



PHYSICS

BOOKS - KCET PREVIOUS YEAR PAPERS

MODEL TEST PAPER - 7

Physics

1. There is no transmission of energy in

A. Critical state

B. Isothermal state

C. Steady state

D. None of these

Answer: C



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2. Area of indicator diagram of a Carnot cycle represents... by the engine/cycle.

A. The amount of heat absorbed

B. The amount of heat rejected

C. Net useful work done

D. none of these

Answer: C



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3. The magnetic moment of a magnet is numerically equal to couple acting on the magnet when the magnet is suspended

A. At 45° to a magnetic field

B. Parallel to a magnetic field

C. Perpendicular to a uniform magnetic field

D. Perpendicular to a uniform field of one
oersted

Answer: D



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4. Magnetic field and magnetic potential are
related

A. $B = \frac{-dV}{dx}$

B. $dV = \frac{B}{dx}$

C. $B = \frac{dV}{dx}$

$$D. V \equiv \frac{-B}{dx}$$

Answer: A



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5. The magnetic moment at a distance of 2 cm from a magnetic pole is $2 \times 10^{-4} \text{ Am}^2$. The pole strength of the pole (in A - m) is

A. 8

B. 1.8

C. 0.005

D. 0.8

Answer: D



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6. A neutral point in a combined magnetic field is the point

A. Where the lines of forces intersect

B. Where the net force on a unit north pole is zero

C. Where a unit north pole moves in two directions

D. Where the lines of force cloud together

Answer: B



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7. The force acting on a pole of polestrength 10 A-m is 10 N. The magnetic intensity at that point is (in tesla)

A. 1

B. 10

C. 0.1

D. 11

Answer: A



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8. If M is the magnetic moment, and d is the distance of the point from the centre of the magnet, then the force in Tan B position is given by

A. $B_H \tan \theta$

B. $\frac{\mu_0 M}{4\pi(d^2 + l^2)^{3/2}}$

C. $\frac{\mu_0 2Md}{4\pi(d^2 - l^2)^2}$

D. none of these

Answer: B



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9. The force between two magnetic poles is F . If both the distance and pole strengths are doubled, then the force experienced is

A. $2F$

B. $F / 4$

C. $F / 2$

D. F

Answer: D



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10. A slab of mass 'm' is released from a height x to the top a spring of force constant k . The maximum compression of the spring is y . Then

$$A. mgx = \frac{1}{2}ky^2$$

$$B. mg(x + y) = \frac{1}{2}ky^2$$

$$C. mg(x + y) = \frac{1}{2}kx^2$$

$$D. mgx = \frac{1}{2}x(x + y)^2$$

Answer: B



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11. For a given velocity, a projectile has the same range R for two angles of projection if t_1 and t_2 are the time of flight in the two cases then

A. 1

B. $\tan \alpha^2$

C. $\tan \alpha$

D. $\cos \alpha_1$

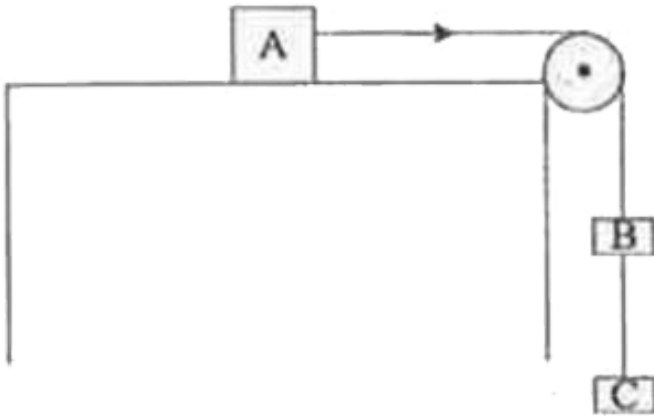
Answer: C



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12. $A = B = C = 4 \text{ kg}$. The table is smooth, the string is light and inextensible. The tension in the string

connecting B and C is



A. $4g$

B. $\frac{16g}{3}$

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

D. $\frac{8g}{3}$

Answer: C



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13. A body moving along a straight line uniform acceleration 'a' covers a distance S_1 in the first t seconds and a distance S_2 in the next t second, a is then given by

A. $\frac{S_1 + S_2}{t^2}$

B. $\frac{3S_1 - S_2}{t^2}$

C. $\frac{S_2 - S_1}{t^2}$

D. $\frac{3S_1 - S_2}{2t}$

Answer: C



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14. In a journey, the first one - third of the distance is covered at a speed of 20km/hr, the second $\frac{1}{3}$ at speed of 30 km/hr and the last $\frac{1}{3}$ at a speed of 24 km/hr. The average speed in km/hr for the whole journey is

A. $\frac{75}{3}$

B. $\frac{73}{3}$

C. $\frac{74}{3}$

D. $\frac{72}{3}$

Answer: D



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15. A body is thrown up vertically with an initial speed of 20ms^{-1} . The speed of the body in ms^{-1} when it has reached $3/4$ of the maximum height is

A. 10

B. 15

C. 5

D. $10\sqrt{2}$

Answer: A



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16. Following can be used as a rectifier.

