PHYSICS 2016

Time: 30 Minutes **Max. Marks: 17**

SECTION "A" (MULTIPLE CHOICE QUESTIONS)

1. Choose the correct answer for each from the given options: (17)

(ii) 1 micro gram =
• 10^{-3} kg • 10^{-6} kg • 10^{-9} kg • 10^{-12} kg

(ii) If the speed of a body moving in a circle is doubled, its centripetal acceleration becomes:
• Twice • Four times • Eight times • three times

(iii) Which is the best approximation of the weight of an object of mass 800 gram?
• 88 N • 80 N • 8 N • 0.8 N

(iv) Specific heat of ice is:
• $4200\ Jkg^{-1}k^{-1}$ • $2100\ Jkg^{-1}k^{-1}$
• $4300\ Jkg^{-1}k^{-1}$ • $4100\ Jkg^{-1}k^{-1}$

(v) The work will be negative if the angle between force and displacement is: • 90° • 180° • 0° • 45°

(vi) If q = 6 cm and p = 3 cm then the magnification of the mirror is: • 4 • 2 • 3 • 12

(vii) If P type substance the charge carrier are:
• Electron • Proton • Holes • Neutron

(viii) To measures current in a circuit, an ammeter is always connected:
• In series • In parallel • In any way • None of these

(ix) It is a scalar quantity:
• Torque • Frequency • Electric Intensity • Momentum

(x) X-Rays wave length ranges from:
• 0.1 nm to 0.01 nm • 1.0 nm to 0.01 nm
• 0.1 nm to 0.001 nm • 1.0 nm to 0.1 nm

(xi) Nucleus of this atom is called α - particle:
• Helium • Uranium • Pollonium • Radium

(xii) A cone standing on its base is an example of this type of Equilibrium:
• Stable • Neutral • Unstable • Kinetic

(xiii) Orbital velocity of a satellite near the surface of the earth is:
• 9270 km/s • 9720 km/s • 7920 km/s • 7290 km/s

(xiv) Which one has maximum elastic limit?
• Crown glass • Steel • Iron • Brass

(xv) The minimum distance between sound and barrier for distinct echo is: • 17 m • 20 m • 23 m • 27 m

(xvi) Which one has maximum index of refraction?
• Water • Glass • Diamond • Air

(xvii) It is a device which converts electrical energy into mechanical: • Electric Coil
• Electric Generator • Solenoid • Electric Motor

PHYSICS 2016

Time: 2 ½ Hours **Max. Marks: 68**

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

NOTE: Answer 14 questions from this section.

2. Write down three difference between heat & temperature
3. A ball is dropped from a tower, it reaches the ground in 10 seconds. Calculate the height of the tower. (Take g = 10 m/s^2)
4. Compute the gravitational force of attraction between two boys of masses 50 kg and 40 kg respectively apart from each other by 2 m. ($G = 6.67 \times 10^{-11}\ N.m^2/kg^2$)
5. Define Irregular reflection of light and also write two points of its importance.
6. With the help of rectangular components of a vector derive the equation for the resultant vector $F = \sqrt{Fx^2 + Fy^2}$
7. The focal length of a concave mirror is 10 cm where should an object be placed so as to get its real image magnified 4 times.
8. State the following laws: (i) Hooke's Law (ii) Snell's Law (iii) Boyle's Law
9. Define power and derive the equation P = FV.
10. Describe quantum theory of light and explain dual nature of light.
11. Write two uses of radioisotopes in medicine and one use in industry.
12. Calculate the current of electric heater. If 1800 conlomb charge passes through it in 3 minutes.
13. With what constant velocity can a 1960 watt motor raise a mass of 100 kg?
14. Define (i) Interference (ii) Stationary waves (iii) Beats
15. State principle of lever and derive formula for mechanical advantage of lever.
16. Write down three precautions to minimize the radiation hazards.
17. Half life of $_{53}I^{131}$ is 8 days. Find the amount of iodine left after 16 days from a sample of 100gm.
18. Find the time period of a simple pendulum whose length is 288 cm.
19. Define anomalus expansion of water and give its two effects.
20. Define equilibrium and state two condition of equilibrium.
21. Calculate the volume occupies by 2 moles of a gas at 27°C & pressure of 1 atm=$1.01 \times 10^5 N/m^2$(R=8.314J/mol-k)
22. Define orbital velocity and derive the formula $V = \sqrt{\frac{GMe}{r}}$

SECTION 'C' (DETAILED ANSWER QUESTIONS)

Note: Answer any Two questions from this Section.

23.(a) Derive the equation: $\beta = 3\alpha$
(b) State Newton's law of gravitation and derive the formula for mass of earth with its help.
(c) Define the following:
(i) Power of lens (ii) Nuclear Reactor
(iii) Half life of an element (iv) Dispersion of light

24.(a) Derive the equation $2as = V_f^2 - V_i^2$
(b) Define Pascal's law and explain any one of its application by diagram.
(c) Write two differences between the following:
(i) Longitudinal waves and transversal waves
(ii) Fission Reaction and Fusion Reaction

25.(a) Derive Ray diagram of Compound Microscope and describe it working.
(b) Write four similarities of static Electricity & magnetism.
(c) Write down two advantages and two disadvantages of Friction.

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