

Paramathi

MALAR MATRIC HR. SEC. SCHOOL, NAMAKKAL

Public Examination – 2022

XI - Physics - Expected Questions (Reduced Syllabus)

PART-II

16. (a) Give the rules of rounding off. **(OR) SUM**
 (b) What do you mean by gross error?
 (c) Based on Dimensional quantities and Dimensionless quantities, classify the following physical quantities: area, volume, specific gravity and strain.
 (d) Check the correctness of the equation $\frac{1}{2}mv^2 = mgh$ using dimensional analysis method.
17. (a) Write down the kinematic equations for angular motion.
 (b) What is non uniform circular motion?
 (c) State triangular law of addition of two vectors.
 (d) Define velocity and speed.
18. (a) State Newtons' second law.
 (b) What are concurrent forces?
 (c) Under what condition will a car skid on a levelled circular road?
19. (a) Define Power.
 (b) **May be sum**
 (c) Which is conserved in inelastic collision? Total energy (or) kinetic energy?
20. (a) Define couple.
 (b) What is the relation between torque and angular momentum?
 (c) What are the rotational equivalents for the physical quantities, (i) mass and (ii) force?
 (d) Define center of mass.
21. (a) Why is the energy of the satellite (or any other planet) negative?
 (b) What is meant by escape speed in the case of the earth?
 (c) Define gravitational potential.
 (d) What is the difference between gravitational potential and gravitational potential energy?
22. (a) State Hooke's law of elasticity.
 (b) Define Poisson's ratio.
 (c) Which one of these is more elastic, steel or rubber? Why?
 (d) What are the factors affecting the surface tension of a liquid?
 (e) Define surface tension of a liquid. Mention its S.I unit and dimension.
 (f) Define terminal velocity.
 (g) We use straw to suck soft drinks, why?

23. (a) Define quasi-static process.
 (b) State Stefan-Boltzmann law.
 (c) State Zeroth law of thermodynamics.
 (d) Draw the PV diagram for (a) Isothermal process (b) Adiabatic process (c) Isobaric process (d) Isochoric process.
 (e) Give an equation state for an isochoric process.
 (f) Why does heat flow from a hot object to a cold object? (OR)
- (a) **SUM**
 (b) Define the term degrees of freedom.
 (c) State the law of equipartition of energy.
24. (a) **compulsory sum may be from unit 8 OR 10 OR 1.**
 (b) What is meant by periodic and non-periodic motion? Give any two examples, for each motion.
 (c) Define frequency of simple harmonic motion. (OR)
 (a) What are transverse waves? Give one example.
 (b) Define wavelength.
 (c) Define intensity of sound and loudness of sound.

PART-III

25. (a) How will you measure the diameter of the moon using parallax method?
 (b) Write the rules for determining significant figures.
26. (a) Explain Wien's law. Why our eyes are sensitive only to visible rays?
 (b) Derive the equations of motion for a particle falling vertically.
27. (a) Explain the concept of inertia. Write two examples each for inertia of motion, inertia of rest and inertia of direction.
 (b) State the empirical laws of static and kinetic friction.
 (c) **May be sum.**
 (d) State Newton's three laws.
28. (a) Write the various types of potential energy. Explain the formulae.
 (b) Explain the characteristics of elastic and inelastic collision.
29. (a) Give any two examples of torque in day-to-day life.
 (b) State principle of moments. (OR)
 (a) Derive the expression for gravitational potential energy.
 (b) Explain the variation of g with altitude.
 (c) Derive the time period of satellite orbiting the Earth.
 (d) Explain in detail the geostationary and polar satellites.

