PHYSICS

BOOKS - KCET PREVIOUS YEAR PAPERS

MODEL TEST PAPER - 1

Physics

1. A photon will have greater energy if it has greater

A. Wavelength

B. Amplitude

C. Frequency

D. Velocity

Answer:

 Watch Video Solution

2. The phenomenon of radioactivity was discovered by

A. Decay of the nucleus

B. Nuclear reaction caused by cosmic rays

C. Decay of the atom

D. Fusion of the nucleus

Answer:

Watch Video Solution

3. During total solar eclipse, the spectrum of the sunlight observed is

A. Line emission spectrum

B. Continuous spectrum

C. Line absorption spectrum

D. Band spectrum

Answer:

Watch Video Solution

4. Telescopes with large aperture objectives are chosen because they

A. Have less aberrations

B. Have better dispersion

C. Have better resolution

D. Can see larger objects

Answer:

5. An electron of mass m and charge e is moving from rest through a potenial difference V in vacuum. Its final speed is

A. $\frac{\sqrt{2eV}}{m}$

B. $\frac{eV}{2m}$

C. $\frac{\sqrt{eV}}{m}$

D. $\frac{eV}{m}$

Answer:

Watch Video Solution

6. Neglecting variation of mass with energy, the wavelength associated with an electron having a kinetic energy E is proportional to

A. $\sqrt{E}$

B. $1/\sqrt{E}$

C. E

D. E^{-2}

Answer:

Watch Video Solution

7. When a microgram of matter is converted into energy, the amount of energy released will be

A. 9×10^{14} joule

B. 9×10^{7} joule

C. 9×10^{10} joule

D. 3×10^{4} joule

Answer: B

Watch Video Solution

8. During a nuclear fusion reaction

A. A heavy nucleus breaks into two fragments by itself

B. A heavy nucleus bombarded by thermai neutrons breaks up

C. A light nucleus bombarded by thermal neutrons breaks up

D. Two light nuclei combine to give a heavier nucleus and possibly other products

Answer: D

Watch Video Solution

9. The ratio of the radii of the nuclei ${}_{12}^{27}Al$ and ${}_{52}^{125}Te$ is

A. $6:10$

B. $40:77$

C. $13:52$

D. $14:73$

Answer: A

Watch Video Solution

10. When diliute sulphuric acid and hydrogen perioxide are added to a solution of chromate ions, an intense blue colour is produced which is stable in ether. This is due to the formation of :

A. The inertia of the horse

B. Large weight of the horse

C. The inertia of the rider

D. Loosing the balance

Answer: C

Watch Video Solution

11. Vectors A and B have equal magnitude . In addition , the magnitude of their resultant is also equal to the magnitude of etither of them . Then A and B are at an angle of

A. 30°

B. 90°

C. 60°

D. 120°

Answer: D

Watch Video Solution

12. Two stones are thrown from the top of a towerone straight down with an initial speed u and the second straight up with the same speed u. When the two stones hit the ground, they will have speeds in the ratio

A. $1:1$

B. $2:1$

C. $1:2$

D. $2:3$

Answer: A

Watch Video Solution

13. At 30 volt D.C. and 90 watt bulbs glows at full power. The value of 'r' be joined in series to work the bulbs on 120 volts D.C. is

A. 30Ω

B. 10Ω

C. 60Ω

D. 20Ω

Answer: A

 Watch Video Solution

14. If $x = \frac{\varepsilon_0 lV}{t}$ where ε_0 is permittivity of free space, l is the length, V is the potential

difference and t is the time, then dimensions of x are the same as that of :

A. LC

B. L/R

C. R/L

D. C/L

Answer: B

Watch Video Solution

15. A uniform wire of 16 Ω resistance is made into the form of a square. Two opposite corners of the square are connected by a wire of resistance 16 Ω. The effective resistance between the other two opposite corners is

