



# PHYSICS

**BOOKS - OSWAAL PUBLICATION**

**PHYSICS (KANNADA ENGLISH)**

**2018 Solved Paper 1**

## Exercise

1. Define electric potential due to a point charge and arrive at the expression for the

electric potential at a point due to a point charge.



[Watch Video Solution](#)

2. Mention any one application of potentiometer



[Watch Video Solution](#)

3. An aluminum piece is subjected to varying temperature. What is the effect of

temperature on its susceptibility?



[Watch Video Solution](#)

4. How much emf is induced in a coil of self-inductance  $2\text{H}$  if the current in it is changing at the rate of  $2\text{As}^{-1}$  ?



[Watch Video Solution](#)

5. What is meant by power factor of an ac circuit?



**Watch Video Solution**

**6. Define polarizing angle for a material.**



**Watch Video Solution**

**7. What are matter waves?**



**Watch Video Solution**

**8. State Heisenberg's uncertainty principle.**



**Watch Video Solution**

**9.** Give an example for  $\beta^+$  - decay process.



**Watch Video Solution**

**10.** What is a transducer in communication?



**Watch Video Solution**

**11.** Distinguish between polar and non-polar molecules.



**Watch Video Solution**

**12.** Define mobility of electrons. How is mobility of electrons in a conductor related to relaxation time?



**Watch Video Solution**

**13.** Give the expression for gyromagnetic ratio of an electron revolving round the nucleus and explain the terms.



**Watch Video Solution**

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



**Watch Video Solution**

**15.** Write the relation between the magnitude of electric and magnetic fields in an electromagnetic wave with speed of light and hence find the magnitude of the electric field at a point in space and time if the magnetic field at that place is  $2 \times 10^{-8} T$ .



**Watch Video Solution**

**16.** What is Doppler effect in light? Write the expression for Doppler shift.







[Watch Video Solution](#)

**17.** Define the terms input resistance and current amplification factor of a transistor in CE mode.



[Watch Video Solution](#)

**18.** Draw block diagram of a receiver



[Watch Video Solution](#)

**19.** Mention any three properties of an electric charge.



**Watch Video Solution**

**20.** Derive the expression for magnetic force on a conductor carrying current kept in a magnetic field.



**Watch Video Solution**

**21.** What are eddy currents ? Mention two applications of eddy currents.



**Watch Video Solution**

**22.** Obtain the expression for the current in an AC circuit containing pure capacitor.



**Watch Video Solution**

**23.** What is the principle behind the working of a transformer ? Mention any two sources of energy loss in transformer



**Watch Video Solution**

**24.** Draw the ray diagram of image formation in case of compound microscope



**Watch Video Solution**

**25.** Mention the three types of electron emission.



**Watch Video Solution**

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



**Watch Video Solution**

27. Derive an expression for capacitance of a parallel plate capacitor



[Watch Video Solution](#)

28. Derive  $\sigma = \frac{ne^2\tau}{m}$

where the symbols have their usual meaning.



[Watch Video Solution](#)

**29.** Explain briefly how bar magnets act as equivalent solenoids.



**Watch Video Solution**

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



**Watch Video Solution**

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

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



**Watch Video Solution**

**32.** What is full wave rectification? Explain the working of a full wave rectifier. Indicate the wave forms of input and output voltage.



**Watch Video Solution**



**33.** Two pith balls of mass 10mg each are suspended by two threads from the same support are charged identically. They move apart by 0.08m and threads make an angle  $60^\circ$  with each other. Find the charge on each pith ball



**Watch Video Solution**

**34.** Two cells of 6 V and 4 V having internal resistance of  $3\Omega$  and  $2\Omega$  respectively are

connected in parallel so as to send a current through an external resistance  $8\Omega$  in the same direction. Find the current through the cells and the current through the external resistance.



[Watch Video Solution](#)

**35.** A circular coil of radius  $0.08\text{m}$  consisting of 100 turns is carrying a current of  $0.4\text{A}$ . Calculate the magnitude of the magnetic field

i) at the center of the coil and ii) at a point 0.2m from the center of the coil on its axis.



[Watch Video Solution](#)

**36.** A circular coil of radius 0.08m consisting of 100 turns is carrying a current of 0.4A. Calculate the magnitude of the magnetic field i) at the center of the coil and ii) at a point 0.2m from the center of the coil on its axis.



[Watch Video Solution](#)

**37.** A parallel beam of light is incident on a face of a prism of refracting angle  $60^\circ$ . Find the refractive index of the prism if the angle of minimum deviation is  $40^\circ$ . What is the new angle of minimum deviation if the prism is immersed in water of refractive index 1.33?



**Watch Video Solution**

**38.** Calculate the value of Rydberg constant if the wavelength of the first member of Balmer series in the hydrogen spectrum is  $6563 \text{ \AA}$ .

Also find the wavelength of the first member of Lyman series in the same spectrum.



**Watch Video Solution**