Homework
Class O-II
Subject: Physics

1. Find the resultant of two vectors by a graphical method.
2. Which of the following are scalars and which are vectors:
   distance, displacement, length, speed, velocity, time, acceleration, mass and force.
3. What are the factors upon which time period of simple pendulum depends?
4. Solve all examples of unit# 1.
5. Differentiate between positive and negative zero error.
6. Describe how to measure different lengths with suitable accuracy using tapes, rules, micrometers, and Vernier calipers.
7. State what is meant by the term speed and velocity. How does an average speed can calculate?
8. Differentiate between uniform and non-uniform acceleration.
9. Solve all examples of unit# 2.
10. Plot and use distance-time graphs and speed-time graphs.
11. Recognize the shape of a speed-time graph for a body at rest, moving with uniform speed, moving with uniform acceleration and moving with non-uniform acceleration.
12. Calculate the area under a speed-time graph to find the distance travelled by a body moving with constant speed or constant acceleration.
13. Write the causes of force.
14. State that the acceleration of free-fall for a body near to the Earth is constant. How it is about 10 m/s^2.
15. Describe in words the motion of bodies falling without air resistance and bodies falling with air resistance. Explain how a body reaches terminal velocity.
16. Solve all examples of unit# 3.
17. Write down the mathematical expression of Newton's laws of motion.
18. Explain the effects of friction on the motion of a body. Describe how the following affect friction between the wheels of a vehicle and the road:
    i. Tyre surface
    ii. Road conditions (including skidding)
    iii. Braking force.
19. Describe in words how objects move in a circular path due to a constant force perpendicular to the direction of travel. Apply ideas about circular motion to:
    i. Electrostatic forces on an electron in an atom,
    ii. Gravitational forces on a satellite,
    iii. The motion of planets in the solar system
20. State that mass of a body resists change from its state of rest or motion.
21. Describe how to measure mass and weight by using suitable balances.
22. Solve all examples of unit# 4.
23. Define gravitational field.
24. Describe how to determine the density of:

  i. A liquid

  ii. A regularly shaped solid

  iii. An irregularly shaped solid which sinks in water (volume by displacement).

25. Describe simple everyday examples of moments. State the principle of moments for a body in equilibrium.

26. Describe how to verify the principle of moments.

27. Sate conditions of equilibrium.

28. How does the stability of an object can determine?

29. How does the position of the center of mass of a plane lamina can determine?

30. Differentiate between stable, unstable and neutral equilibrium.

31. Define the term pressure in terms of force and area.

32. Solve all examples of unit# 5.

33. Explain in words how the pressure beneath a liquid surface changes with depth and density of the liquid in simple everyday examples. Do calculations using the equation *pressure = $\rho g h$.*

34. Describe and explain the transmission of pressure in hydraulic systems. Describe the workings of:

  i. The hydraulic press,

  ii. Hydraulic brakes on vehicles

35. List the different forms of energy, give examples in which each form occurs.

36. Solve all examples of unit# 6.

37. State the principle of the conservation of energy, apply this principle to the conversion of energy from one form to another.

38. State that kinetic energy $E_k = \frac{1}{2} mv^2$.

39. What are the factors upon which kinetic energy of a body depends?

40. State that potential energy $E_P = mgh$

41. What are the factors upon which potential energy of a body depends?

42. List renewable and non-renewable energy sources.

43. Solve all examples of unit# 7.

44. Describe the energy conversions taking place when using the following energy sources:

  i. Chemical/fuel energy (re-grouping of atoms)

  ii. Hydroelectric generation (emphasizing the mechanical energies involved)

  iii. Solar energy (nuclei of atoms in the Sun)

  iv. Nuclear energy

  v. Geothermal energy

  vi. Wind energy

45. How does the work can be calculate?

46. Differentiate between heat and temperature.

47. Why does mercury or alcohol used as thermometric substances?

48. Differentiate between Centigrade, Fahrenheit and kelvin temperature scale.

49. What do you mean by the term upper and lower fixed point?

50. Differentiate between work and power.

  <u>**Note**</u> ***Upload the solution of above assignment on Google Classroom.***

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