PHYSICS

BOOKS - SUNSTAR PHYSICS (KANNADA ENGLISH)

II PUC PHYSICS SUPPLEMENTARY EXAM QUESTION PAPER JULY - 2016

Part A

1. Write the SI unit of Electric field.

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2. When does the force acting on a charged particle moving in a uniform magnetic field is Maximum?

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3. Where on the earth.s surface is the magnetic dip zero ?

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4. State Curie's law for a paramagnetic substance.

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5. What is the significance of Lenz's law ?

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6. Write the formula for Law of Malus

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7. What is the ratio of the nuclear densities of two nuclei having mass numbers in the ratio 1:3 ?

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8. Define ac signal current amplification factor (β).

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9. Write the truth table of NAND gate.

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10. Why sky wave propagation is not possible for wave having frequency more than 30 MHz ?

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Part B

1. Sketch the electric lines of force due to a point charge q. If i) $q<0$ and ii) $q>0$

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2. A galvanometer having a coil of resistance 12 Ω gives full scale deflection for a current of 4 mA. How can it be converted into a voltmeter of range 0 to 24V.

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3. Distinguish between paramagnetic and ferromagnetic substances.

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4. What si meant by Self inductance and Mutual Inductance ?

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5. What are electromagnetic waves ? Write the expression for the velocity of electromagnetic waves in terms of permittivity and magnetic permeability of free space.

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6. Write the relation between the path difference and wavelength of light wave used for constructive and destructive interference of light

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7. Define: i) photoelectric work function ii) electron volt (eV)

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8. Draw block diagram of a reciever

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Part C

1. Derive an expression for the electric potential energy of a system of two point charges in the absence of an external electric field.

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2. Arrive at an expression for drift velocity.

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3. State and explain Gauss's law in magnetism.

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4. Derive the expression for emf induced in a straight conductor moving perpendicular to a uniform magnetic field.

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5. With a diagram, explain the working of a transformer.

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6. What is total internal reflection? Mention two applications of optical fibres.

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7. What are matter waves? Derive an expression for the de Broglie wave length.

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8. Give three defferences between n-type and p-type semiconductors.

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Part D

1. Derive an expression for the electric field at a point due to an infinitely long thin charged straight wire using Gauss Law.

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2. Deduce the condition for balance of a wheatstone's bridge using Kirchoffs rules .

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3. Obtain an expression for the force between two straight parallel conductor carrying current. Hence define ampere.

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4. Derive th lens maker's formula.

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5. Assuming the expression for radius of the orbit, derive an expression for total energy of an electron in hydrogen atom.

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6. What is amplification? With a circuit diagram, explain the working of npn transistor as an amplifier in CE configuration.

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7. Charges 5mC, 4inC and 6mC are placed at the three corners A, B and C respectively of a square ABCD of side X metre. Find, what charge must be places at the fourth corner so that the total potential at the centre of the square is zero.

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8. A wire having length 2.0 m diameter 1.0 mm and resistivity $1.963 \times 10^{-8}\Omega$ m is connected in series with a battery of emf 3V and internal

resistance IΩ. Calculate the resistance of the wire and current in the circuit.

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9. An inductor and a bulb are connected in series to an AC source of 220V, 50Hz. 7C A current of 11A flows in the circuit and phase angle between voltage and current is $\frac{\pi}{4}$ radians. Calculate the impedance and inductance of the circuit

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10. In Young's double slit experiment while using a source of light of wavelength 4500 A, the fringe width is 5mm. If the distance between the screen and the plane of the slits is reduced to half, what should be the wavelength of light to get fringe width 4mm?

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11. The activity of a radioactive substance is 4700 per minute. Five minute later the activity

is 2700 per minute. Find

(a) decay constant and

(b) half-life of the radioactive substance.

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