



# PHYSICS

**BOOKS - OSWAAL PUBLICATION**

**PHYSICS (KANNADA ENGLISH)**

**2017 Solved Paper 2**

**Exercise**

**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. 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.** Mention and five properties of electric field lines.



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



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**13.** State and explain ohm's law



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**14.** Define the terms :

(i) Declination

(ii) Inclination or Dip.



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**15.** Define the terms :

(i) Declination

(ii) Inclination or Dip.



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**16.** State Faraday's law of electromagnetic induction.



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**17.** Name the type of lens used to correct

(i) Myopia

(ii) Hypermetropia



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**18.** Name the type of lens used to correct

(i) Myopia

(ii) Hypermetropia



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



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**20.** Derive the expression for energy stored in a charged capacitor.



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**21.** How is a galvanometer converted into a voltmeter?



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



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



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**24.** Mention any three application of polaroids



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**25.** Write any three experimental observations of photoelectric effect



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**26.** Give three differences between n-type and p-type semiconductors.



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



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



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**29.** Write any five properties of ferromagnetic materials



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**30.** Derive the lens maker's formula.



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**31.** State radioactive decay law. Derive

$N = N_0 e^{-\lambda t}$  for a radioactive element





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



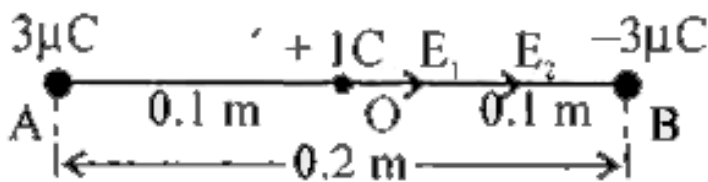
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**33.** Two point charges  $q_A = 3\mu C$  and  $q_B = -3\mu C$  are located 0.2 m apart in vacuum.

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?



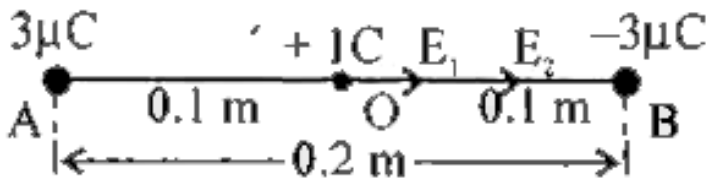
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**34.** Two point charges  $q_A = 3\mu C$  and  $q_B = -3\mu C$  are located  $0.2\text{ m}$  apart in vacuum.



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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35. Which two resistors are connected in series with a cell of emf  $2\text{ V}$  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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**36.** A source of alternating emf of  $220\text{ V}$ - $50\text{ Hz}$  is connected in series with a resistance of  $200\Omega$  an inductance of  $100\text{ mH}$  and a capacitance of  $30\mu\text{F}$  does the current lead or lag the voltage and by what angle ?



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37. Light of wavelength  $6000 \text{ \AA}$  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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**38.** 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,  $c = 3 \times 10^8 \text{ m/s}$ .



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