



PHYSICS

BOOKS - UNITED BOOK HOUSE

MODEL PAPER SET-11

Exercise

1. Four point charges each '+q' is placed on the circumference of a circle of diameter $2d$ in such a way that they form a square. The potential at the centre is

A. 0

B. $\frac{4q}{d}$

C. $\frac{4d}{q}$

D. $\frac{q}{4d}$

Answer:



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2. What will be the radius of a spherical capacitor of capacitance 1 farad?

A. $3 \times 10^9 m$

B. $6 \times 10^9 m$

C. $9 \times 10^9 m$

D. $12 \times 10^9 m$

Answer:



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3. A wire of resistance R is elongated n -fold to make a new uniform wire. The resistance of new wire

A. nR

B. $n^2 R$

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

D. $\frac{R}{n^2}$

Answer:



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4. What will be the change of magnetic induction vector at the centre of a loop (circular), if its radius is made double, keeping current fixed

- A. Half
- B. Doubled
- C. times
- D. Remains same

Answer:



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5. The current through a straight current carrying conductor is i , what will be the magnetic induction at any

point on the wire:

A. zero

B. infinite

C. $\frac{\mu_0 i}{2} \pi r$

D. $\frac{\mu_0 \pi i}{2} r$

Answer:



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6. The angle of dip at any place is 30° , and the Horizontal component of earths magnetic field is $0.5T$. What will be the value of magneticfield at that place?

A. $\sqrt{3}T$

B. T

C. $\frac{T}{\sqrt{3}}$

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

Answer:



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7. The flux at any time t is $\phi = 10t^2 - 50t + 250$ what will be the induced emf after 3sec?

A. $-10V$

B. $10V$

C. $190V$

D. $-190V$

Answer:

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8. Two transparent media A and B are adjacent to each other. Velocity of light in medium A is $2 \times 10^8 m \cdot s^{-1}$ and in medium B it is $2.5 \times 10^8 m \cdot s^{-1}$. If ray of light under goes total internal reflection when travelling from A to B then what is the critical angle for the pair of media?

A. $\sin^{-1}\left(\frac{1}{2}\right)$

B. $\sin^{-1}\left(\frac{2}{5}\right)$

C. $\sin^{-1}\left(\frac{5}{4}\right)$

D. $\sin^{-1}\left(\frac{4}{5}\right)$

Answer:



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9. What will be the equivalent focal length for two lenses of focal length f_1 and f_2 in contact ?

A. $f_1 f_2$

B. $\frac{f_1 f_2}{f_1 + f_2}$

C. $f_1 + \frac{f_2}{f_1^2 + f_2^2}$

D. $f_1 + \frac{f_2}{f_1 + f_2}$

Answer:



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10. What among the following remains same in case of the waves coming from coherent sources?

A. Wavelength and Amplitude

B. Wavelength and Phase

C. Amplitude and Wavelength

D. None of the above

Answer:



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11. The property of light to bend through a sharp edge of an obstacle is:

- A. Diffraction
- B. Polarisation
- C. Dispersion
- D. Coherence

Answer:

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12. Which wave can not be polarised—

- A. Transverse Wave
- B. Longitudinal Wave
- C. Electromagnetic Wave

D. LightWave

Answer:



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13. In which case of the following, the dual nature of light comes into action:

- A. Diffraction and Reflection
- B. Refraction and Interference
- C. Photoelectric Emission
- D. Diffraction and Photoelectric effect.

Answer:



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14. In 8000 years a radioactive element is reduced to $\frac{1}{32}$ of its initial amount. What is its half life?

A. 800yr

B. 1600yr

C. 2400yr

D. $-3200yr$

Answer:



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15. an α particle is projected If ^{14}N Nucleus is projected by which Nucleus then ^{17}O is created?

- A. Neutron
- B. Proton
- C. Electron
- D. Positron

Answer:

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16. 1gm of any atom is converted into energy then find out the energy is KWh unit:

A. 9×10^{20}

B. 25×10^6

C. 9.03×10^{19}

D. 2.5×10^{10}

Answer:

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17. An alpha particle (${}^4\text{He}$) has a mass of 4.00300 amu. A proton has a mass of 1.00783 amu and a neutron as a mass of 1.00867 amu respectively. The binding energy of alpha particle estimated from these data is the closest to

A. 27.9MeV

B. 22.3MeV

C. 34MeV

D. 20.4MeV

Answer:

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18. What is used as moderator in nuclear reactor:

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19. The stopping potential any material is 1.4Volt.What will its threshold wavelength if the value of incident radiation is

5.6 eV. .

$$[h = 6.63 \times 10^{-34} \text{ Js}, C = 3 \times 10^8 \text{ m/s}, eV = 1.6 \times 10^{-19} \text{ J}]$$

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20. What do you mean by n type semiconductor?



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21. What is the effect of reversed bias on any p-n junction diode— explain:



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22. Show the logic symbol, Binary equation and truth table for an AND gate.

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23. Explain— Electric field lines cut the equipotential surface normally.

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24. Find out the capacitance of a parallel plate capacitor in air. What is the effect of distance between the plates of the capacitors on its capacitance?

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25. Two capacitors of $0.1 \mu\text{F}$ and $0.01 \mu\text{F}$ are connected in series combination and applied a voltage of 22V . If these two capacitors are connected in parallel then what will be the stored energy?

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26. Define the components of earth's magnetic field.

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27. For any inductive circuit the induced current is reduced to zero from 10A in 0.1 sec time. If the value of induced emf be 100mV , then what will be the self inductance of the coil?



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28. In Youngs Double Slit Experiment the incident radiation is of 590 nm wavelength and the fringe width is $3 \times 10^{-3}m$. If the incident wave. length is changed to 480 nm, What will be the new fringe width?



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29. For a thin convex lens the focal length for red and blue light is 1.005 m and 0.995 m respectively. What is the dispersive power for that lens medium?



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30. If the value of Rhydberg's Constant be 109737cm^{-1} , then what is the shortest wavelength for Balmar series?



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31. Construct OR gate by using NAND gates only. Write its Truth Table.



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