A. 32Ω

B. 8Ω

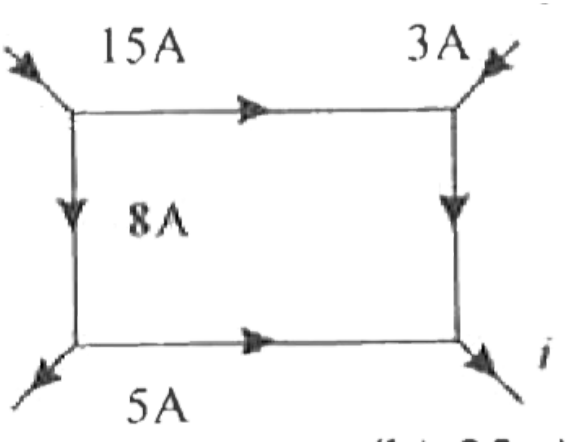
C. 16Ω

D. 4Ω

Answer: D

Watch Video Solution

16. The value of current in the given circuit is



A. 3A

B. 23A

C. 13A

D. $-3A$

Answer: C

Watch Video Solution

17. A man runs towards a mirror at a rate of 6 m/s. If we assume the mirror to be at rest, his image will have a velocity

A. $+12m/s$

B. $-6m/s$

C. $+6m/s$

D. $-12m/s$

Answer: B

Watch Video Solution

18. In a reflecting astronomical telescope, if the objetcive (a spherical mirror) is replaced by a parabolic mirror of the same focal length and aperture, then

A. The final image will be erect

B. The telescope will gather more light

C. The larger image will be obtained

D. Spherical aberration will be absent

Answer: D

Watch Video Solution

19. The condition for observing Fraunhoffer diffraction from a single slit is that the wave fronts incident on the slit should be

A. Spherical

B. Planar

C. Cylindrical

D. Elliptical

Answer: B

Watch Video Solution

20. Which of the following does not support the wave nature of light ?

A. Interference

B. Polarisation

C. Diffraction

D. Photoelectric effect

Answer: D

Watch Video Solution

21. When a $._4 Be^9$ atom is bombarded with $\propto$ – particle, one of the product of nuclear transmutation is $._6 C^{12}$. The other is.

A. ${}_{-1}e^{0}$

B. ${}_{1}D^{2}$

C. ${}_{1}H^{1}$

D. ${}_{0}n^{1}$

Answer: D

Watch Video Solution

22. What is the mass of one curie of U^{234}?

A. $3.7 \times 10^{10} g$

B. $3.7 \times 10^{-10} g$

C. $2.348 \times 10^{-23} g$

D. $1.438 \times 10^{-11} g$

Answer: B

Watch Video Solution

23. A radioisotope has a half life of 5 years. The fraction of the atoms of this meterial that would decay in 15 years will be

A. 1

B. $7/8$

C. $2/3$

D. $5/8$

Answer: B

Watch Video Solution

24. X-ray region lies between

A. Short radio waves and visible region

B. Gamma rays and ultraviolet region

C. Visible and ultraviolet region

D. Short radio waves and long radio waves

Answer: B

Watch Video Solution

25. An electron jumps from the 4th orbit to the 2nd orbit of hydrogen atom. Given the Rydberg's constant $R = 10^5 cm^{-1}$ the

frequency in Hz of the emitted radiation will be

A. $\frac{3}{10} \times 10^5$

B. $\frac{9}{15} \times 10^{12}$

C. $\frac{3}{16} \times 10^{15}$

D. $\frac{3}{4} \times 10^{16}$

Answer: B

 Watch Video Solution

26. In an adiabatic change, the pressue and temperature of a monoatomic gas are related as $P \propto T^c$, where c equals:

A. $PV = 8RT$

B. $PV = RT$

C. $PV = \frac{RT}{4}$

D. $PV = \frac{RT}{2}$

Answer: D

Watch Video Solution

27. A satellite in force-free space sweeps stationary interplanetary dust at a rate of $dM/dt = \alpha v,$ where M is the mass and v the speed of the satellite, and α is a constant. What is the deceleration that satallite experiences?

