Maximum

Avinashilingam Institute for Home Science and Higher Education for Women

(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)
Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination – June / July 2021
II Semester

Class : I UG **Time : 3 Hours**
Major : Physics **Max. Marks : 100**

18BPHC04 Mechanics and Sound

Part A **10 x 1 = 10**

Choose the Correct Answer

1. The trajectory of the projectile is _____ in shape. CO1 K1
   a. circle b. square
   c. parabolic d. straight line

2. The unit of electric intensity is CO1 K2
   a. newton b. newton/coulomb
   c. coulomb d. dynes

3. The ____ of the tangential component of the force evaluated along the actual path of the particle. CO2 K3
   a. line integral b. volume integral
   c. surface integral d. none of the above

4. In the C.G.S system, the unit of power is CO2 K2
   a. 1 foot-poundal/sec b. 1 joule/sec
   c. watt d. 1 erg/sec

5. The maximum displacement of a vibrating particle is called CO3 K2
   a. frequency b. amplitude
   c. velocity d. acceleration

6. The oscillations will have _____ amplitude & the state of vibration of a system is called resonance. CO3 K3
   a. maximum b. minimum
   c. equal d. zero

7. The frequency of ultrasonics is higher than _____ hertz. CO4 K3
   a. 200 b. 20000
   c. 20 d. 2000

8. The expression for velocity of ultrasonic wave is CO4 K1
   a. v=2d b. v=2N
   c. v=2Nd d. v=2N/d

9. The branch of physics that deals with the process of generation, reception and propagation of sound is called CO5 K2
   a. acoustics b. reverberation
   c. loudness d. modulation

10. For a propagation of acoustical waves the medium must be CO5 K3
    a. plastic b. either plastic or elastic
    c. neither plastic nor elastic d. elastic

Part B **5 x 6 = 30**

Answer ALL questions

Each answer should not exceed 400 words or two pages

11.a. Express the equation for motion of a body falling freely under the action of gravity. CO1 K2

(or)

11.b. Derive an expression for range of a projectile. CO1 K2

12.a. Write a note on conservative forces. CO2 K3

(or)

12.b. Define linear momentum. State and explain the principle of conservation of linear momentum. CO2 K1

13.a. Define simple harmonic motion. Obtain the solution of differential equation of simple harmonic motion. CO3 K1

(or)

13.b. What are damped vibrations? Obtain an expression for the displacement in the case of a damped oscillatory motion. CO3 K3

14.a. Describe the production of ultrasonic waves by magnetostriction method. CO4 K3

(or)

14.b. Describe about acoustic grating. CO4 K3

15.a. Describe the factors affecting the acoustics of buildings. CO5 K1

(or)

15.b. State the laws of transverse vibration of strings. CO5 K1

Part C **5 x 12 = 60**

Answer ALL questions

Each answer should not exceed 800 words or four pages

16.a. Explain in detail about charged particle in an uniform and constant electric field. CO1 K3

(or)

16.b. Explain the charged particle in an uniform and constant magnetic field. CO1 K4

17.a. Explain the motion of centre of mass with examples. CO2 K2

(or)

17.b. Explain in detail about conservation of angular momentum. CO2 K2

18.a. Explain the theory of beats. CO3 K2

(or)

18.b. Explain how two simple harmonic vibrations acting simultaneously on a particle and in perpendicular directions, can be compounded. CO3 K2

19.a. Discuss briefly the applications of ultrasonics. CO4 K2

(or)

19.b. Apply Fourier theorem in analyzing the square wave form. CO4 K3

20.a. Derive Sabine's reverberation formula and explain its significance. CO5 K2

(or)

20.b. Describe Melde's experiment and explain how the laws of vibration of strings can be verified with this experiment. CO5 K2

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