SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL No: | | | | | | | | | | | | | Total number of pages:[2]

Total number of questions: 06

May 2018

Reapear for 2015 B.Tech onwards

B.Tech. || EE || 3rd Sem

Electrical Measurements

Subject Code: BTEE-303 A

Paper ID:

Time allowed: 3 Hrs **Max Marks: 60**

Important Instructions:

- **All questions are compulsory**
- **Assume any missing data**

PART A (2×10)

Q. 1. Short-Answer Questions: All Cos

(a) Define Instrument transformer.
(b) What do you understand by air damping and eddy current damping?
(c) Give limitations of PMMC instruments.
(d) Give the applications of A.C Potentiometer.
(e) What is the difference between instrument transformer and power transformer?
(f) Comparison between Analog and Digital instruments.
(g) Derive the dimensional equation for Emf.
(h) State significance of Wagner earthing device.
(i) Derive general equation for bridge balance.
(j) What are the advantages of Bridge Circuit?

PART B (8×5)

Q. 2. The energy stored in a parallel plate capacitor per unit volume (energy density) is given by: $w = Kc^a V^b d^c$ CO4

Where c = permittivity of the medium

d = distance between plates CO4

V = voltages between plates and K is a constant.

Find the values of a, b and c.

(OR)

Explain Instrument Transformer & give its advantages and disadvantages. What are various types of Errors that are present in Current Transformer and Potential Transformer?

Q. 3. Explain the working of Moving Iron Indicating Instruments. Show that this type of instruments can be used for both DC and AC measurements. CO3

OR

What are the essential characteristics of energy meter? Explain the working principle and give the advantages of Induction type watt hour meter. CO3

Q. 4. How inductance can be measured using Maxwell's Bridge? CO2

OR

A bridge consists of following:
Arm ab-a choke coil having a resistance R_1 and inductance L_1.
Arm be-a non inductive resistance R_3.
Arm cd-a mica condenser C_4 in series with a non inductive resistance R_4.
Arm da-a non inductive resistance R_2.
When this bridge is fed from a source of 500 Hz, balance is obtained under following conditions. R_2 =2410 ohm, R_3 =750 ohm, C_4=0.35μF, R_4=64.5 ohm. The series resistance of capacitor is 0.4 ohm. Calculate the resistance and inductance of the choke coil.

Q. 5. Draw and explain phasor diagram of current transformer. CO2

OR

Discuss the working and constructional detail of PMMC instruments. CO2

Q. 6. Write a short note on following: CO1

a) Wheat stone bridge
b) Self balancing potentiometer

OR

Write a short note on following: CO1

a) Dynamometer type instruments
b) DC potentiometer