JAR-003-0491006 Seat No. _____

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

December - 2019

Paper - VI : Applied Physics - II

(New Course)

Faculty Code : 003
Subject Code : 0491006

Time : $2\frac{1}{2}$ Hours]　　　　　　　　　　　　[Total Marks : **70**

1 Attempt any **seven** short questions : (Two marks each)　**14**

(1) Define Beats.

(2) Define Constructive and Destructive interference.

(3) What is an organ pipe? How does it produce sound?

(4) Define transverse wave and longitudinal wave.

(5) Classify sound based on frequency.

(6) Define Ohm's law. Write the dimensional formula for ohm's law.

(7) State the principal of superposition of sound wave.

(8) State Gauss's law

(9) Define Magnetic Flux.

(10) What is Magnetostriction effect?

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

(1) Describe the formation of stationary wave in closed organ pipe. Explain how nodes and antinodes are formed.

(2) Describe and explain: Melde's experiment for transverse arrangement.

(3) What are the various factors, which affect the velocity of sound in air?

(4) Define the laws of transverse vibrations of a string.

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

    (1) Discuss Newton's formula and Laplace correction for velocity of sound in gases.

    (2) Give the difference between standing wave and travelling wave.

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

    (1) Derive Sabine's equation for Reverberation time for hall or auditorium.

    (2) What are the acoustic requirement of a good auditorium? Discuss the theory of Reverberation.

    (3) How absorption coefficient of a material is measured?

    (4) Write down the Application of Ultrasonic waves for communication.

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

    (1) Discuss construction and working principle of piezoelectric generator.

    (2) Write the conditions for good acoustics.

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

    (1) State and explain Coulomb's Law for electrostatics.

    (2) Derive the equation for electric field due to a charged surface.

    (3) What is capacitor? Derive the formula for capacitance of parallel plate capacitor.

    (4) State and explain Kirchhoff's current and voltage law with suitable diagram.

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

    (1) Discuss in detail the classification of substances according to their resistivity.

    (2) Discuss the current density, conductance and conductivity.

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

      (1) Write a brief note on mutual induction.

      (2) Explain Motional EMF. State Flaming's right hand rule to determine the direction of current induced due to motion of conductor in perpendicular magnetic field.

      (3) What is meant by self-induction? Define self-induction in detail.

      (4) State and explain Faraday's law of electromagnetic induction.

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

      (1) Describe Eddy current.

      (2) State and explain Lenz's law with energy conservation.

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