- A. Pure semiconductor
- B. N - type semiconductor
- C. P - type semiconductor
- D. P - N junction

Answer: D



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17. The function of a moderator in a nuclear reactor is

- A. To slow down the neutrons
- B. To absorb neutrons
- C. To speed up the neutrons
- D. To stop the nuclear chain reaction

Answer: A



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18. When an α particle is emitted from a nucleus, its

A. Atomic number increases by 2 and mass number increases by 4

B. Atomic number increases by 1 and mass number remains the same

C. Atomic number decreases by 2 and mass number decreases by 4

D. Atomic number and mass number remain the same

Answer: C



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19. 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: A



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20. Photoelectric work function of a photoemissive metal depends on

- A. Frequency of the incident light
- B. Stopping potential
- C. Intensity of the incident light
- D. Nature of the metal

Answer: D



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21. The frequency range of ultraviolet radiation is

- A. Below the range of visible light
- B. Above the range of visible light
- C. Below the range of infrared light
- D. The same as that of visible light

Answer: B



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22. In a pure capacitance used on an a.c. circuit, the phase of the

- A. Voltage leads the current
- B. Voltage is in phase with the current
- C. Voltage may lead or lag the current
- D. Voltage may lead or lag the current

Answer: C



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23. A moving coil galvanometer is converted into an ammeter by connecting

- A. A high resistance in series
- B. A low resistance in series
- C. A high resistance in parallel
- D. A low resistance in parallel

Answer: D



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24. The plane of the coil of a T.G. is placed perpendicular to the magnetic meridian and an electric current is passed through it. The deflection of the needle is

A. 0° only

B. 0° or 180°

C. 180° only

D. 90°

Answer: B



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25. When a sheet of dielectric is inserted between the two plates of a capacitor, its capacitance

A. Decreases

B. May increase or decrease

C. Increases

D. Remains the same

Answer: C



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26. A uniform wire of resistance R is stretched uniformly so that its length is doubled. Its new resistance is

A. $4R$

B. $\frac{R}{4}$

C. $\frac{R}{2}$

D. $2R$

Answer: A



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27. Surface density of change is maximum at the point where

- A. Curvature is a minimum
- B. Radius of curvature is minimum
- C. Radius of curvature is maximum
- D. None of these

Answer: B



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28. The vertical plane dip circle is perpendicular to the magnetic meridian. The dip needle reads

A. 0-0

B. 45-45

C. 90-90

D. 60-60

Answer: C



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29. When a bar magnet is cut into two equal halves, the pole strength of each piece

- A. Becomes double
- B. Becomes zero
- C. Becomes half
- D. Remains the same

Answer: D



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30. if i_p is the polarising angle and μ is the refractive index of the material of a reflector.

A. $\mu \tan i_p = 1$

B. $\mu \cot i_p = 1$

C. $\mu \sin i_p = 1$

D. $\mu \cos i_p = 1$

Answer: B



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31. If the distance between the screen and the light source is reduced to $\frac{1}{3}$ of the original distance, the illumination of the screen

- A. Increases 3 times
- B. Reduces to $\frac{1}{3}$ rd
- C. Increases 9 times
- D. Reduces to $\frac{1}{9}$ h

Answer: C



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32. RI for green light is 1.5. The deviation produced by a prism of angle 10° for green light is

A. 0.5°

B. 20°

C. 5°

D. 10°

Answer: C



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33. The R.I. of diamond is 2.4 and that of glass is 1.5.

Then R.I. of glass with respect to diamond is

A. 1.6

B. 3

C. 4.8

D. 0.625

Answer: D



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34. The focal lengths of a lens for red, violet and green rays are F_r , F_v and F_g respectively. Then,

A. $F_r > F_g > F_v$

B. $F_v > F_t > F_g$

C. $F_t < F_g < F_v$

D. $F_v > F_r > F_g$

Answer: A



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35. Snell's law of refraction does not hold good when the angle of incidence on a refracting surface is

A. 30°

B. 0°

C. 60°

D. 90°

Answer: B



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36. The energy equivalent of 1 atomic mass unit is

A. $1.6 \times 10^{-13} \text{ MeV}$

B. 93.1 MeV

C. 931 MeV

D. $1.6 \times 10^{-19} \text{ MeV}$

Answer: C



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37. A candle flame gives

- A. Line spectrum
- B. Continuous emission spectrum
- C. Band spectrum
- D. Continuous absorption spectrum

Answer: B



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38. The kinetic energy of the photoelectrons depends upon:

- A. Intensity

B. Frequency

C. Both intensity and frequency

D. none of these

Answer:



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39. The insertion of a new metal into a thermocouple

A. Joule

B. Seebeck

C. Peltier

D. Thomson

Answer: B



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40. A current which varies periodically with time and reverse its direction every half a cycle is called ... current.

