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**Question Paper Code: 41634**

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Third Semester

Instrumentation and Control Engineering

14UIC304 - MEASUREMENTS AND INSTRUMENTATION

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 1 = 10 Marks)

1. A \_\_\_\_\_ device prevents the oscillation of the moving system and enables the latter to reach its final position quickly
  - (a) deflecting
  - (b) controlling
  - (c) damping
  - (d) none of these
2. If a voltmeter is connected, like an ammeter in series to the load
  - (a) The measurement reading will be too high
  - (b) Almost no current will flow in the circuit
  - (c) The meter will burn
  - (d) An instantaneously high current will flow
3. A dynamometer wattmeter can be used for
  - (a) Both D.C. and A.C
  - (b) D.C. only
  - (c) A.C. only
  - (d) none of these
4. Induction type single phase energy meters measure electric energy in
  - (a) kW
  - (b) Wh
  - (c) kWh
  - (d) VAR

5. Which of the following devices should be used for the accurate measurement of low D.C. voltage?
- (a) small range moving coil voltmeter                      (b) D.C. potentiometer  
(c) small range thermocouple voltmeter                      (d) none of these
6. Instrument transformers are
- (a) potential transformers    (b) current transformers  
(c) both (a) and (b)    (d) power transformers
7. For measuring a very high resistance we should use
- (a) Kelvin's double bridge    (b) Wheat stone bridge  
(c) Meggar    (d) None of these
8. The material used to make standard resistance is
- (a) Manganin                      (b) Aluminium                      (c) Nichrome                      (d) Platinum
9. Maxwell-Wien bridge is used to measure
- (a) Inductance                      (b) Capacitance                      (c) Dielectric loss                      (d) Frequency
10. For measurements on high voltage capacitors, the suitable bridge is
- (a) Wein bridge    (b) Modified De Santy's bridge  
(c) Schering bridge    (d) none of these

PART - B (5 x 2 = 10 Marks)

11. Compare Moving coil with Moving iron instruments.
12. Define Phantom loading.
13. Mention the errors in instrument transformer.
14. How resistance is measured in loss of charge method.
15. Define Q-factor of the coil

PART - C (5 x 16 = 80 Marks)

16. (a) Explain in detail about the principle, construction and working of D'Arsonval galvanometer with a neat diagram. (16)

Or

- (b) Explain the principle, construction and operation of moving iron meters with neat diagram. (16)
17. (a) Explain the construction and operation of Electrodynamic type wattmeter in detail with neat diagram. (16)

Or

- (b) Explain the construction and theory of operation of a single phase induction type energy meter. (16)
18. (a) Explain the principle of operation of Drysdale phase shifting transformer. How it is used in polar type A.C potentiometer to measure the unknown e.m.f? (16)

Or

- (b) With neat circuit diagram explain the principle and operation of Crompton's type and polar type potentiometers. (16)
19. (a) Obtain the expression for the measurement of resistance using Wheatstone bridge and Kelvin double bridge. (16)

Or

- (b) Explain the construction and working principle of Megger. (16)
20. (a) Explain the working principle of Schering Bridge and also derive its balance equations. (16)

Or

- (b) With neat diagram describe in detail about the Maxwell bridge in measurement system. (16)
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