



JAQ-003-0491004 Seat No. _____

**B. Sc. / M. Sc. (Applied Physics) (Sem. I) (CBCS)
Examination**

November - 2019

**Paper III - Applied Physics-I
(New Course)**

Faculty Code : 003

Subject Code : 0491004

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions are compulsory.
(2) Numbers in the right margin indicate marks.

- 1** Attempt any **seven** short questions : (Two marks each) **14**
- (1) Define Radiation.
 - (2) Define interference thermometer.
 - (3) Define Stefan's law.
 - (4) What is angle of contact?
 - (5) Write any two point to fix the scale of thermometer.
 - (6) Define perfectly elastic body and perfectly plastic body.
 - (7) Define: streamline and turbulent flow.
 - (8) Give dimensional formula of following : Pressure, Surface tension.
 - (9) Define Angular velocity.
 - (10) What is bimetallic thermometer?
- 2** (A) Write answers of any **two** : **10**
- (1) Write short note on Newton's law of cooling.
 - (2) Describe the constant volume hydrogen thermometer with well-labelled diagram.
 - (3) Write working and principle of platinum resistance thermometer.
 - (4) Write a short note on S.H.M.

- (B) Write answer of any **one** : 4
- (1) Write short note on thermoelectric thermometer.
 - (2) Give the differences between transverse wave and longitudinal wave.
- 3 (A) Write answers of any **two** : 10
- (1) Explain the perfect black body.
 - (2) Derive an expression for equation of displacement in S.H.M.
 - (3) How many types of wave are there? Give a brief account of each of them.
 - (4) Describe thermal conductivity with neat diagram and practical application of thermal conductivity.
- (B) Write answer of any **one** : 4
- (1) Write short note on Kirchhoff's law.
 - (2) Define the general characteristics of wave.
- 4 (A) Write answers of any **two** : 10
- (1) Explain parallelogram law of forces.
 - (2) Derive the mathematical proof of law of conservation of momentum.
 - (3) Explain in detail fundamental quantities and derived quantities.
 - (4) Explain in detail Newton's first law of motion.
- (B) Write answer of any **one** : 4
- (1) Explain Lami's theorem
 - (2) Write short note on rolling friction.

5 (A) Write answers of any **two** : 10

- (1) Derive the equation of continuity of flow.
- (2) Derive the Hooke's law.
- (3) Describe the determination modulus.
- (4) Derive an expression for the rise of liquid in a capillary tube.

(B) Write answer of any **one** : 4

- (1) Explain in detail elastic hysteresis.
 - (2) Describe the strain and stress in material.
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