A. $-2\alpha v^2/M$

B. $-\alpha v^2/2M$

C. $-\alpha v^2/M$

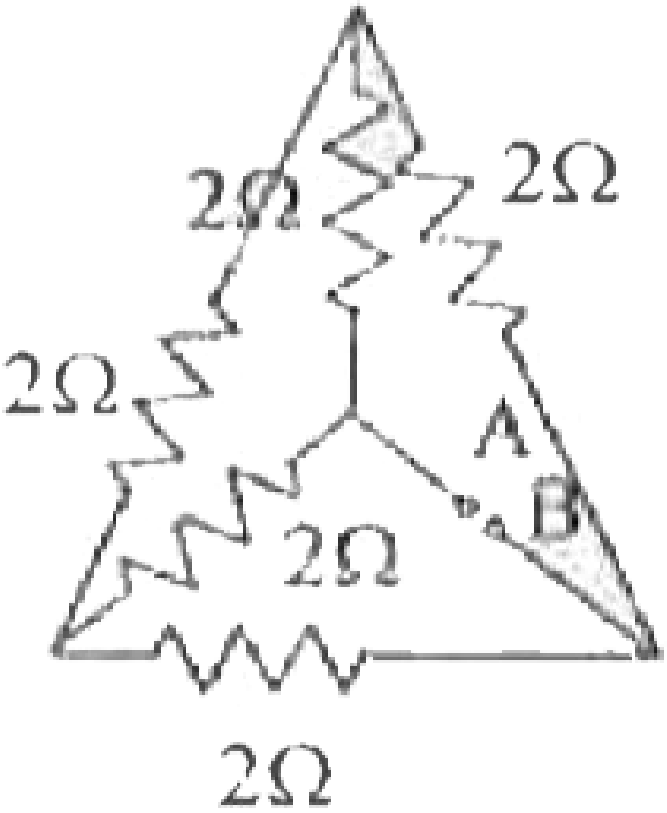
D. $-\alpha v^2$

Answer: C

Watch Video Solution

28. In the network shown in the figure, each of the resistance is equal to $2\ \Omega$ The resistance

between the points A and B is



A. 3Ω

B. 1Ω

C. 2Ω

D. 4Ω

Answer: C

Watch Video Solution

29. If resistance of 100Ω , inductance of 0.5 henry and capacitor of $10 \times 10^{-6} F$ are connected in series through $50 Hz$ AC supply, then impedence is

A. 1.876Ω

B. 187.6Ω

C. 18.76Ω

D. 101.3Ω

Answer: D

Watch Video Solution

30. An aeroplane, in which the distance between the tips of thie wings is 50m, is flying horizontally with a speed of $360km/hour$, over a place where the vertical component of

earth's magnetic field is 2.0×10^{-4} tesla. The potential difference between the tips of the wings would be

A. 2.1 volt

B. 4.2 volt

C. 3.0 volt

D. none of these

Answer: D

Watch Video Solution

31. In an LCR series circuit the capacitance is changed from C to $4C$ For the same resonant fequency the inductance should be changed from L to .

A. 2L

B. L/4

C. L/2

D. 4L

Answer: B

 Watch Video Solution

32. A voltmeter with a resistance $50 \times 10^3 \Omega$ is used to measure voltage in a circuit. To increase its range to 3 times, the additional resistance to be put in series is

A. $10^5 \Omega$

B. $900K\Omega$

C. $150K\Omega$

D. $9 \times 10^6 \Omega$

Answer: A

Watch Video Solution

33. The walls of the halls built for music concerts should

A. Amplify sound

B. Transmit sound

C. Reflect sound

D. Absorb sound

Answer: D

Watch Video Solution

34. Ultrasonic sound waves

A. Can be heard by a normal human ear

B. Cannot be heard

C. Can be heard with the help of a normal hearing aid

D. Can be heard with the help of microphone

Answer: B

Watch Video Solution

35. A hollow metallic tube of length L and closed at one end produce resonance with a tuning fork of frequency n. The entire tube is then heated carefully so that at equilibrium temperature its length changes by l. If the change in velocity V of sound is v, the resonance will now produced by tuning fork of frequency :-

A. $\frac{V+v}{4(L+l)}$

B. $\frac{V+v}{4(L-l)}$

C. $\frac{V-v}{4(L-l)}$

D. $\frac{V-v}{4(L+l)}$

Answer: A

Watch Video Solution

36. The point on the parabola $y^2 = 16x$ where the tangent makes an angle 60° with the x - axis is

A. A straight line with respect to observer A

B. Parabolic with respect to observer A

C. A straight line with respect to observer B

D. None of the above

Answer: A

Watch Video Solution

37. For a gas $\gamma = \frac{5}{3}$, $800cc$ of this gas is suddenly compressed to 100 cc. If the initial pressure is P, then the final pressure will be

