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Total number of printed pages – 3

B. Tech
PCEE 4204

Third Semester Examination – 2013
ELECTRICAL AND ELECTRONICS MEASUREMENT

BRANCH : ETC, EIE, EC, IEE, AEIE

QUESTION CODE : C-483

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory and any **five** from the rest.
The figures in the right-hand margin indicate marks.*

1. Answer the following questions : 2×10
- (a) Accuracy of instrument "A" is 5% and accuracy of instrument "B" is 10%. Which instrument gives more correct reading ?
- (b) Calculate the power dissipation of a Resistor when the voltage across it is 112.5 V and current through it is 1.62 A. Give only the significant figures in the answer.
- (c) Write names of few detectors used in AC bridges. Write the indications of these detectors under balanced condition and unbalanced condition.
- (d) Write few advantages of using Wagner Earthing Device.
- (e) Define Logarithmic Decrement.
- (f) In PMMC, write the name of the opposing torque that becomes equal to deflecting torque at steady state condition.
- (g) Compare accuracy of measurement of unknown voltage using a PMMC and a DC Potentiometer.

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- (h) What will happen when the secondary of a Current Transformer is made open even though the primary is being excited ?
- (i) What is the purpose of using Delay Line in Oscilloscope ?
- (j) What is distortion of a signal ?
2. (a) How Standards are classified ? Describe construction and working of a "Standard – Ampere". 5
- (b) Derive the expression and explain the method of measurement of low resistance using Kelvin's Double Bridge. 5
3. (a) With suitable diagram, describe measurement of Resistance of Earth Connections. How position of the Auxiliary Electrode affects the accuracy of measurement ? 5
- (b) Draw circuit diagram of Schering Bridge and derive the expression of unknown impedance at balanced condition. Describe the method of measurement of Power Factor and Dissipation Factor. 5
4. (a) Derive the expressions for the angle of deflection of the moving coil of a D'Arsonval type galvanometer under various damping conditions. 5
- (b) Derive the expression of the deflecting torque of a Moving Iron instrument. 5
5. (a) Draw circuit diagram of a Deflectional Potentiometer. Derive the expression of the unknown voltage and describe its method of measurement. 5
- (b) Describe theory and principle of operation of an Electrodynamometer type wattmeter. 5
6. (a) Describe constructions of Current Transformer and Potential Transformer. 5
- (b) With suitable circuit diagram describe the use of rectifier circuits for measurement of AC voltages using DC voltmeter / ammeter. 5

7. (a) Briefly describe measurement of Frequency, Phase Angle and Time Delay using Oscilloscope. 5
- (b) With suitable block diagram explain operation of any one Spectrum Analyzer. 5
8. Write short notes on any **two** of the following. 5×2
- (a) Construction and operation of Portable Resistance Testing Set
- (b) Circuit diagram and operation of Power Factor Meter
- (c) Q-meter – Circuit diagram and operation.


