

Set No. 1

Max. Marks: 75

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Code No: **R31022****R10****Set No. 2****III B.Tech I Semester Supplementary Examinations, June - 2015****ELECTRICAL MEASUREMENT****(Electrical and Electronics Engineering)****Time: 3 hours****Max. Marks: 75****Answer any FIVE Questions****All Questions carry equal marks***********

- 1 a) Derive the equation for deflection in spring controlled permanent magnet Moving coil instrument. [8]
b) What is a loading effect? Explain how to overcome it. [7]
- 2 a) Derive the actual ratio of a Current transformer from its equivalent circuit and Phasor diagram. [8]
b) Why secondary of current transformer should never be open when the Primary winding is energized. [7]
- 3 a) List the different types of errors that propel up in Dynamometer Wattmeter and the methods to compensate them. [7]
b) Explain with a neat diagram the working of a single phase induction type energy meter. [8]
- 4 a) Explain the operation of DC Crompton Potentiometer with a neat diagram. [8]
b) Design a volt ratio box with a resistance of 50Ω /volts and ranges 25 V, 50 V, 75 V, 150 V, and 300 V. The volt ratio box is to be used with a potentiometer having a measuring range of 1.6 V. [7]
- 5 a) Explain how insulation resistance of a cable can be measured with the help of loss of charge method. [8]
b) State the advantages of using the bridge circuits for the measurement. [7]
- 6 a) List the advantages and disadvantages of Desauty's Bridge. [7]
b) A sample of Bakelite was tested by the Schering bridge method at 33 KV, 50 Hz. Balance was obtained with a standard condenser of 116 PF capacitance, a condenser of capacitance $0.8 \mu\text{F}$ in parallel with a non reactive resistor of 419Ω and a non reactive resistor of 220Ω . Determine the equivalent series resistance and the power factor of the specimen. [8]
- 7 a) Explain the 'Lloyd Fisher square' method of measuring iron losses in a magnetic material. [7]
b) Explain the method for finding out the B-H curve of a magnetic materials using step by – step method. [8]
- 8 Write short notes on the following: [15]
a) Phantom Loading in Energy meters b) Quality factor in AC Bridges.
c) Power factor meters.

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Set No. 3

III B.Tech I Semester Supplementary Examinations, June - 2015

ELECTRICAL MEASUREMENT

(Electrical and Electronics Engineering)

Time: 3 hours**Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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| 1 | a) Explain the construction and working of Repulsion type Moving iron Instruments. | [8] |
| | b) List the different types of errors in PMMC Instruments and how they can be overcome. | [7] |
| 2 | a) Compare between Current transformer and Potential transformer. | [8] |
| | b) List the various parameters that affect the characteristics of current transformer. | [7] |
| 3 | a) Derive the necessary torque equation for the Electrodynamometer type Instruments. | [8] |
| | b) In a Power measurement test the two wattmeter readings are 4 KW and 1 KW. Calculate the power and power factor if i) both meters read direct ii) One meter connection is reversed. | [7] |
| 4 | a) Explain the standardization procedure of a potentiometer. | [7] |
| | b) Explain the Operation of Gall – Tinsley Co – ordinate type A.C. Potentiometer with a neat diagram. | [8] |
| 5 | a) List the difficulties encountered in the measurement of high resistances? How to overcome these limitations? | [7] |
| | b) Explain the working of Carey – Foster slide wire bridge with neat circuit diagram. | [8] |
| 6 | a) Explain the different types of detectors used in ac bridges. | [7] |
| | b) Explain, with a neat diagram, how the inductance can be measured by using Hay bridge. | [8] |
| 7 | a) Explain the determination of Hysteresis loop by method of reversals using a neat diagram. | [8] |
| | b) List the advantages and disadvantages of ring and bar specimens used in testing of magnetic materials. | [7] |
| 8 | Write short notes on the following: | [15] |
| | a) Loading effect in Instruments b) Creeping in energy meter c) Digital Tachometer. | |

Code No: R31022

R10**Set No. 4**

III B.Tech I Semester Supplementary Examinations, June - 2015

ELECTRICAL MEASUREMENT

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

- 1 a) Explain the construction and working of a Permanent magnet moving coil meter. [8]
b) Explain the working of Universal shunt used for multi range ammeters. [7]
- 2 a) Explain the following terms with respect to Instrument transformers:- [8]
i) Actual Ratio ii) Nominal ratio
iii) Ratio correction factor iv) Burden of an instrument transformer
b) A current transformer has a single turn primary and 400 secondary turns. The magnetizing current is 90A while core loss current is 40A. Secondary current phase angle is 28° . Calculate the actual primary current and ratio error when secondary carries 5A current. [7]
- 3 a) List the advantages and disadvantages of Electrodynamometer type Instruments. [7]
b) Explain the working of Low power factor Electrodynamometer type wattmeter with a neat diagram. [8]
- 4 a) Explain the working of a basic slide wire DC potentiometer with a neat diagram. [7]
b) How the unknown emf is measured using Drysdale – Tinsley A.C. Potentiometer? [8]
- 5 a) Why the voltmeter – ammeter method is unsuitable for the precise measurement of low resistance. [7]
b) Calculate the insulation resistance of a cable which was tested for insulation resistance by loss of charge method. An electrostatic voltmeter of infinite resistance is connected between the cable and earth forming a joint capacitance of $0.0007 \mu\text{F}$. It is observed that the charging voltage falls from 290 Volts to 95 Volts in one minute. [8]
- 6 a) Explain how the inductance can be measured by using Maxwell bridge with a neat diagram. [8]
b) Explain how Wein bridge can be used for the measurement of frequency with a neat diagram and derive the necessary equation under the balanced condition. [7]
- 7 a) Classify the different types of magnetic materials with an example of each type. [7]
b) Explain from basics the working of a Ballistic Galvanometer with a neat diagram. [8]
- 8 a) Explain the working of Dual slope integrating type digital voltmeter with a neat diagram. [8]
b) List the specifications of Digital Voltmeters. [7]

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