Preliminary Examination

Physic IX   **SECTION A (12 MARKS)**

Q1. **All Question of section A are to be done on paper. Make sure your writing is neat and legible.**

1. A systematic error is due to:

(a) experiment   (b) instrument   (c)weather   (d) system

2. The unit of surface area of a sphere is:

(a)m   (b) m^2 (c) m^4 (d) m^3

3. Speed in a given direction is called:

(a) acceleration   (b) velocity   (c) distance   (d)uniform speed

4. The quantity of matter in a body is called its:

(a) mass   (b) force   (c)weight   (d) power

5. If F_x = 5.3 km, F_y = 43.8 km then F is:

(a) 40km   (b) 44.12 km   (c) 440km   (d) 480 km

6. Torque is the product of the force and:

a) moment   (b) moment arm   (c) distance   (d) displacement

7. The centre of gravity of a uniform rod is

(a) centre of the rod   (b)end of the rod   (c) both a &b   (d) none of them

8. Centripetal force will increase two times if the mass of a body moving with uniform speed in a circle is:

(a) doubled   (b) four times   (c)six times   (d) eight times

9. If the force is opposite to the displacement the work is:

(a) negative   (b) positive   (c) zero   (d)none of them

10. The ratio between load and effort is called:

(a) efficiency   (b) mechanical advantage   (b) output/input   (d) Output

11. The significant number(s) 0.08 has, is/are:

(a) one   (b) two   (c)three   (d) four

12. It is that characteristic of a body due to which it resists against any change in its state:

(a) momentum   (b) force   (c) weight   (d) inertia

Section B (24 Marks)

Note: Attempt any eight questions from this section each question carries three marks

Q1) Define torque. Give its formula and unit.

Q2) Define fundamental quantities and derived quantities, give two examples of each.

Q3) State and explain Hooke's law. Also State Pascal's law.

Q4) What is inertia? State Newtons 1st and 3rd law of motion.

Q5) State three differentiate between G and g.

Q6) Discus three kinetic postulates of gas.

Q7) A ball is dropped from a height of 80m. What will be its velocity before touching the ground?

Q8) A car is running on a circular part of highway having about 800m radius. The mass of the car is 600kg and its velocity is 72 kmh^{-1}. Find (i) Centripetal force exerted by the car. (ii) Centripetal acceleration of the car.

Q9) Calculate the pressure at a depth of 6m in a swimming pool? (Density of water = 1000kgm^{-3})

Q10) A planet has mass three times of Earth and radius two times that of Earth. If the value of "g" on the surface of Earth is 10ms^{-2}. Calculate acceleration due to gravity on the planet.

Q11) Calculate the power of a machine, if it does 60 Joules of work in 10 sec.

Q12) 3kg of copper requires 1500 J of heat to raise its temperature by 18°C. Calculate the specific heat capacity of the sample.

Section C (24 Marks)

Note: Attempt any four questions from this section each question carries six marks

Q13) Define acceleration. Derive third equation of motion: $2as = Vf^2 - Vi^2$

Q14) Define thermal expansion. Define linear thermal expansion. Derive $\Delta L = \alpha L \Delta T$

Q15) State the Law of Conservation of Momentum. Prove $F = \frac{\Delta p}{t}$

Q16) Derive relation for mass of earth with the help of Newton law of gravitational formula. Also calculate the mathematical value of mass of the earth

Q17) Discus the three states of equilibrium with one example of each. Also state two conditions of equilibrium.

Q18) Define power. State it's formula and unit. Also derive K.E = ½ mv^2.