



PHYSICS

BOOKS - JEEVITH PUBLICATIONS

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?



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5. Write one application of microwave .



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



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



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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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Part B

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



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4. Define the terms :

(i) Declination

(ii) Inclination or Dip.



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5. State Faraday's law of electromagnetic induction.



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6. Name the type of lens used to correct

(i) Myopia

(ii) Hypermetropia



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7. Name the type of lens used to correct

(i) Myopia

(ii) Hypermetropia



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8. What is a NAND gate?



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9. Draw block diagram of a receiver



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Part C

1. Obtain the relation between electric field and electric potential due to a point charge.



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



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3. How is a galvanometer converted into a voltmeter?



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



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6. Mention any three application of polaroids



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7. Write any three experimental observations of photoelectric effect



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



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Part D

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



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



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3. Write any five properties of ferromagnetic materials



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4. Derive the lens maker's formula.



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



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6. What is rectification with relevant circuit diagram and waveform explain the working of p-n junction diode as full wave rectifier



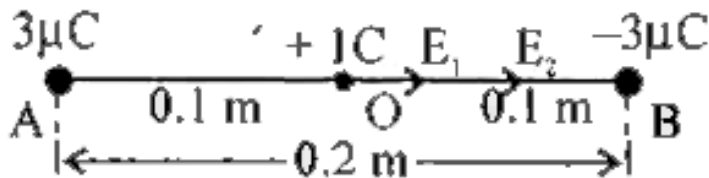
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7. Two point charges $q_A = 3\mu C$ and $q_B = -3\mu C$ are located 0.2 m apart in vacuum.

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?



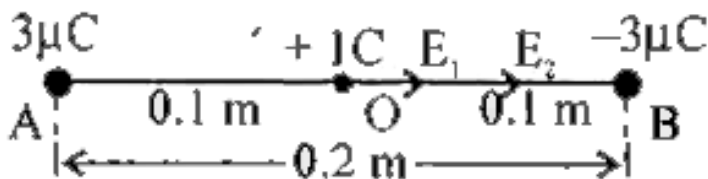
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8. Two point charges $q_A = 3\mu\text{C}$ and $q_B = -3\mu\text{C}$ are located 0.2 m apart in vacuum.

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?



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9. Which two resistors are connected in series with a cell of emf 2 V and negligible internal resistance, a current of $(2/5)\text{ A}$ flows in the circuit. When the resistances are in parallel,

the main current is $(5/3)\text{A}$. Calculate the resistances.



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



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11. Light of wavelength 6000 \AA 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.



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12. The first member of the Balmer series of hydrogen atom has wavelength of 656.3nm.

Calculate the wavelength and frequency of the second member of the same series. Given,

$$c = 3 \times 10^8 \text{ m/s.}$$



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