Section-A (MCQ's)

Q.1 Choose the correct answer from the following choices:

(i) A large ripple tank with a vibrator working at a frequency of 30 Hz produces 25 complete waves in a distance of 50 cm. The velocity of the wave is -1
(a) 53 cm s (b) 60 cm s-1-1 -1 (c) 750 cm s (d) 1500 cm s

(ii) .Which of the following characteristics of a wave is independent of the others?
(a) speed (b) frequency (c) amplitude (d)wavelength

(iii) The relation between v, f and λ of a wave is
(a) $v f = \lambda$ (b) $f \lambda = v$ (c) $v \lambda = f$ (d) $v = \lambda /$

(iv) .Image formed by a camera is
(a) real, inverted, and diminished (b) virtual, upright and diminished
(c) virtual, upright and magnified (d) real, inverted and magnified

(v) If a ray of light in glass is incident on an air surface at an angle greater than the critical angle, the ray will
(a) refract only (b) reflect only
(c) partially refract and partially reflect (d) diffract only

(vii) A positive and a negative charge are initially 4 cm apart. When they are moved closer together so that they are now only 1 cm apart, the force between them is
(a) 4 times smaller than before (b) 4 times larger than before
(c) 8 times larger than before (d) 16 times larger than before

(viii) Five joules of work is needed to shift 10 C of charge from one place to another. The potential difference between the places is
(a) 0.5 V (b) 2 V (c) 5 V (d) 10 V

(ix) Two small charged spheres are separated by 2 mm. Which of the following would produce the greatest attractive force?
(a) +1q and +4q (b) –1q and –4q (c) +2q and +2q (d) +2q and –2q

(x) What happens to the intensity or the brightness of the lamps connected in series as more and more lamps are added?
(a) increases (b) decreases (c) remains the same
(d) cannot be predicted

(xi) Why should household appliances be connected in parallel with the voltage source?
(a) to increase the resistance of the circuit
(b) to decrease the resistance of the circuit
(c) to provide each appliance the same voltage as the power source
(d) to provide each appliance the same current as the power source

(xii) The step-up transformer
(a) increases the input current
(b) increases the input voltage
(c) has more turns in the primary
(d) has less turns in the secondary coil

(xiii) The turn ratios of a transformer is10. It means
(a) $Is = 10\ Ip$ (b) $Ns\ p = N/10$ (c) $Ns = 10\ Np$ (d) $Vs\ p = V/10$

(xiv) When Uranium (92 protons) ejects a beta particle, how many protons will be in the remaining nucleus?
(a) 89 protons (b) 90 protons (c) 91 protons (d) 93 protons

(xv) Which of the following is an example of simple harmonic motion?
(a) the motion of simple pendulum
(b) the motion of ceiling fan
(c) the spinning of the Earth on its axis
(d) a bouncing ball on a floor

(xi). If the mass of the bob of a pendulum is increased by a factor of 3, the period of the pendulum's motion will
(a) be increased by a factor of 2 (b) remain the same
(c) be decreased by a factor of 2 (d) be decreased by a factor of 4

(xii) Which of the following devices can be used to produce both transverse and longitudinal waves?
(a) a string (b) a ripple tank (c) a helical spring (slinky)
(d) a tuning fork

(xiii) The loudness of a sound is most closely related to its
(a) frequency (b) period (c) wavelength (d) amplitude

(xiv) For a normal person, audible frequency range for sound wave lies between
(a) 10 Hz and 10 kHz (b) 20 Hz and 20 kHz (c) 25 Hz and 25 kHz
(d) 30 Hz and 30 kHz

(xv) An object is 14 cm in front of a convex mirror. The image is 5.8 cm behind the mirror. What is the focal length of the mirror?
(a) -4.1 cm (b) -8.2 cm (c) -9.9 cm (d) -20 cm

(xvi) The index of refraction depends on
(a) the focal length (b) the speed of light
(c) the image distance (d) the object distance

(xvii) Which type of image is formed by a concave lens on a screen?
(a) inverted and real (b) inverted and virtual
(c) upright and real (d) upright and virtual