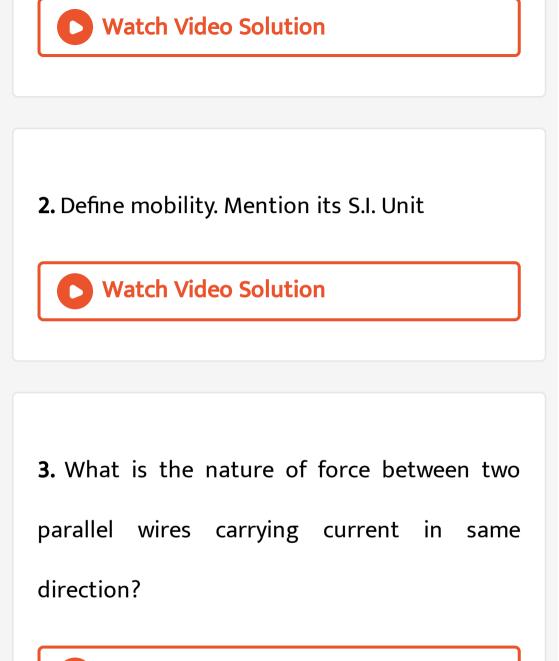# PHYSICS

BOOKS - SUNSTAR PHYSICS (KANNADA ENGLISH)

II PUC PHYSICS (ANNUAL EXAM QUESTIONS PAPER MARCH - 2014)

Part A

1. Write the SI unit of charge .

2. Define mobility. Mention its S.I. Unit

3. What is the nature of force between two parallel wires carrying current in same direction?

4. Draw magnetic field lines around a bar magnet.

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5. Give the expression for energy stored in an inductance coil carrying current.

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6. How is rm.s voltage of a.c related to peak value of a.c voltage?

7. What is a wavefront?

8. State the law of radiactive disintegration.

9. Write the truth table for logic OR gate.

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10. Give the Bandwidth of a TV signal.

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11. State Coulomb.s law

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12. Draw Wheatstone bridge and write the condition for balance.

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13. What is magnetic susceptibility? For which material is it low and positive?

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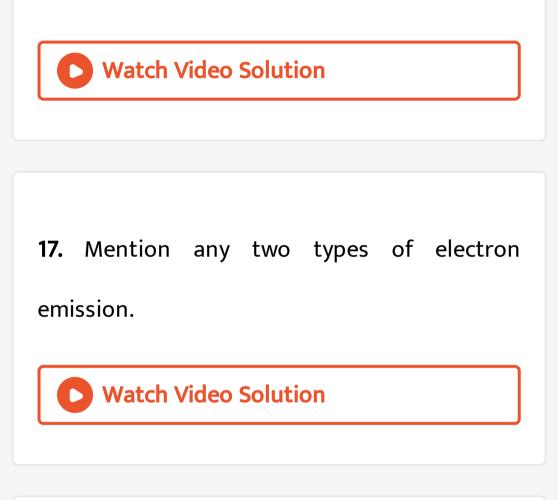
14. Mention any three application of eddy currents.

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15. Who predicted the existence of electromagnetic waves? Give the wavelength range of electromagnetic spectrum.

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16. Explain Malu's law for polaroids

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17. Mention any two types of electron emission.

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18. Why there is a need for modulation ?

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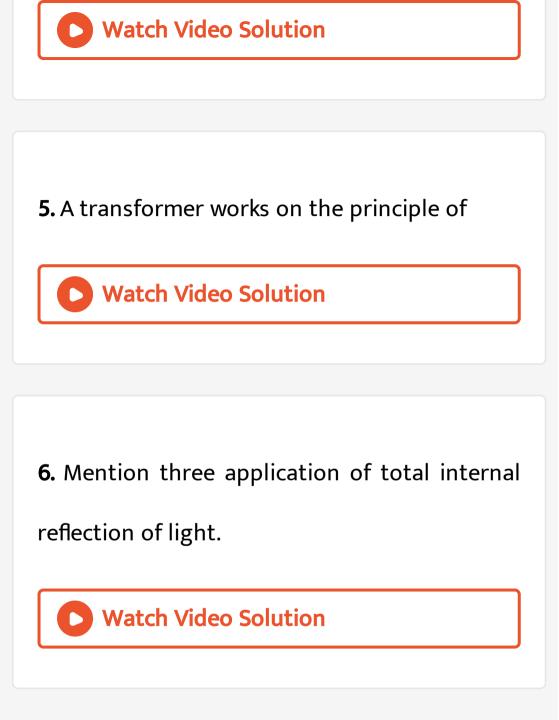
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2. Write three uses of cyclotron.

3. What are

i. Magnetic declination

ii. Magnetie dip

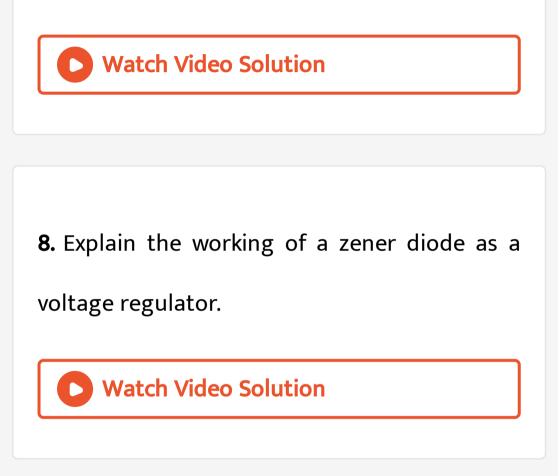iii. Horizontal component of earth.s magnetic field at a place?

4. State and explain Lenz.s law for induced emf.

5. A transformer works on the principle of

6. Mention three application of total internal reflection of light.

7. Give three characteristics of photon.

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8. Explain the working of a zener diode as a voltage regulator.

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Part D

1. State Gauss's theorem. Obtain an expression for electric field at any point outside a charged spherical hollow conductor (shell).

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2. Obtain an expression for equivalent resistance of two resistors connected in parallel.

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3. Derive the expression for magnetic field at a point on the axis of a circular current loop.

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

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5. Write three postulates of Bohr. Mention two limitation of Bohr model.

6. Explain the formation of energy bands in solids. On the basis of energy bands distinguish Vetween a metal, a semiconductor and an insulator.

7. In a parallel plate capacitor with air between the plates, each plate has an area of $6 \times 10^{-3} m^2$ and the distance between the plates is 3 m. Calculate the capacitance of the capacitor. If this capacitor is connected to a 100V supply. What is the charge on the each plate of the capacitor?

8. A battery of internal resistance 3Ω is connected to 20Ω resistor and the potential

difference across the resistor is 10V. If another resistor 30Ω is connected in series with the first resistor and battery is again connectecl to the combination, then calculate the e.m.f and terminal potential difference across the combination..

9. Calculate the resonant frequency and Q-factor of a series L-C-R circuit containing a pure inductor of inductance 3H, capacitor of

capacitance $27\mu F$ and resistor of resistance

7.4Ω

10. Two lenses of local lengths 0.20m and 0.30m are kept in contact. Find the focal length of the combination. Calculate power of two and combination.

11. Calculate the binding energy and binding energy per nucleon (in MeV) of a nitrogen nucleus $\left(^{14}_{7}N\right)$ from the following data:

Mass of proton=1.0078 u

Mass of neutron=1.00867 u

Mass of nitrogen nucleus=14.00307 u

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