A. $\frac{P}{32}$

B. $8P$

C. $\frac{24}{5}P$

D. $32P$

Answer: D

Watch Video Solution

38. A man is standing on a weighing machine placed in a lift. When stationary his weight is recorded as 40 kg . If the lift is accelerated

upwards with an acceleration of $2m/s^2$, then the weight recorded in the machine will be $(g = 10m/s^2)$

A. $32kg$

B. $42kg$

C. $40kg$

D. $48kg$

Answer: D

Watch Video Solution

39. If m_1 collides another mass body m_2 elastically, then what will be the fraction of kinetic energy retained by the body of mass m_1.

A. Kinetic energy of the system alone is conserved

B. Both energy and momentum are conserved

C. Only momentum is conserved

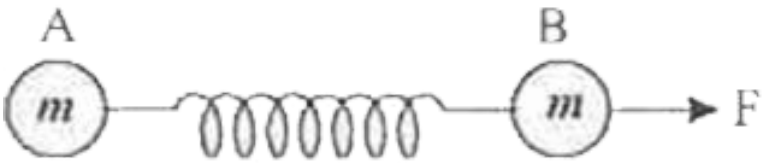
D. Neither energy nor momentum is conserved

Answer: B

 Watch Video Solution

40. Two identical bodies A and B of mass m each are connected by a spring. The body B is pulled by applying a constant force F. The body A moves with acceleration 'a'. Therefore

acceleration of B is given by



A. $\frac{F}{m} - a$

B. a

C. $-F/m$

D. F

Answer: A

Watch Video Solution

41. The permittivity of free space $\varepsilon_0 = 8.86 \times 10^{-12}$ coulomb/$N - m^2$ and the permeability of the free space $\mu_0 = 1.26 \times 10^{-6}$ henry/metre. If c is the velocity of light in vacuum, the correct relation between μ^0, ε_0 and c is

A. $\mu_0 c^2 = \varepsilon_0$

B. $\mu_0 \varepsilon_0 = 1/c^2$

C. $\mu_0 \varepsilon^2 = c^2$

D. $\mu_0 \varepsilon_0 = 1/c$

Answer: B

Watch Video Solution

42. A charged particle moves with velocity $\vec{v}$ in a uniform magnetic field $\vec{B}$. The magnetic force experienced by the particle is

