PHYSICS 2017

Time: 2 ½ Hours   **Max. Marks: 68**

SECTION "B" (SHORT ANSWER QUESTIONS) (42)

NOTE: Answer 14 questions from this section.

2. Define Physics and write the names of any of its four branches.
3. Write down the S.I. units of the following physical quantities: (i) Time (ii) Weight (iii) Power (iv) Stress (v) Length (vi) Frequency
4. State Newton's laws of motion.
5. A car starting from rest attains a velocity of 20 ms^{-1} in 5 seconds. Find the distance covered by the car.
6. Define wave length, time period and frequency.
7. Write three states of equilibrium.
8. Define: (i) Nuclear Fission (ii) Rectifier (iii) Half life of an element
9. A steel rod has a length of 10 metres at a temperature of 25°C. Calculate the increase in length if it is heated to 35°C, For Steel ($\alpha = 1.1 \times 10^{-5}$ K^{-1})
10. Write Newton's corpuscular theory of light.
11. A car is moving in a circular track of radius 30 m at a constant speed of 20 m/s. Find the centripetal acceleration of the car.
12. Define Primary cell and write its four examples.
13. Find the resistance of an electric bulb if 0.60 A current is passing through it and the potential difference across the bulb is 220 V.
14. Define pressure. Write its formula and S.I. unit.
15. What is Bimetallic Strip? Write the names of its two applications.
16. What is the Kinetic Energy (K.E) of 2000 Kg car traveling at a velocity of 90 km/h?
17. State the laws (i) Charle's law (ii) Coulomb's law (iii) Ohm's law.
18. With the help of diagram define negative of a vector and resultant vector.
19. Write down three differences between forward biased and reverse biased.
20. Calculate the distance of object from a convex lens having a focal length of 15 cm if the magnification in 3 and the image in real.
21. Calculate the length of second's pendulum – Taking 'g' equal to 10 m/s^2. (Second's pendulum has a time period of 2 second)
22. In a nuclear reaction 9.0×10^{10} J of energy is released due to conversion of mass into energy. How much mass has been converted to energy?

SECTION 'C' (DETAILED ANSWER QUESTIONS)

Note: Answer any Two questions from this Section.

23. (a) Derive the equation : $S = V_i t + \frac{1}{2} at^2$.
   (b) What is inclined plane? Calculate its Mechanical Advantage.
   (c) Write four properties of Alpha rays.
24. (a) Write the construction and working of electric bell with diagram.
   (b) What is Radar? Write its three uses.
   (c) Write four uses of spherical mirrors.
25. (a) Two bodies of different masses are attached with a string which passes over a friction less pulley such that the bodies are moving vertically. Derive the formula:

$$\alpha = \left(\frac{m_1 - m_2}{m_1 + m_2} \right) g.$$

   (b) Draw a ray diagram of an Astronomical Telescope and describe to working.
   (c) Define Musical sound and write its three characteristics.