PHYSICS 2014

Time: 30 minutes Max. Marks: 17

SECTION "A" (COMPULSORY)(M.C.Q.)

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

(1) Which on e of the following has maximum value of refractive index?
(a) Ruby (b) Crownglass (c) Quartz (d) Diamond
(2) Production of beats is due to the ------- of sound waves:
(a) Interference (b) Reflection (c) Diffraction (d) Refraction
(3) The branch of physics concerned with highly ionized atoms is called ------ Physics:
(a) Atomic (b) Nuclear (c) Plasma (d) Nuclear State
(4) The Unit of co-efficient of friction (μ) is:
(a) Newton (b) Joule (c) Newton metre (d) None of these
(5) The waves produced by a vibrating body in air are:
(a) Longitudinal waves (b) Transverse waves
(c) Electronegative waves (d) Magnetic waves
(6) It always gives virtual image:
(a) Concave lens (b) Convex Mirror
(c) Plane Mirror (d) All of them
(7) The viscocity of Ethanol is:
(a) 0.019 (b) 0.1 (c) 1.000 (d) 0.801
(8) If frequency of a pendulum is 10 Hz, then time period will be:
(a) 1 sec. (b) 10 sec. (c) 0.1 sec. (d) 0.01 sec.
(9) Water has maximum density at:
(a) $0^{o}C$ (b) $-4^{o}C$ (c) $4^{o}C$ (d) $100^{o}C$
(10) 1 Mega metre = --------- metres.
(a) 10^{12} (b) 10^{9} (c) 10^{6} (d) 10^{15}
(11) If P = 15 cm, q = 30 cm, the magnification is --------:
(a) 2 (b) ½ (c) 45 (d) 15

(12) Latent heat of vaporization of water is:
(a) 3.36×10^{5} J/kg (b) 2.26×10^{5} J/kg
(c) 2.26×10^{6} J/kg (d) 2.26×10^{-6} J/kg
(13) Right hand rule is introduced by:
(a) Maxwell (b) Fraday (c) Oersted (d) Ampere
(14) Rainbow appears due to:
(a) Absorption of light (b) Dispersion of light
(c) Refraction of light (d) Reflection of light
(15) The mass of our galaxy is:
(a) 2×10^{43} kg (b) 2×10^{50} kg
(c) 6×10^{24} kg (d) 7×10^{22} kg
(16) Which of the following is used for the study of thyroid glands?
(a) I-132 (b) P-32 (c) Na-24 (d) CD-60
(17) Rechargeable cell is called --------- cell.
(a) Daniell (b) Secondary (c) Primary (d) voltaic

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Time: 2 ½ Hours Max. Marks: 68

SECTION "B" (SHORT-ANSWER QUESTIONS)

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

(2) Write down S.I.U. for the following:
(i) Viscosity (ii) Strees (iii) Torque
(iv) Temperature (v) Momentum (vi) Input
(3) How much energy will be released when 20 gm mass is completely transferred to energy by Einstein's Euation?
(4) Prove that $V_f = V_i + at$ O R $V = f\lambda$
(5) Write down three differences between Transverse and longitudinal waves.
(6) A gun of mass 10 kg fires a bullet of mass 0.05 kg with a speed of 200 m/s. Calculate velocity of recoil of the gun.
(7) Derive Mechanical advantages Formula for Inclined Plane.
(8) A 5m long beam pivoted into a wall, a force of 100 N is applied vertically at the Far end of beam. Find the torque produced.
(9) Define: (i) Power (ii) Spectrum (iii) Newton
(10) How can we convert a Galvanometer into Ammeter and Voltmeter? (Show only by labeled diagrams).
(11) Find the amount of heat required to convert 10kg ice $0^{o}C$ into water without changing the temperature while latent heat of fusion of ice 336000 J/kg.

(12) Write down any three differences between alpha and beta rays.
(13) Show the image formation and characteristic by Conves Mirror with the help of ray diagram.
(14) The focal length of a convex lens is 20 cm. If the image formed by it is twice in size, find the position of the object.
(15) Write three differences between Forward and Reverse biased.
(16) Calculate the amount of work done in carrying a charge of +25 μc from A to B. If A is at a potential of -60 V and B is at 10 V.
(17) Define : (i) Resonance (ii) Inertia (iii) Specific Heat
(18) Describe any three laws of fusion.
(19) Define Electric Motor and Write down two factors on which its speed depends.
(20) Two bodies of Masses 5 kg and 4 kg are attached to the ends of a string which passes over a frictionless pulley such that two bodies hang vertically. Find the acceleration of the bodies.
(21) Write down three uses of laser technology.
(22) 20 waves per second pass through a point on the surface of the pond. Calculate the wave-length if the velocity of wave is the 3.5 ms^{-1}.

SECTION 'C' (DETAILED - ANSWER QUESTIONS)

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

23.(a) With the help of V_f^2, V_i^2 and s derive the equation of motion.
(b) What is bimetallic strip. Describe its three applications.
(c) With the help of prism, draw solar spectrum of dispersion of light.
24.(a) Define Nuclear fission Reaction. Write down its equation and explain Chain Fission reaction.
(b) Define Resolution of Vector and resolved a vector into its components.
(c) Draw the diagram of defects of eyes. Describe short sightedness and long sightedness.
25.(a) Define Kinetic Energy & derive the equation $K.E = \frac{1}{2} mv^2$.
(b) Draw the diagram of nuclear reactor and describe the importance of boron rod.
(c) With the help of figure write the four rules of reflection of rays of light by concave mirror.