A. Always zero

B. Zero if $\vec{B}$ and $\vec{v}$ are prependicular

C. Never zero

D. Zero if $\vec{B}$ and $\vec{v}$ are parallel

Answer: D

 Watch Video Solution

43. Two electric bulbs, one of 200 volt 40 watt and the other 200 volt 100 watt are connected in a house wiring circuit

A. They have equal currents through them

B. The resistance of the filament in 40 watt bulbs is more than the resistance in 100 watt bulb

C. The resistance of the filament in both the bulbs is same

D. The resistance of the filament in 100 watt bulb is more than the resistance in 40 watt bulb

Answer: B

 Watch Video Solution

44. The line on which magnetic potential due to a bar magnet is zero is called

A. Axial line

B. Magnetic equator

C. Equatorial line

D. Isogonal line

Answer: C

Watch Video Solution

45. The couple acting on a bar magnet kept in a magnetic field is maximum when the inclination with the field is

A. 90°

B. 0°

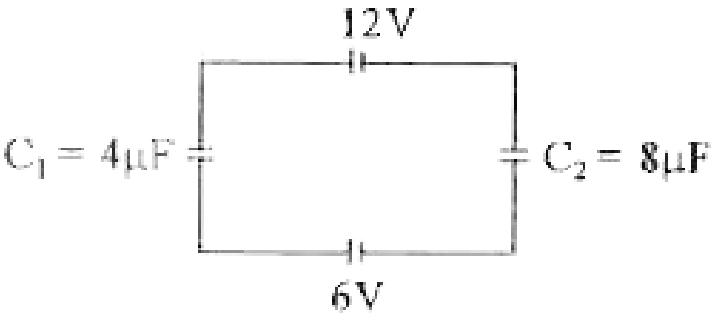
C. 45°

D. 180°

Answer: A

Watch Video Solution

46. In the circuit shown



A. Pressure versus temperature of a given gas (constant volume)

B. Capacitance vs charge to give a constant potential

C. Kinetic energy vs velocity of a particle

D. Potential vs capacitance to give a constant charge

Answer: D

 Watch Video Solution

47. A charge q is placed at the centre of the line joining two equal charges Q. The system of three charges will be in equilibrium if q is equal to

A. $-\frac{Q}{2}$

B. $+\frac{Q}{4}$

C. $-\frac{Q}{4}$

D. $+\frac{Q}{2}$

Answer: C

Watch Video Solution

48. Laser light is considered to be coherent because it consists of

A. Many wavelengths

B. Coordinated waves of exactly the same wavelength

C. Uncoordinated wavelengths

D. Divergent beams

Answer: B

Watch Video Solution

49. In Young's experiment for interference of light with two slits, reinforcement takes place when $\theta = \left(\frac{m\lambda}{d}\right)$ where d is the

A. Distance from slits to screen

B. Distance between slits

C. Distance between dark and bright fringes

D. Width of mth fringe

Answer: B

Watch Video Solution

50. A thin film of air between a plane glass plate and a convex lens is irradiated with parallel beam of monochromatic light and is observed under a microscope, you will see

A. Uniform brightness

B. Field crossed over by concentric bright and dark rings

C. Complete darkness

D. Field crossed over by parallel bright and dark fringes

Answer: D

View Text Solution

51. A cylindrical tube, open at both ends has a fundamental frequency in air. The tube is dipped vertically in water so that half of it is in water. The fundamental frequency of the air column is now

A. $\frac{f}{2}$

B. f

C. $\frac{3f}{4}$

D. $2f$

Answer: B

Watch Video Solution

52. The frequency of vibration of string can be increased by

A. Increasing the length of the string keeping the tension constant

B. Increasing the thickness of the string keeping the length constant

C. Decreasing the density of the string keeping the tension constant

D. Decreasing the tension of the string keeping the length constant

Answer: C

Watch Video Solution

53. The intensity of a sound wave while passing through an elastic medium falls down by 10% as it covers one meter distance through the medium. If the initial intensity of the sound wave was 100 db its value after it has passed through 3 meter thickness of the medium will be

A. 70 ab

B. 81 ab

C. 72.9 ab

D. 60 ab

Answer: C

Watch Video Solution

54. A tuning fork sounded together with a tuning fork of frequency 256 emits two beats. On loading the tuning fork of frequency 256, the number of beats heard are 1 per second. The frequency of tuning fork is

A. 257

B. 256

C. 258

D. 254

Answer: D

 Watch Video Solution

55. Two sound waves are

$y = a\sin(\omega t - kx), y = a\cos(\omega - kx).$

Phase difference between two waves is

A. $\pi/2$

B. $\pi/8$

C. $\pi/4$

D. $3\pi/4$

Answer: A

Watch Video Solution

56. The unit of Planck's constant is

A. Nm

B. Js^{-1}

C. eV

D. Js

Answer: D

Watch Video Solution

57. The energy equivalent to a substance of mass 1 g is

A. 4 kg per second

B. 0.01 mg per second

C. 4 tonns per hour

D. 10.2 mg per second

Answer: B

Watch Video Solution

58. Light of wavelenth 600×10^{-9} metres has a frequency

A. $1.8 \times 10^{4} Hz$

B. 5×10^{14} Hz

C. 3×10^{8} Hz

D. 3×10^{10} Hz

Answer: B

Watch Video Solution

59. A transformer steps up or asteps down

A. A.C. only

B. either A.C. or D.C

C. D.C. only

D. A.C. mixed with D.C.

Answer: A

 Watch Video Solution

60. Kirchhoff's second law 1 is valid for

A. Open circuit

B. Only parts of a circuit

C. Circuits with cells only

D. Closed circuit

Answer: D

 Watch Video Solution