C. ABDUL HAKEEM COLLEGE (AUTONOMOUS), MELVISHARAM - 632 509. SEMESTER EXAMINATIONS, NOVEMBER - 2018

B.Sc., PHYSICS U15MPH101 - PROPERTIES OF MATTER AND ACOUSTICS

Time: Three Hours Maximum: 75 Marks

SECTION - A $(10 \times 2 = 20 \text{ Marks})$

Answer ALL Questions.

- Define Hooke's law.
- 2. Define Young's modulus.
- Define Surface tension.
- Define Viscosity
- 5. What is meant by Resonance?
- 6. What is Simple harmonic motion?
- 7. What is Piezoelectric effect?
- 8. What is Ultrasonic wave?
- 9. Define the reverberation time
- 10. What is a Musical scale?

SECTION - B (5 X 5 = 25 Marks)

Answer **ALL** Questions.

11. a) Derive the formula for the work done in stretching a wire

(Or)

- b) Explain the bending of beams
- 12. a) Drive the expression for the rate of flow of a liquid in a capillary tube.

- (I)
- b) Explain the construction and working of rotary pump.
- 13. a) Write a short note on Interference and Superposition of waves.

(Or)

- b) State and explain the Fourier theorem.
- 14. a) Explain the working of NDT (Non-destructive testing) method.

Qr.

- b) Describe the determination of velocity of ultrasonic waves in a liquid.
- 15. a) Write the conditions for a good acoustical design of an auditorium.

Or Or

b) How will you measure the intensity of Sound? Explain.

SECTION - C (3 X10 = 30 Marks)

Answer ANY THREE Questions.

- 16. Describe Koenig's method for the determination of Young's Modulus of a beam by non-uniform bending method.
- 17. Describe the Jaegar's method of studying the variation of surface tension of water with temperature.
- 18. What are damped vibrations? Derive the differential equation of damped oscillatory motion and give its general solution.
- Explain the principle of Magnetostriction method of producing Ultrasonics.
- 20. Derive Sabine's formula for reverberation time. Explain its significance.

R18603 R18603