	1,2
b)	The meter constant of a 230V, 10A energy meter is 1800 revolutions/kwh. The meter is tested at half load and rated voltage and unity p.f. The meter is found to make 80 revolutions in 138 seconds. Determine the meter error at half load.	3	3	2	1,2

13. a)	Describe the construction and working of Megger with a neat sketch.	5	2	3	1,2
b)	Prove that Kelvin's double bridge eliminates the connection leads resistance in the measurement value.	3	4	3	1,2
14. a)	List the applications of Potentiometer and explain Ammeter calibration with it.	3	1	4	1,2
b)	Draw the phasor diagram of Current Transformer and derive the expression for transformation ratio & phase angle.	5	3	4	1,2
15. a)	Describe the construction and working of DC tacho-generator with a neat sketch.	4	2	5	1,2
b)	Explain the construction and working of Bonded Strain Gauge with diagram.	4	1	5	1,2
16. a)	Prove that the scale of instrument using spring control is uniform.	4	4	1	1,3
b)	Prove that the total number of revolutions made by disc of the energy meter is equal to the total energy consumed by the load.	4	4	2	1,2
17.	Answer any <i>two</i> of the following:				
a)	Derive the balance equation for the general A.C bridge.	4	3	3	1,2
b)	Explain the calibration of a voltmeter with DC potentiometer?	4	2	4	1,2
c)	Describe the construction and working of LVDT with a neat sketch.	4	2	5	1,2

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	40%
iii)	Blooms Taxonomy Level – 3 & 4	40%
