

**School of University Polytechnic**

Diploma in Civil Engineering Summer/Backlog  
-Semester End Examination - Jul / Aug 2024

Duration : 180 Minutes  
Max Marks : 100

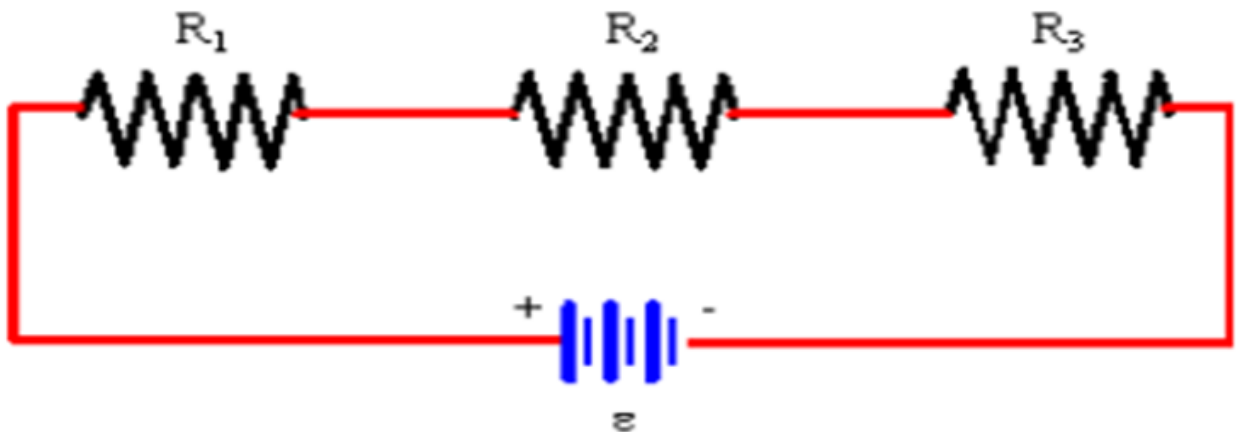
**Sem II - N1DF201B / PHYE1010 - Applied Physics II**General Instructions

Answer to the specific question asked

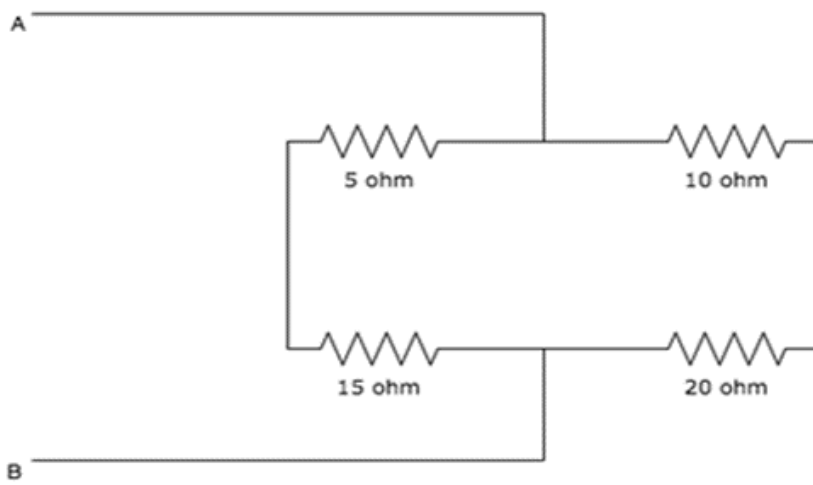
Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

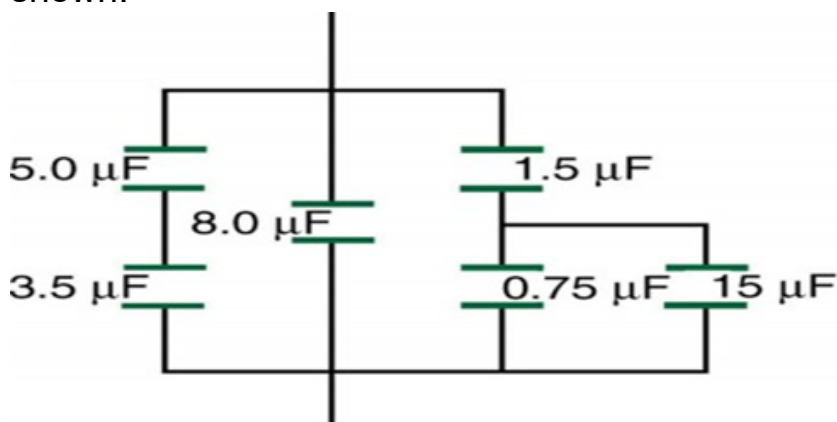
- 1) Define phenomenon of total internal reflection. K1(2)
- 2) Explain the shape of the magnetic field lines. K2(4)
- 3) Explain reflection phenomenon of light. A ray of light is incident towards a plane mirror at an angle of  $30^\circ$  with the mirror surface. What will be the angle of reflection? K2(6)
- 4) Illustrate Coulomb's law in electrostatic force between two charges. A positive charge of  $6 \times 10^{-6} C$  is 0.040 m from the second positive charge of  $4 \times 10^{-6} C$ . Calculate the force between the charges. K3(9)
- 5) In the diagram below,  $R_1 = 5 \Omega$ ,  $R_2 = 10 \Omega$ , and  $R_3 = 15 \Omega$ . The battery supplies an emf of  $\varepsilon = 0.30 V$ . Identify the equivalent resistance, the current through each resistor, the voltage drop across each resistor? K3(9)



- 6) Examine the equivalent resistance between A and B K5(10)



- 7) Analyze biasing of a p-n junction diode. How is forward biasing different from reverse biasing in a p-n junction diode? Draw the characteristics curve of p-n diode. K4(12)
- 8) Examine for total capacitance of the combination of capacitors shown. K5(15)



- 9) Examine transistor with its types. Explain the construction and working of NPN transistor with suitable diagram. K5(15)
- 10) Discuss gas laser. Explain with suitable diagram the principle, construction and working of He-Ne laser gas laser. Also give applications of Laser. K6(18)