KATHMANDU UNIVERSITY
End-Semester Examination [C]
January, 2018

Marks Scored:

Level : B.E./B.Sc./B.Tech.
Year : I

Course : ENGG 112
Semester: II

Exam Roll No.:

Time: 30 mins.

F.M. : 20

Registration No.:

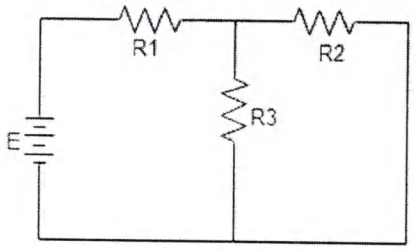
Date JAN 0 8 2018

SECTION "A"

[20 Q.×1=20 marks]

Choose the most appropriate answer.

1. The D.C resistive circuit in figure shows that

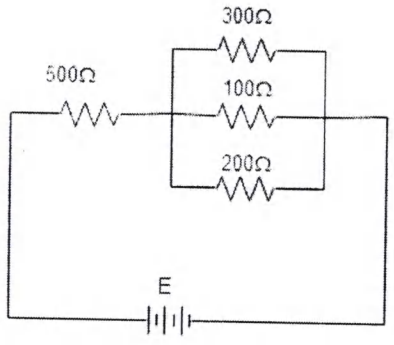


a. E and R_1 form a series circuit.
b. R_3 is in series with R_2.
c. R_1 is in series with R_3.
d. R_3 is in parallel with R_2.

2. Kirchhoff's current law is applicable to only
a. Closed loops in a network.
b. Electronic circuits.
c. Junctions in a network.
d. Electric circuits

3. The nodal analysis is primarily based on the application of
a. Kirchhoff's voltage law.
b. Kirchhoff's current law.
c. Resistive divider rule.
c. Voltage divider rule.

4. For any value of battery voltage, E in figure the smallest current will flow in the resistance of



a. 300 Ω.
b. 500 Ω.
c. 100 Ω.
d. 200 Ω.

5. The superposition theorem requires as many circuits to be solved as there are
a. Source, nodes and meshes.
b. Sources and nodes.
c. Sources.
d. Nodes

6. Thevenin's equivalent circuit consists of
   a. Series combination of R_{TH}, V_{TH} and R_L.
   b. Series combination of R_{TH}, V_{TH}.
   c. Parallel combination of R_{TH}, V_{TH}.
   d. Parallel combination of R_{TH}, V_{TH} and R_L.

7. The power in an a.c circuit is given by
   a. VI cosφ.
   b. VI sinφ.
   c. I^2Z.
   d. I^2X_L.

8. In a series RLC circuit resonance occurs when
   a. $R=X_L - X_C$.
   b. $X_L = X_C$.
   c. $X_L = 10*X_C$ or more.
   d. Net X > R.

9. The voltage induced in the three windings of a three phase alternator are ..... degree apart in phase
   a. 120
   b. 90
   c. 60
   d. 30

10. The power taken by a three phase load is
   a. $3V_LI_L\cos\theta$
   b. $3V_LI_L\sin\theta$
   c. $\sqrt{3}\ V_LI_L\cos\theta$
   d. $\sqrt{3}\ V_LI_L\sin\theta$

11. The form factor is the ratio of
   a. Peak value to r.m.s value.
   b. r.m.s value to average value.
   c. Average value to r.m.s value.
   d. Peak value to average value.

12. A transformer transforms
   a. Voltage.
   b. Current.
   c. Frequency.
   d. Power.

13. For a frequency of 200 Hz the time period will be
   a. 0.05 seconds.
   b. 0.005 seconds.
   c. 0.5 seconds.
   d. 0.0005 seconds.

14. In a RLC series resonant circuit, magnitude of resonance frequency can be changed by changing the value of
   a. Resistor, R only.
   b. Inductor, L only.
   c. Capacitor, C only.
   d. Inductor, L or Capacitor, C.

15. In a star connected system the relation between line voltage, V_L and phase voltage, V_P is
   a. $V_L = \sqrt{3} * V_P$.
   b. $V_L = V_P$.
   c. $V_P = \sqrt{3} * V_L$.
   d. $V_L = \frac{1}{\sqrt{3}} * V_P$

16. In an induction motor, the rotor
   a. Rotates at synchronous speed.
   b. Rotates above synchronous speed.
   b. Rotates below synchronous speed.
   d. Rotates opposite to synchronous speed.

17. The speed of a 'P' pole synchronous machine for frequency, f in r.p.m is given by
   a. 120*f / P.
   b. 120*P / f.
   c. 120*f*P.
   d. $\sqrt{(120fp)}$

18. The kilowatt hour (kWh) meter is used for measuring
   a. Power.
   b. Voltage
   c. Current.
   d. Energy.

19. The ..... instrument is used for protection and metering
   a. Energy meter.
   b. Wattmeter.
   c. Instrument transformer.
   d. Power factor meters.

20. The ratio of change in output to change in input is
   a. Precision
   b. Resolution
   c. Sensitivity
   d. Repeatability.