

Registration No. :

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Total number of printed pages – 2

B. Tech  
PCEE 4204

Third Semester (Back / Special) Examination – 2013  
ELECTRICAL AND ELECTRONICS MEASUREMENT

BRANCH : AEIE, EC, EIE, ETC, IEE

QUESTION CODE : D 210

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
- Define "Accuracy".
  - List different types of error.
  - Draw circuit diagram of Kelvin's Double Bridge.
  - List detectors used in AC bridges.
  - Define "Logarithmic Decrement".
  - Mention whether Electrodynamometer type instruments can be used for DC or AC or both current measurements.
  - Draw circuit diagram of any one AC potentiometer.
  - Why CT and PT are used ?
  - Write few advantages of Electronics Voltmeters.
  - What is meant by Harmonic Distortion ?
2. (a) Three resistors having resistances 12.5 ohm, 10 ohm and 7.55 ohm are connected in series. What is the value of equivalent resistance ? Express the answer using significant figure. 5
- (b) Describe the construction and principle of operation of Portable Resistance Testing Set (Megohmmeter). 5



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3. (a) Draw circuit diagram of Maxwell's bridge and derive the expression of the unknown components during balanced condition. 5  
(b) Draw circuit diagram and describe method of measurement of mutual inductance using Felici's method. 5
4. (a) Describe construction and basic principle of operation of D'Arsonval type galvanometer. 5  
(b) Derive the expression of the deflecting torque of a MI type instrument. 5
5. (a) Describe construction and principle of operation of DC potentiometer. 5  
(b) Describe construction and principle of operation of Electrodynamicometer type wattmeter. 5
6. (a) Draw circuit diagram and explain principle of operation of AC voltmeter using rectifier. 5  
(b) Draw functional block diagram of an oscilloscope and explain its operation. 5
7. (a) Draw functional block diagram of digital voltmeter and explain its operation. 5  
(b) Briefly explain the operation of a Spectrum Analyzer. 5
8. Write short notes on any **two** of the following : 5×2  
(a) Screening of bridge components and Wagner's Earthing Device.  
(b) Construction and principle of measurement of any one frequency meter.  
(c) Measurement of frequency, phase angle and time using oscilloscope.