



FACULTY OF ALLIED HEALTH SCIENCES
UNIVERSITY OF RUHUNA

Department of Medical Laboratory Science

Year End Examination Year 1 - 9th Batch - June 2018

Basic Sciences –Physics (Theory)



25th June 2018

Time: 9.00 a.m. – 10.30 a.m.

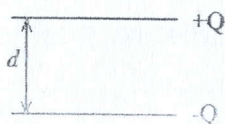
Duration: 1 hour and 30 minutes

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Answer all questions.

1. (a) Describe a parallel plate capacitor and discuss its usage and importance.

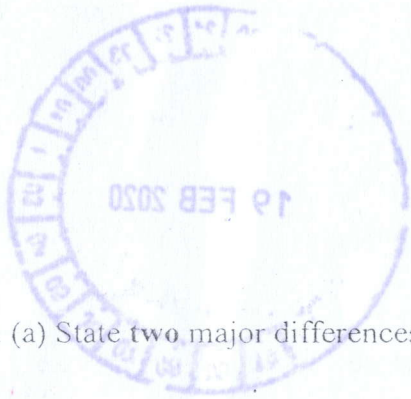
(b) A parallel plate capacitor is having a charge Q on its positively charged plate. The distance between the plates is d . Sketch the direction of the electric field (E) and the voltage (V) in the diagram given below. Assume that a vacuum is maintained between the plates.



(c) Write down the expression that relates capacitance C , Q and V . If the Area of a plate is A , express C in terms of A and d . (ϵ_0 is the permittivity of vacuum).

(d) What is a dielectric? If a dielectric of thickness d is inserted into the above capacitor, what changes would you expect?

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2. (a) State **two** major differences between light and sound?

(b) State **five** different properties that both sound and light have in common.

(c) A sounding ambulance passes by a person standing on the road. Discuss differences of the sound frequency that he hears, if any.

(d) What principle is used in optical fibers? Discuss, briefly, the importance of optical fibers.

(e) How does an interference pattern formed?



3. Describe, briefly, any **three topics** from the following.

- (a) Define the momentum of a moving object, stating the variables that you use
- (b) Impulse (I) is defined as the change in momentum. State the **three** different ways that the momentum could be changed.
- (c) How can you express Impulse using the Newton's second law?
- (d) A boy standing at the outfield catches a ball coming directly at him when the batter tries to hit a six. What should the catcher do to reduce the pain of catching the ball?

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4. (a) Write down Kirchoff's rules.
(b) How would you define resistance?
(c) Find the currents in the following circuit.

