PHYSICS

BOOKS - SUNSTAR PHYSICS (KANNADA ENGLISH)

ANNUAL EXAM QUESTION PAPER MARCH - 2017

Part A

1. State Coulomb's law .

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

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

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4. What is meant displacement current?

5. Write one application of microwave .

6. How is the power of lens related to its focal length ?

7. Write the expression for de-Broglie wavelength of a particle.

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8. What is the outcome of Davission Germer Experiment?

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9. What is the SI unit of activity?

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10. What is transducer?

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11. State Coulomb's law .

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19. What is the SI unit of activity?

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20. What is a transducer in communication?

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1. Mention and five properties of electric field lines.

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2. Mention any two factors on which the capacitance of a parallel plate capacitor depends.

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3. State and explain ohm's law

> ▶ **Watch Video Solution**

4. Define the terms :

(i) Declination

(ii) Inclination or Dip.

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5. State Faraday's law of electromagnetic induction.

6. Name the type of lens used to correct

(i) Myopia

(ii) Hypermietropia

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

9. Draw block diagram of a reciever

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Part C

1. Derive a relation between electric field and potential

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2. Derive the expression for energy stored in a charged capacitor.

3. How is a galvanometer converted into a voltmeter?

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

5. What is a transformer ? Mention two sources of energy loss in a transformer

6. Mention any three application of polaroids

7. Write any three experimental observations of photoelectric effect

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

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

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

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11. Write any five properites of ferromagnetic materials

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12. Derive th lens maker's formula.

13. State the law of radioactivity and hence, show that $N = N_0 e^{-\lambda t}$.

14. What is Rectification? Describe with a circuit diagram the working of a p-n junction diode as half wave rectifier with input and output waveforms.
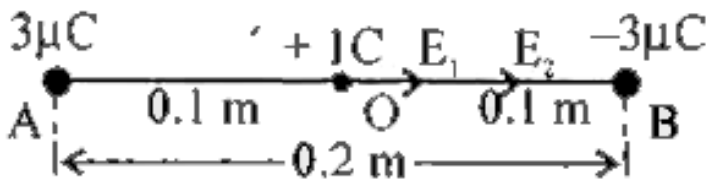
15. Two point charges $q_A = 3\mu C$ and $q_B = -3\mu C$ are located 0.2 m apart in vacuum.

a. What is the electric field at the mid point O of the line AB joining the two charges?

b. If a negative test charge of magnitude $1.5 \times 10^{-9}C$ is placed at this point, what is the force experienced by the test charge?
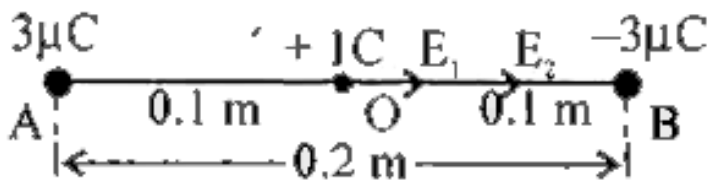
$3\mu C$ $+ 1C$ E_1 E_2 $-3\mu C$

A   0.1 m   O   0.1 m   B

$\longleftarrow$————0.2 m————$\longrightarrow$

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17. Which two resistors are connected in series with a cell of emf 2V and negligible internal resistance, a current of (2/5)A flows in the circuit. When the resistances are in parallel, the main current is (5/3)A. Calculate the resistances.

18. A source of alternating emf of 220 V-50 Hz is connected in series with a resitance of 200Ω an inductance of 100 mH and a capacitance of $30\mu F$ does the current lead or lag the voltage and by what angle ?

19. Light of wavelength 6000 $\overset{\circ}{A}$ is used to obtain interference fringe of width 6 mm in a young's double slit experiment. Calculate the

wavelength of light required to obtain fringe of width 4 mm if the distance between the screen and slits is reduced to half of its initial value.

20. The first member of the Balmer series of hydrogen atom has wavelength of 656.3 nm. Calculate the wavelength and frequency of the second member of the same series. Given, $c = 3 \times 10^8 m/s.$

21. Derive a relation between electric field and

potential

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a charged capacitor.

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

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32. Derive th lens maker's formula.

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

34. What is a rectifier ? With suitable circuit describe the action of a full wave rectifier by drawing input and output waveforms.
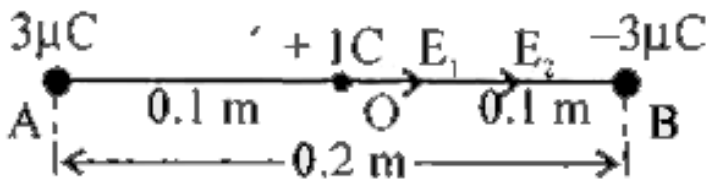
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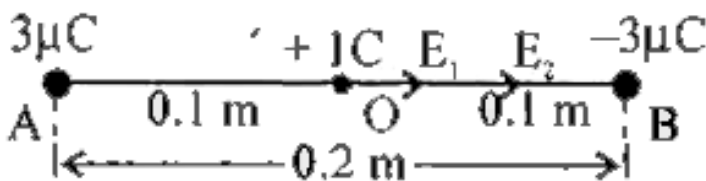
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