File

FACULTY OF MEDICINE, UNIVERSITY OF RUHUNA

B.Sc. Medical Laboratory Science Degree Programme

Year End Examination, Year 1 –7th Batch - December 2015

Basic Sciences –Physics, Theory

26

Date: 29th December 2015 **Time:** 2.00 pm- 4.00 pm **Duration:** 2 Hour

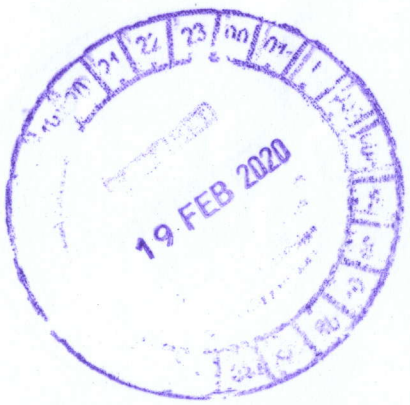
Answer all questions

1.

1.1 All materials in our surroundings comprise of positive and negative charges. However, they are neutral. Why?

1.2 How do you explain charge conservation?

1.3 Write down two (2) fundamental properties of electric field lines.



26

1.4 A conducting sphere of radius a is given a positive charge Q.
Describe the charge distribution within the sphere and on the surface.

1.5 Describe, briefly, why a capacitor is an important electrical component.

2.

2.1 Define thermal energy, briefly.

2.2 How do you compare thermal energy of a hot body and a cold body?

25

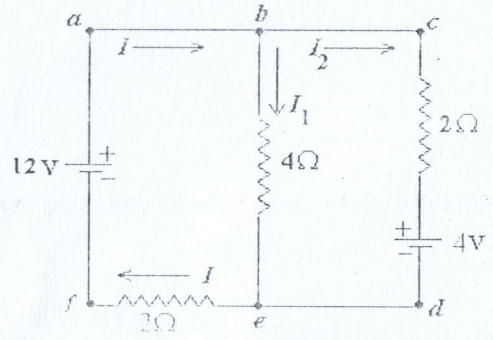
2.3 Water has a much higher specific heat capacity than iron. How can you prove this statement?

2.4 Water behaves differently in the temperature range $0^{\circ}C - 4^{\circ}C$. Explain, briefly.

2.5 What are the methods of heat transfer?

25

3. Find the currents passing through each of the branches of the following circuit.



4.

4.1 What is meant by wave-particle duality?

4.2 Sketch how constructive and destructive interference patterns may be formed.

4.3 Discuss, briefly how population inversion is important in laser action.

4.4 Give two examples where laser technology is used in the medical field.