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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech III Year II Semester Supplementary Examinations July-2021

ELECTRICAL AND ELECTRONIC MEASUREMENTS

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 a Define the terms “Indicating instruments”, “Recording instruments” and “Integrating instruments”. **6M**
- b A 2mA meter with an internal resistance of 100ohm is to be converted to 0-150mA ammeter. Calculate the value of the shunt resistance required. **6M**

OR

- 2 a Explain the working of universal shunt used for multi range ammeters and derive expressions for resistances of different sections of a universal shunt for 3 range ammeter. **10M**
- b List the errors in PMMC instrument. **2M**

UNIT-II

- 3 a Draw the circuit diagram of a Wheatstone bridge and derive the conditions for balance. **6M**
- b The Wheatstone bridge has $R_1=10\text{Kohm}$, $R_2=2\text{Kohm}$ and $R_3=5\text{Kohm}$. Calculate the value of unknown resistance, assuming the bridge to be in balanced condition. **6M**

OR

- 4 a An inductance comparison bridge is used to measure the inductive impedance at a frequency of 1.5KHz. The bridge constants at bridge balance are, $L_3=8\text{mH}$, $R_1=1\text{Kohm}$, $R_2=25\text{ohm}$, $R_3=50\text{kohm}$. **6M**
- b Derive the balance equation for AC bridges **6M**

UNIT-III

- 5 a Discuss the errors of single phase energy meter. **6M**
- b A 50A, 230 V meter on full load test makes 61 revolutions in 37 seconds. If the normal disc speed is 520 revolutions per Kwh , find the percentage error. **6M**

OR

- 6 a A single phase kilo watt hour meter makes 500 revolutions per kilo watt hour. It is found on testing as making 40 revolutions in 58.1 seconds at 5KW full load. Find the percentage error. **6M**
- b Explain driving system, moving system and braking system in a single phase induction type energy meter. **6M**

UNIT-IV

- 7 a Discuss C T and P T. **6M**
- b Why secondary of C.T should not be open? **6M**

OR

- 8 a Explain the applications of DC potentiometers. **6M**
- b List the advantages of potentiometers **6M**

UNIT-V

- 9 a Discuss A C testing. What are Iron losses? How do they vary with frequency? **8M**
- b Write explanatory notes on flux meter. **4M**

OR

- 10 a With neat diagram, explain about cathode ray tube. **8M**
- b List some application of CRO. **4M**

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