Progressive Education Society's

Seat No.

Modern College of Arts, Science and Commerce (Autonomous)

Shivajinagar, Pune -5

[Total no. of questions: 5] [Total number of pages: 3]

First Year B.Sc. Electronics (Mar-2020)

End Semester Backlog Examination, (2019 Pattern) Semester – I

Course Code: 19ScEleU101 **Course Name: Basics of Analog Electronics**

Date: 13-03-2020 **Time: 10.00 a.m. to 12.00 p.m.**

[Time: 2 Hours] [Max Marks: 60]

Instructions:

1. *Question 1 and Question 5 are compulsory*
2. *Solve any two questions from Q2. To Q4.*
3. *Questions 2 to 4 carry equal marks.*

Q1. Answer the following questions in one sentence each (Any Ten) **(10 x 1 = 10)**

1. Draw circuit symbol of DPST-NC and SPDT switch.
2. Draw the circuit symbol of step down transformer.
3. What is coaxial cable?
4. Define push button switch.
5. Define color code of 39 kΩ resistor with 5 % tolerance.
6. If two capacitors of 10 μf are connected in parallel, what is the resultant capacitance?
7. List any two applications of resistor.
8. Define turn ratio of transformer.
9. What is the ohm's law equation for resistor?
10. Define Capacitor.
11. What is fuse?
12. Find the value of resistor with color code as BROWN BLACK GREEN SILVER.

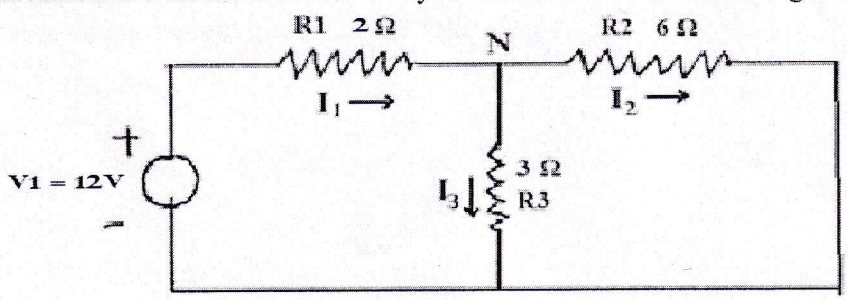
Q2.

A. Answer the following questions (Any Four) **(4 x 4 = 16)**

1. Define semiconductor, its types and applications.
2. Explain I-V characteristics of P-N junction diode.
3. Write notes on variable resistor.
4. Compare inductive and capacitive reactance.
5. Write notes on solar cell.

B. Answer the following question (Any One) **(1 x 4 = 4)**

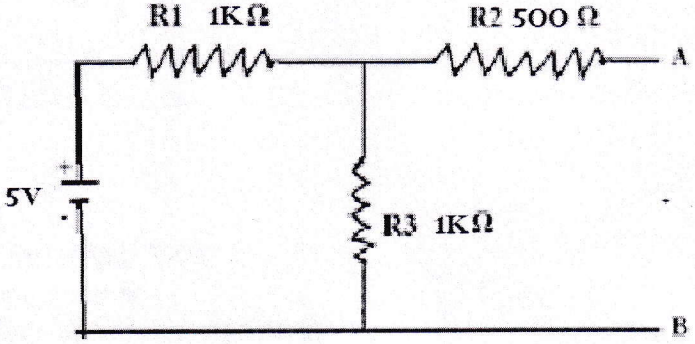
1. State and prove maximum power transfer theorem.
2. State Kirchhoff's Current law and verify it at node N in the following circuit.



Q3.

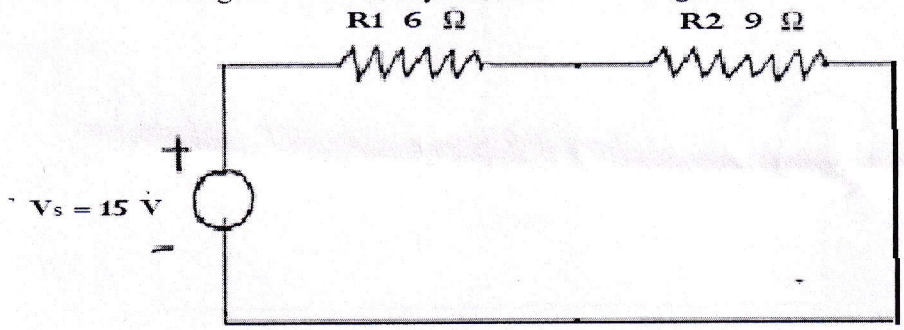
A. Describe the following questions (Any Four) **(4 x 4 = 16)**

1. Explain the working of LED.
2. Define phase, frequency, peak to peak value and rms value of sinusoidal signal.
3. Compare ideal and practical voltage source.
4. Write notes on Varactor diode.
5. Find Thevenin equivalent circuit for the following circuit.



B. Answer the following question (Any One) **(1 x 4 = 4)**

1. Write notes on ideal and practical current source.
2. State Kirchhoff's voltage law and verify it for the following circuit



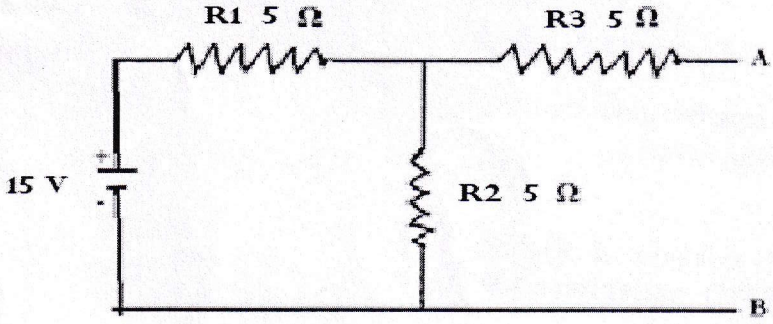
Q4.

A. Explain the following (Any Four) **(4 x 4 = 16)**

1. Explain the classification of capacitors.
2. Explain construction of P-N junction diode.
3. Compare primary cell and secondary cell.
4. What is tolerance in resistance value? Define color code of 390 Ω resistor with 5% tolerance.
5. Explain working of photo diode.

B. Answer the following question (Any One) **(1 x 4 = 4)**

1. Draw series RLC circuit and write the expression of resonant frequency.
2. Obtain Norton equivalent circuit of the following



Q5. Attempt the following (Any Two) **(2 x 5 = 10)**

1. Write notes on optocoupler.
2. Explain zener diode as voltage regulator.
3. Explain voltage and current dividers with examples.
4. State super position theorem and find current through R3.