PHYSICS

BOOKS - SUNSTAR PHYSICS (KANNADA ENGLISH)

II PUC PHYSICS (P.U. BOARD LATEST MODEL QUESTION PAPER -1)

Part A

1. Give an expression for the electric potential at a point due to a point charge.

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2. Mention any one application of potentiometer

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3. An aluminum piece is subjected to varying temperature. What is the effect of temperature on its susceptibility?

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4. How much emf is induced in a coil of self-inductance 2H if the current in it.is changing at the rate of $2As^{-1}$?

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5. What is meant by power factor of an ac circuit?

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6. Define polarizing angle for a material.

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7. What are matter waves?

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8. State Heisenberg's uncertainty principle.

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9. Give an example for β^+ - decay process.

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10. What is a transducer in communication?

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Part B

1. Distinguish between polar and non-polar molecules.

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2. Mobility of free electrons in a conductor is

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3. Give the expression for gyromagnetic ratio of an electron revolving round the nucleus and explain the terms.

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4. State Faraday's law of electromagnetic induction.

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5. Write the relation between the magnitude of electric and magnetic fields in an electromagnetic wave with speed of light and hence find the magnitude of the electric field at a point in space and time if the magnetic field at that place is $2 \times 10^{-8} T$.

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6. What is Doppler effect in light? Write the expression for Doppler shift.

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7. Define the terms input resistance and current amplification factor of a transistor in CE mode.

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8. Write the block diagram of a detector for AM signal.

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Part C

1. Mention any three properties of an electric charge.

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2. Derive the expression for magnetic force on a conductor carrying current kept in a magnetic field.

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3. What are eddy currents ? Mention two applications of eddy currents.

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4. Derive an expression for resonant frequency of series circuit containing inductor, capacitor and resistor.

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5. What is the principle behind the working of a transformer ? Mention any two sources of energy loss in transformer

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6. Draw the ray diagram of image formation in case of compound microscope

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7. Mention the three types of electron emission.

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8. What is a NAND gate? Write its circuit symbol and truth table for two inputs.

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Part D

1. Derive the expression for the capacitance of a parallel plate capacitor. And hence write the expression for the capacitance when a dielectric medium is inserted between its plates.

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2. Obtain the expression for the conductivity of a conductor in terms of its relaxation time. Or Deduce $\sigma = \frac{ne^2\tau}{m}$ where the symbols have their usual meaning.

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3. Show that a bar magnet behaves as an equivalent current carrying solenoid.

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4. Obtain the expression for fringe width in the case of interference of light waves.

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5. State radioactive decay law. Derive $N = N_0 e^{-\lambda t}$ for a radioactive element

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6. What is a rectifier? Explain the working of semi-conductor diode as a full wave rectifier with a necessary circuit diagram. Also give the input and output wave forms for the same

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7. Two pith balls of mass 10mg each are suspended by two threads from the same support are charged identically. They move apart by 0.08m and threads make an angle 60° with each other. Find the charge on each pith ball

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8. Two cells of 6 V and 4 V having internal resistance of 3Ω and 2Ω respectively are connected in parallel so as to send a current

through an external resistance 8Ω in the same direction. Find the current through the cells and the current through the external resistance.

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9. A circular coil of radius 0.08m consisting of 100 turns is carrying a current of 0.4A. Calculate the magnitude of the magnetic field i) at the center of the coil and ii) at a point 0.2m from the center of the coil on its axis.

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10. A parallel beam of light is incident on a face of a prism of refracting angle 60°. Find the refractive index of the prism if the angle of minimum deviation is 40. What is the new angle of minimum deviation if the prism is immersed in water of refractive index 1.33?

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11. Calculate the value of Rydberg constant if the wavelength of the first member of Balmer series in the hydrogen spectrum is 6563 Å. Also find the wavelength of the first member of Lyman series in the same spectrum.

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