30. (a) Distinguish between streamlined flow and turbulent flow.
 (b) State the principle and usage of venturimeter.
 (c) Derive an expression for the elastic energy stored per unit volume of a wire.
 (d) Obtain an expression for the excess of pressure inside a (i) liquid drop (ii) liquid bubble (iii) air bubble.
31. (a) Apply first law for (a) an isothermal (b) adiabatic (c) isobaric process.
 (b) Describe the anomalous expansion of water. How is it helpful in our lives?
 (c) Derive the work done in an isothermal process.
 (d) Derive the expression for Carnot engine efficiency.
32. (a) Explain in detail the kinetic interpretation of temperature.
 (b) Describe the total degrees of freedom for monoatomic molecule, diatomic molecule and triatomic molecule. **(OR)**
 (a) State the laws of simple pendulum.
 (b) Write short notes on two springs connected in series.
33. (a) **Compulsory Sum from Units 1,2,3,4,5,6 (OR)**
 (b) Discuss the law of transverse vibrations in stretched strings.
 (c) Briefly explain the difference between travelling waves and standing waves.

PART-IV

34. (a) (i) Write a note on triangulation method and radar method to measure larger distances.
 (ii) Explain in detail the various types of errors. **(OR)**
 (b) (i) Prove that at points near the surface of the earth, the gravitational potential energy of the object is $U = mgh$.
 (ii) Derive an expression for escape speed.
35. (a) (i) Discuss the properties of scalar and vector products.
 (ii) Derive the kinematic equations of motion for constant acceleration. **(OR)**
 (b) (i) Derive Poiseuille's formula for the volume of a liquid flowing per second through a pipe under streamlined flow.
 (ii) State and prove Bernoulli's theorem for a flow of incompressible, non-viscous, and streamlined flow of fluid.
36. (a) (i) Explain the motion of blocks connected by a string in vertical motion.
 (ii) Explain the need for banking of tracks. **(OR)**
 (b) (i) Explain in detail Newton's law of cooling.
 (ii) Derive Meyer's relation for an ideal gas.
37. (a) (i) State and explain work energy principle. Mention any three examples for it.
 (ii) Arrive at an expression for elastic collision in one dimension and discuss various cases.

(OR)

- (b) (i) Explain the horizontal oscillation of a spring.
(ii) Discuss in detail the energy in simple harmonic motion.
38. (a) (i) Explain why a cyclist bends while negotiating a curve road? Arrive at the expression for angle of bending for a given velocity.
(ii) Derive the expression for moment of inertia of a rod about its center and perpendicular to the rod.

(OR)

- (b) (i) Describe Newtons' formula for velocity of sound waves in air and also discuss the Laplace's correction.
(ii) What are stationary waves? Explain the formation of stationary waves and also write down the characteristics of stationary waves.
(iii) Explain how overtones are produced in a closed organ pipe.

XI - Physics – PUBLIC Expected SUMS (Reduced Syllabus)

UNIT 1:

1.1,1.3,1.4,1.5,1.6,1.7,1.8,1.9,1.12,1.13,1.15,1.16 NUMERICAL: 1,2,3

UNIT 2: 2.1,2.2,2.4,2.5,2.7, 2.9, 2.25,2.28,2.30,2.36,2.41,

NUMERICAL: 2,5,6,14,16,17,19, 22

UNIT 3:

3.2,3.10,3.17,3.20,3.24,3.25

NUMERICAL: 1,2

UNIT 4:

4.4,4.5,4.7,4.18,4.20

NUMERICAL: 1,2

UNIT 5:

5.1,5.3,5.4,5.8,5.9,5.13,5.14,5.20 NUMERICAL : 3,6

UNIT 6:

6.3,6.4,6.5,6.7

NUMERICAL: 4,7,9,11,14,15

UNIT 7:

7.8,7.11,7.14

NUMERICAL : 1,3,6

UNIT 8:

8.6,8.7,8.8,8.9 ,8.24,8.25,8.26

NUMERICAL : 5,6,8,9,11,13,14

UNIT 9:

9.1,9.5,9.6

NUMERICAL : 4,5,6,7,8,9

UNIT 10:

10.1,10.2,10.3,10.5,10.6,10.7,10.9,10.10,10.11 ,10.14,10.15

UNIT 11: 11.2,11.3,11.6,11.7,11.14,11.15,11.18,11.19,11.20,11.21,11.23,11.24,11.25

NUMERICAL : 1,7

PREPARED BY :

*D.MICHAEL RAJ, M.Sc.,
B.Ed., M.Phil., B.G.L., DCA,
PHYSICS DIRECTOR*