PHYSICS 2011

Time: 2 ½ Hours Max. Marks: 68

Instruction: This paper consisting of Short-Answer Questions (Section "B") and Detailed-Answer Questions (Section "C") will be given after 30 minutes and its total duration will be 2 ½ hours only.

SECTION "B" (SHORT-ANSWER QUESTIONS)

Note: Answer any 14 questions from this section. No answer should exceed 3 to 5 sentences: (42)

2. Define physics and write down only the names of four branches.
3. A body weighting 25 N is placed on a wooden plank. How much force is required to set it in motion if the co-efficient of friction between plank and the body is 0.4.
4. Define Work and write down its two formulad.
5. Define the following:
   (i) Limiting frictions (ii) Inertia (iii) Power
6. Define machine and write down the names of four simple machines.
7. What is Transistor. Write its two advantages.
8. Draw a labeled diagram of an electric bell.

9. Write down three differences between Mass and Weight.
10. A body of 20 Kg is moving with a speed of 15 m/s. Find it momentum.
11. Hlw much hear is required to raise the temperature of 100kg of Iron through 10oC? (Specific hear of iron is 499.8 J/lg°C)
12. Define the following: (i) Dispersion of Light
    (ii) Magnification (iii) Focal length of Concave mirror
13. Draw the ray diagram for the formation of image in a plane mirror.
14. Calculate amount of current passing through an electric heater if it takes 1800C of charge to heat in 3 min.
15. Prove that $V = f\lambda$
16. Find the Focal length of a concave lens if P = 5cm, q = 10cm and the image formed is virtual.
17. A stone is dropped from a tower. It reaches the ground in 5 seconds. Calculate the height of the tower.
18. Define resolution of vector and write down two formulae of rectangular components.
19. Describe Quantum theory of light.
20. A Sitar string vibrates at 400Hz. What is the time period of this vibration?
21. Define the following: (i) Half life of radio active elements. (ii) Doping (iii) Magnetic field
22. In a nuclear reaction 9×10^{10}J of energy is released due to conversion of mass into energy. How much mass has been converted into energy?(Speed of light is 3×10^8m/s)

SECTION 'C' (DETAILED – ANSWER QUESTIONS)

NOTE: Attempt any 2 questions from this section.(26)

23.(a) Derive the equation $S = V_i t + \frac{1}{2} at^2$

(b) Draw the Ray diagram of a compound Microscope and write its working.

(c) Define Radio isotopes and state its one use in agriculture and two uses in medicine.

24.(a) State Boyle's law, Charles' Law and Pressure Law. Derive PV = nRT.

(b) Draw Ray diagram for image formed by Concave mirror and write its characteristics.

(c) What is Radar? Write its three uses.

25.(a) Define Fission reaction. Write down its equation and draw the diagram for chain reaction.

(b) Define the following:
(i) Ampere (b) Volt (c) Farad (d) ohm

(c) State the following laws/principles:
(i) Hooke's Law (ii) Pascal's Principle
(iii) Newton's Second Law of Motion (iv) Snell's Law