11th CLASS GUESS PAPER 2022.

PHYSICS

CHAPTER NO. 1 MEASUREMENTS.

SHORT QUESTIONS.

1. Define precision and accuracy.
2. Give that V= (5.2 + o.a) volt. Find its percentage uncertainty.
3. Constant G in the formula $F = Gm M /r^2$
4. What is physical significance of dimension of physical quantity?
5. Write the dimensions of viscosity and angular velocity.
6. Show that the expression Vf = Vi + at is dimensionality correct.
7. Show that the equation E= mc2 is dimensionally correct.

LONG QUESTIONS.

1. Show that the famous "Einstein Equation E = mc2 is dimensionally constant calculate equivalence energy of one kilogram.
2. Derive a relation for time period of a simple pendulum using dimension analysis. The various possible factors on which time period "T" may depend are.
   Acceleration due to gravity.

CHAPTER NO. 2 VECTOR AND EQUILIBRIUM.

SHORT QUESTIONS.

1. Define Null Vector and component of a vector.
2. Find unit vector in the direction of the vector A = 12 $\{-5\}$
3. Explain Cartesian coordinate system.
4. If two perpendicular vectors have same magnitude. Find the angle between their sum and difference?
5. Write down the steps for addition of vectors by rectangular component method.
6. Can the magnitude of a vector ever be zero? Explain.
7. Show that : i.j = j.k = k.i = 0
8. Give two factors on which turning effect depends.

LONG QUESTIONS.

1. Explain cross product or vector of two vector state right hand rule and give at least four characteristic.
2. A load of 10 N is suspended from a clothes line this distorts the line so that it makes an angle of 15º with the horizontal at each end. Find the tension in the clothes line.

CHAPTER NO. 3 MOTION AND FORCE.

SHORT QUESTIONS.

1. Define momentum and given its unit.
2. What is impulse? Show that impulse and momentum have same unit.
3. Define isolated system with an example?
4. A bullet is fired from a rifle. Derive the relation for velocity of rifle.
5. What is ballistic fight? Explain.
6. What is trajectory? Explain briefly.
   The horizontal range of projectile is four times of its maximum height. What is angle of projection?

LONG QUESTIONS.

1. What is projectile? Derive expressions for the i) Maximum height ii) Horizontal range.
2. Numerical No. 3.11

CHAPTER NO. 4 WORK AND ENERGY.

SHORT QUESTIONS.

1. Write two difference between conservative and non –conservative force.
2. Name the four non-conservative forces.
3. An object has one joule of potential energy. Explain what does it mean?
4. Convert 1.4 kW into joule/sec.
5. What is Salter's Duck? Explain it.
6. What is solar constant and what is its value?

LONG QUESTIONS.

1. Explain work done by a variable force.
2. Numerical No. 4.7
3. Numerical No. 4.4
4. Prove that the work done is independent of the path followed in Gravitational field.

CHAPTER NO. 5 CIRCULAR MOTION.

SHORT QUESTIONS.

1. Define angular frequency. Give its formula and unit.
2. Define positive and negative angular acceleration. Give examples for each.
3. Difference between Angular acceleration and centripetal acceleration.
4. Banked tracks are need for turns on highway. Why?
5. What is difference between inertia and moment of inertia?
6. Define angular momentum and give its dimensions.

LONG QUESTIONS.

1. Numerical No. 5.10
2. What are geostationary Satellites? Derive the relation/expression for radius of geostationary orbit.

CHAPTER NO. 6 FLUID DYNAMICS.

SHORT QUESTIONS.

1. How a dynamic lift is produced in an aero plane?
2. Two row boats moving parallel in the same direction are pulled towards each other. Explain.
3. Derive venture relation.
4. Difference between laminar flow and turbulent flow.

LONG QUESTIONS.

1. Prove that the product of cross sectional of the pipe and the .Fluid speed at any point along the pipe is a constant.
2. Numerical No. 6.5
3. Numerical No. 6.7
4. Numerical No. 6.9

CHAPTER NO. 7 OSCILLATIONS.

SHORT QUESTIONS.

1. If mass of a spring –mass vibrating system is increased by four times. What is the effect on its frequency?
2. What should be the natural period of simple pendulum whose length is 90 cm?
3. What happens to the period of a simple pendulum if its length is doubled?
4. State the total energy of the vibrating mass and spring is constant.
5. Define simple harmonic oscillator and driven harmonic oscillator?

LONG QUESTIONS.

1. Define simple harmonic motion. Discuss that energy remains conserved during simple harmonic motion.
2. Numerical No. 7.4
3. Prove that total energy of a mass-spring system remains constant.
4. Sodium light is incident normally on a grating having 3000 lines per centimeter. What is the highest order of the spectrum obtained with this grating?

CHAPTER NO. 8 WAVES

SHORT QUESTIONS.

1. Taking an example of periodic wave, Prove that $v = f \lambda$
2. What happened when a jet plans like a Concorde files faster than speed of sound?
3. On what factors does the fundamental frequency in a stretched string depends?
4. Define electromagnetic waves. Give example.
5. What is the difference between open and closed organ pipe?

LONG QUESTIONS.

1. Describe the transverse stationary waves in a stretched string. Show that the frequencies of stretched string are quantized.
2. Show that frequencies of stationary waves in a stretched string are quantized.
3. An organ pipe has a length of 50 cm. find the frequency of its fundamental note when it is.
   a) Open at both ends b) close at both ends.
4. Example No. 8.4

CHAPTER NO. 9 PHYSICAL OPTICS

SHORT QUESTIONS.

1. What is meant by wave front? Give its types.
2. State Huygen's principle.
3. If wavelength of light 600 mm illuminates two slits 0.5 mm apart. The distance between the slits and screen is 200 cm. Calculate its fringe spacing.
4. What is the difference between interference and diffraction of light waves?

LONG QUESTIONS.

1. What is Michelson's interference? Explain its construction and working.
2. Numerical No. 9.4

CHAPTER NO. 10 OPTICAL INSTRUMENTS.

SHORT QUESTIONS.

1. What is optical resolution and resolving power?
2. A magnifying glass gives a five times enlarged image at a distance of 25 cm from the lens. Find, by ray diagram, the focal length of the lens.
3. How the resolving power of compound microscope by can increased?
4. Define the critical angle.
5. A person buys a cheap microscope for the use of students the image has coloured edges. Why is this so? Explain briefly.

LONG QUESTIONS.

1. Numerical No. 10.8
2. What is astronomical telescope? Using ray diagram calculate magnifying of astronomical telescope?
3. What is spectrometer? Discuss its different parts write its uses.
4. Numerical No. 10.9

CHAPTER NO. 11. HEAT AND THERMODYNAMICS

SHORT QUESTIONS.

1. Why is the average velocity of the molecules in a gas zero, but the average of the square of the velocities is not zero?
2. Define the term internal energy.
3. Define Charles's law how it derived from kinetic theory of gases.
4. Is it possible to convert internal energy into mechanical energy? Explain with an example.
5. Give an example of a natural process that involves an increase in entropy.

LONG QUESTIONS.

1. Numerical No. 11.8
2. What is petrol engine? Describe its working by elaboration its four strokes and what is main difference between petrol engine and diesel engine.
3. 336 J of energy is required to melt 1 g of ice at 0 ºC. What is the change in entropy of 30 g of water at 0 ºC as it is changed to ice at 0 ºC by a refrigerator?
4. Define and explain entropy with example. Does entropy decreases for reversible reaction? Why absolute cannot determine?