PHYSICS

BOOKS - SUNSTAR PHYSICS (KANNADA ENGLISH)

II PUC PHYSICS (P.U. BOARD LATEST MODEL QUESTIONS PAPER -2)

Part A

1. Write the colour code for a carbon resistor of resistance is $(2.5K \pm 20 \%)\omega$

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2. What is the magnetic moment associated with a current loop of area $2 \times 10^{-3}m^2$ and carrying current of 0.5A?

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3. Which important property differentiates magnetic field lines and electric field lines?

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4. What is meant displacement current?

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5. Mention any one application of γ- ray.

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6. Define critical angle for a pair of media.

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7. Give the expression for the wavelength of a charged particle in terms of accelerating potential and explain the meaning of the symbols used.

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8. Represent graphically the variation of photoelectric current with the intensity of incident radiation for a given photo sensitive material.

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9. Give an example for isobars.

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10. Mention one advantage of frequency modulation (FM) over amplitude modulation (AM) in communication.

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Part B

1. Give any two practical limitations of Ohm's law.

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2. State Kirchhoff's laws of Electrical network.

3. Define tesla. using the expression for the force on a charged particle moving in a magnetic field.

4. Which are the two properties required for a material to be used as a core of electromagnets.

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5. What are thermal generators? Mention the value of frequency of ac used in India.

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6. Mention any two differences between primary rainbow and secondary rainbow.

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7. What is a light emitting diode? Write an advantage of using it over conventional low power lamps.

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8. Explain the term .amplification. in communication system. Why is it necessary?

Part C

1. Derive the expression for torque on an electric dipole placed in a uniform electric field.

2. What is an equipotential surface? Draw the equipotential surfaces for i) a uniform electric field and ii) a point charge.

3. Draw the graphs representing the variation of resistivity with temperature for (1) copper (2) nichrome (3) a typical semiconductor.

4. Define the term .angle of dip.. Find the value of dip at a place if the vertical component of Earth.s magnetic field is $\sqrt{3}$ times the horizontal component.

5. Show that the charges oscillate with a frequency given by $\omega = \dfrac{1}{\sqrt{LC}}$ when a charged capacitor of capacitance C is connected to an inductor of inductance L.

6. What is meant by diffraction of light? Write the conditions for maxima and minima of diffraction pattern in terms of the wavelength of light used for the diffraction at single slit.

7. Explain the experimental setup used to study photoelectric effect with a neat labelled

diagram.

8. What are logic gates? Give the logic symbol

of NOT and AND gates.

Part D

1. State Gauss theorem in electrostatics. Derive the expression for electric field at a point due to an infinitely long straight charged conductor.

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2. Obtain an expression for the equivalent emf and internal resistance of two cells connected in parallel.

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3. Describe the construction and working of an AC generator and arrive at the expression for the emf induced in it.

4. Derive n= $\dfrac{\sin \frac{A+D}{2}}{\sin \frac{A}{2}}$ for the prism. Where the symbols have their usual meaning.

5. Writer Bohr's postulates for the hydrogen atom model.

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6. with a suitable circuit explain the action of a transistor as an amplifier in CE configuration .

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7. A900pF capacitor is charged by 100 V sources .Calculate the electrostatic energy stored in the capacitor .The capacitor is then disconnected from the source and connected to another uncharged 900pF capacitor . Find the common potential of the system ?

8. A pointer galvanometer with a scale of 30 divisions has a resistance of 12Ω full scale

deflection is obtained for a current of 3mA .Calculate the current sensitivity of the galvanometer .How will you convert this galvanometer into a voltage of range 0 to 18 V ?

9. A resistor and a capacitor are connected in series to a 50 Hz ac source . The voltage (rms) acrooss the resistor and capacitor are 151 V and 160.3 V respectively Calculate the rms

voltage of the source .Also find the capactive

reactance adn impedance of the circuit , if the

circuit is 0.755 A .

10. double -convex lens is to be manufactured

from a glass of refractive index 1.55 with both

faces of the same radius of curvatures .

Calculate the radius of curvature required if

the focal length is to be 20 cm ? Also find the

focal length of the lens if it is immersed in water of refractive index 1.33 ?

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11. Calculate the energy released in the reaction $^{235}_{92}U + ^1_0n - \rightarrow ^{92}_{36}Kr + ^1_0n + Q$
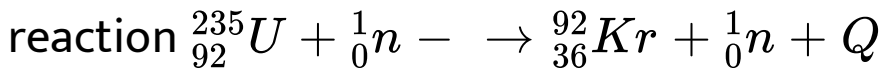
Given :

Mass of $_{92}{}^{235}U = 235.0439a\mu$

Mass of $^{141}_{56}Ba = 140.9178amu$

Mass of $^{92}_{36}Kr = 91.8854amu$

and mass of neutron $= 1.008655 amu$.

Express the result in joules .