A. Transient

B. Steady

C. Eddy

D. Alternating

Answer: D



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41. Resistance of a conductor depends on its

A. Length

B. Density

C. Volume

D. Mass

Answer: A



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42. The basic instrument employed to detect current is

A. Galvanometer

B. Wattmeter

C. Ammeter

D. Voltmeter

Answer: A



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43. What is Van de Graaff generator?

- A. In producing nuclear power
- B. For lighting and heating
- C. IN high voltage experiments
- D. For lighting only

Answer: C



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44. A capacitor has a charge of $6 \times 10^{-4} C$. When the potential difference across the plates is 150 volts, its capacitance is

A. $250 \mu F$

B. $9 \mu F$

C. $0.25 \mu F$

D. $4 \mu F$

Answer: D



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45. The potential of the earth is

- A. Zero
- B. Small finite value
- C. Large finite value
- D. Infinite

Answer: A



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46. Dip at the poles is

A. Zero

B. 60°

C. 45°

D. 90°

Answer: D



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47. The direction of a magnetic field can be determined using

A. 30°

B. 90°

C. 60°

D. 45°

Answer: B



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48. The relation between the magnetic field (B) and the magnetic potential (V) at a point is

A. $B = - \frac{dV}{dx}$

B. $V = - \frac{dB}{dx}$

$$C. B = \frac{dV}{dx}$$

$$D. V = \frac{dB}{dx}$$

Answer: A



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49. What is a neutral point in a combined electric field?

A. Resultant magnetic field is zero

B. Resultant magnetic field is maximum

C. Resultant magnetic field is minimum

D. Resultant magnetic field is neither maximum
nor minimum

Answer: A



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50. Waves that can not be polarized are

A. Electromagnetic waves

B. Longitudinal waves

C. Transverse waves

D. Light

Answer: B



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51. A prism is made of glass of unknown refractive index. A parallel beam of light is incident on a face of the prism. The angle of minimum deviation is measured to be 40° . What is the refractive index of the material of the prism? The refracting angle of the prism is 60° . If the prism is placed in water (refractive index 1.33), predict the new angle of minimum deviation of a parallel beam of light

A. Quartz

B. Canada balsam

C. Glass

D. Calcite

Answer: D



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52. What are coherent sources of light?

A. Polarimeter

B. Photometer

C. Spectrometer

D. Photomultiplier

Answer: B



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53. What is the deviation produced by a thin prism of angle 8° and of R.I. 1.5?

A. $\frac{(\mu - 1)}{A}$

B. $(\mu + 1)A$

C. $\frac{A}{(\mu - 1)}$

D. $(\mu - 1)A$

Answer: D



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54. For an equiconvex lens of focal length f and refractive index $\frac{3}{4}$ the radius of curvature of either face is equal to

A. $\frac{3f}{2}$

B. $\frac{2f}{3}$

C. f

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

Answer: C



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55. If μ_1 and μ_2 are the refractive indices of two media in which the velocities of light are v_1 and v_2 , then,

A. $\frac{\mu_2}{\mu_1} = \frac{v^2}{v_1}$

B. $\mu_1\mu_2 = \frac{1}{v_1v_2}$

C. $\frac{\mu_2}{\mu_1} = \frac{v_1}{v_2}$

$$D. \mu_1 \mu_2 = v_1 v_2$$

Answer: C



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56. A table makes 5 rev/sec. A force of frequency 1000 Hz is at a distance of 0.7 m from the axis of rotation. The velocity of sound is 352 m/s. A man is standing at a little distance from the table. The maximum frequency noted by the man is

A. 1066 Hz

B. 941 Hz

C. 1000 Hz

D. 2000 Hz

Answer: A



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57. In a musical scale, the following interval is known as a major tone

A. 9: 8

B. 3: 5

C. 10:9

D. 16:6

Answer: D



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

A. $3f$

B. $4f$

C. f

D. $f/3$

Answer: C



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59. Two waves are represented at a certain point

by the equation

$$y_1 = 10 \sin 2000\pi t \text{ and } y_2 = 10 \sin[2000\pi t + (\pi/2)]$$

, for the resultant wave

A. The amplitude is 2000π units

B. The amplitude is 14.1 units

C. The frequency is 100 hertz

D. The frequency is $200\pi t$

Answer: B



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60. Dwarf plants can be obtained with the help of

A. Of different frequencies

B. Of different phases

C. Of different amplitudes

D. None of the above

Answer: C



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