Pole.

FACULTY OF MEDICINE, UNIVERSITY OF RUHUNA

B.Sc. Medical Laboratory Science Degree Programme

Year End Examination Year 1 - 8th Batch - January 2017

Basic Sciences – Physics

MLS - 1101

Date: 30th January 2017 Time: 1.00 p.m. – 3.00 p.m. Duration: 2 hours

Answer all questions **Index Number: .....**

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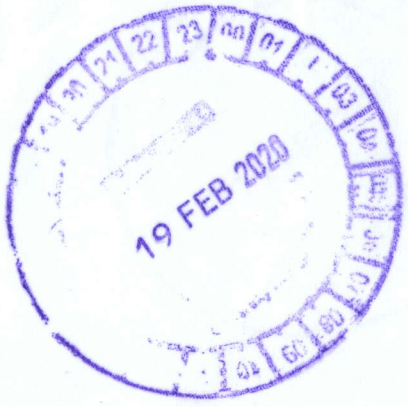
1.

(a) You are given a glass rod and a piece of silk fabric. What would happen if you rub the rod with the silk fabric? Why?

(b) What is the difference between a conductor and an insulator?

(c) Sketch field lines in the following two situations.

(i) ⊕ ⊕ (ii) ⊕ ⊖



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

(e) You are given two capacitors of capacitance C1 and C2. Sketch two appropriate circuit diagrams to increase and decrease resultant capacitors.

(i) (ii)

2. (a) Define potential and kinetic energies in a thermal substance, briefly.
(i) What contributes to temperature of the substance? Why?

(b) Discuss briefly the limits of the Kelvin temperature scale.

(c) Write briefly how you may prove that water has much higher specific heat capacity than iron using a simple laboratory experiment.

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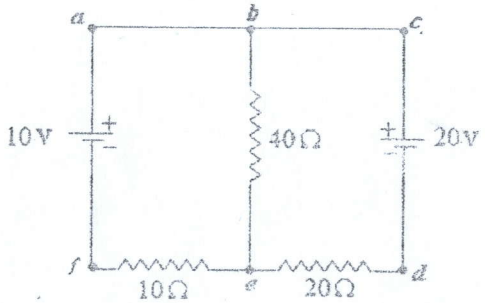
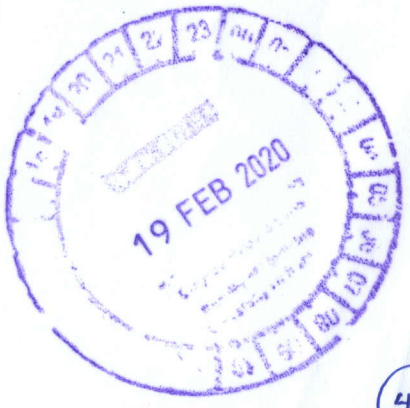
(d) Briefly explain why water behaves differently in the temperature range, 0°C – 4°C.

(e) State the methods of heat transfer. Give an example for each.

3. State Kirchhoff's 1st and 2nd laws. Find currents passing through each of the branches, *ab*, *bc* and *be*, of the following circuit.





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