Hall Ticket Number:

Code No. : 14326

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (E.E.E. : CBCS) IV-Semester Main Examinations, January-2021

Electrical Measurements & Instrumentation

Time: **2** hours Max. Marks: **60**

*Note: Answer any **NINE** questions from **Part-A** and any **THREE** from **Part-B***

Part-A (9× 2 = 18 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	Explain the terms error and relative error?	2	2	1	1,3
2.	Classify the measuring instruments.	2	2	1	1,3
3.	Is creeping phenomena is good or bad for energy meter?	2	4	2	1,2
4.	Discuss the applications of Lissajous patterns?	2	2	2	1,2
5.	What is the function of Wagner's earthing device?	2	1	3	1,2
6.	Draw the Wheatstone bridge and list its applications	2	1	3	1,2
7.	Explain what is meant by standardization of potentiometer?	2	2	4	1,2
8.	What would happen if the secondary of Current Transformer is left open?	2	4	4	1,2
9.	Differentiate between sensor and transducer?	2	4	5	1,2
10.	What is a strain gauge?	2	1	5	1,2
11.	For proper function of indicating type instrument, which systems are required?	2	2	1	1,3
12.	What would happen if the shading bands were not used in energy meter?	2	3	2	1,2
	Part-B (3 × 14 = 42 Marks)				
13. a)	With a neat sketch, describe the construction and working of PMMC instrument.	8	2	1	1,3
b)	A basic meter is having a resistance 75Ω and full scale deflection for the current of 2mA. Calculate resistance required for the meter to measure currents of ranges 10mA, 50mA and 100 mA.	6	3	1	1,3
14. a)	Explain the construction and working of Weston synchroscope with schematic diagram.	8	2	2	1,2
b)	An energy meter is designed to make 100 revolutions of the disc for one unit of energy. Calculate the no. of revolutions made by it when connected to a load of 20A, 230V at 0.8 p.f. for an hour. If it actually makes 360 revolutions, compute the % error.	6	3	2	1,2
15. a)	Describe the construction and working of Megger with a neat sketch.	8	2	3	1,2
b)	Prove that, Kelvin's double bridge doesn't include connection leads resistance in the measurement value.	6	4	3	1,2

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16. a)	Explain the construction and working of Crompton DC potentiometer with schematic diagram.	8	1	4	1,2
b)	A bar type CT has 300 secondary turns. The secondary carries a burden of ammeter having resistance of 1Ω & reactance of 0.53Ω while secondary winding resistance is 0.25Ω & reactance of 0.35Ω. The magnetizing m.m.f. required is 85A while the current component for core losses is 50A. Find i) the primary current when the secondary carries 5A. ii) the ratio error.	6	3	4	1,2
17. a)	Describe the construction and working of DC tacho-generator with a neat sketch.	7	2	5	1,2
b)	Explain the construction and working of LVDT with diagram.	7	2	5	1,2
18. a)	Prove that the scale of instrument using gravity control is not uniform.	7	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.	7	4	2	1,2
19.	Answer any ***two*** of the following:				
a)	Derive the balance equation for the general A.C bridge.	7	2	3	1,2
b)	Explain the process of calibration of an ammeter and voltmeter with DC potentiometer?	7	1	4	1,2
c)	Describe the construction and working of AC tacho-generator with a neat sketch.	7	2	5	1,2

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

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	64
2	Knowledge on application and analysis (Level-3 & 4)	36
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	0

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