



Regulation 17

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A' Grade)

Subject code: 1P5BA

B.Tech III Year I Semester Supplementary Examinations, December 2021

ELECTRICAL MEASUREMENTS & INSTRUMENTATION
(Electrical and Electronics Engineering)

Maximum Marks: 70

Date: 23.12.2021 Duration: 3 hours

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Compare between the spring control and gravity control.
- 2 Why an ammeter should have a low resistance value?
- 3 What are the errors occurs in instrument transformers?
- 4 compare the principle of dc potentiometer and ac potentiometer.
- 5 What is the major cause of creeping error in an energy meter?
- 6 Write down about LPF and UPF wattmeters?
- 7 What are the sources of errors in AC bridge measurement?
- 8 What is meant by balanced bridge?
- 9 What are active and passive transducers? Give examples.
- 10 What is piezoelectric effect.

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 With a neat diagram explain in detail the construction of PMMC instrument. (10M)

OR

- 12 What are the shunts and multiplier? Derive the expression for both, with reference to meters used in electrical circuits. (10M)

- 13 For a current transformer with bar primary has 300 turns in its secondary winding. The resistance and reactance of the secondary circuit are 1.5Ω and 1.0Ω respectively, including the transformer winding. With 5A flowing in the secondary winding, the magnetizing mmf is 100AT and the core loss is 1.2 W. Determine the ratio and phase angle errors. (10M)

OR

- 14 Evaluate expression for actual transformation ratio, ratio error and phasor angle error of a P.T. (10M)

- 15 Designed an energy meter is to make 100 revolutions of the disc for one unit of energy. Calculate the number of revolutions made by it, when connected to a load carrying 40 A at 230V and 0.4 p.f. for 1 hour. If it actually makes 360 revolutions, find the percentage error. (10M)

OR

16 Discuss with block diagram, the principle of operation of single phase energy meter. (10M)

17 Evaluate the equation of balance for Anderson bridge and also draw the phasor diagram. (10M)

OR

18 Name an AC bridge is balanced at 2KHz with the following components in each arm: Arm AB= $10\text{K}\Omega$, Arm BC= $100\mu\text{F}$ in series with $100\text{K}\Omega$, Arm AD= $50\text{K}\Omega$ Find the unknown impedance $R\pm jX$ in the arm DC, if the detector is between BD. (10M)

19 What is transducer? Briefly explain the procedure for selecting a transducer. (10M)

OR

20 Explain the principle of operation of LVDT. (10M)