

20/1/14. XII - Phy.

KENDRIYA VIDYALAYA SANGATHAN
ERNAKULAM REGION
SECOND COMMON PRE BOARD EXAMINATION
SESSION 2013-14

CLASS XII

PHYSICS

Time Allowed 3 Hours

Maximum Marks 70

INSTRUCTIONS TO CANDIDATES

1. All Questions are compulsory
2. There are 30 questions in total. Question Nos. 1 to 8 are very short answer questions and carry one mark each.
3. Question numbers 9 to 18 carry two marks each. Question numbers 19 to 27 carry three marks each and Question numbers 28 to 30 carry five marks each.
4. There is no overall choice. However an internal choice has been provided in one question of two marks, one question of three marks and all the three questions of five marks each. You have to attempt only one of the choices in such questions.
5. Question No 27 is a value based question and carries three marks.
6. Use of calculators not permitted. However you may use log tables if necessary.
7. You may use the values of following physical quantities wherever necessary.

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

$$h = 6.63 \times 10^{-34} \text{ Js}$$

$$e = 1.6 \times 10^{-19} \text{ C}$$

$$\mu_0 = 4\pi \times 10^{-7} \text{ TmA}^{-1}$$

$$\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{ Nm}^2\text{C}^{-2}$$

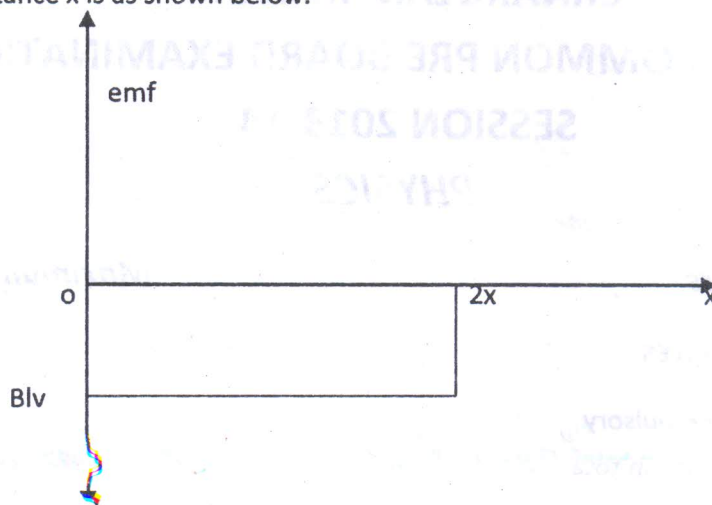
$$m_e = 9.1 \times 10^{-31} \text{ kg}$$

$$\text{Mass of Neutron} = 1.675 \times 10^{-27} \text{ kg}$$

$$\text{Mass of Proton} = 1.673 \times 10^{-27} \text{ kg}$$

1. The capacitance of a capacitor with air in between the plates is C. How will the capacitance change if a dielectric medium of dielectric constant K is introduced in between the plates?
2. A charge q is placed in a magnetic field of strength B. What is the force acting on the charge?

3. The emf of a conductor of length l moving in a magnetic field B with a velocity V as the function of distance x is as shown below.



Draw the variation of power developed in the conductor with distance.

4. Two independent sources cannot produce sustained interference. Why?
5. A convex lens is placed in contact with a concave lens. Which one of them – convex or concave, should possess greater focal length so as to obtain a real image on the screen? Justify your answer.
6. Diamond sparkles brilliantly. Why?
7. A source of light emits both blue photons and red photons. Which of them has (a) higher wavelength (b) higher velocity?
8. The radii of two nuclei are in the ratio 1:2. What is the ratio of their atomic mass?
9. Draw the variation of current with voltage for Gallium Arsenide. Name the different regions of the graph.
10. Name one material each where
 - (a) Magnetization disappears when the external magnetic field is removed
 - (b) Magnetization persists even after the applied magnetic field is removed.

Write one use for each of these materials

