ST. LAWRENCE HIGH SCHOOL

FOR GOD AND COUNTRY

WORK SHEET 4

Subject: PHYSICS

Class: XII **Date : 6.5.20**

Chapter : Electrostatics **Topic: Intensity of infinite long charged wire, plane thin sheet**

Multiple Choice Questions : **1 x 15 = 15**

1.Electric field intensity due to uniformly charged infinitely long straight wire is

a) $2\lambda/r$ b) $2\lambda r$ c) $r/2\lambda$ d) $2\lambda r^2$

2. Electric field intensity due to a thin infinite plane sheet of charge is

a) $2\sigma\epsilon_0$ b) $\sigma/2\epsilon_0$ c) $2/\sigma\epsilon_0$ d)0

3. E related to r for thin infinite plane sheet of charge –

a) E α r b) E α 1/r c) E = r d) independent

4 .Nature of E vs r graph for charged infinitely long wire is

a) circular b) straight line c) rectangular hyperbola d) elliptical

5. Electric field intensity of the infinite plane sheet has uniform thickness a)σ/ϵ_0 b) $\sigma\epsilon$ c)ϵ_0/σ d) $\sigma/2\epsilon_0$

6. The dimensional formula of electric intensity is

a) $[MLT^{-2}A^{-1}]$ b)$[MLT^{-3}A^{-1}]$ c)$[ML^2T^{-3}A^{-1}]$ d)$[ML^2T^{-3}A^{-2}]$

7.Two thin infinite parallel sheets have uniform surface densities of charge + σ and – σ .Electric field in the space between the two sheets will be

a) σ/ϵ_0 b) $\sigma/2\sigma_0$ c) $2\sigma/\epsilon_0$ d) zero

8.As per the condition mentioned in question 7 the electric field between the sheets increases by

a) increasing the separation of the plates

b) decreases by decreasing the separation of the plates

c) remains constant

d) both a) and b) are correct

9. The electric field intensity at a distance of 4cm due to infinite line charge is 18 x 10^4 N/C.Calculate The linear charge density.

a) 4 x 10^7C/m b) 4 x 10^{-7}C/m c) 4 x 10^2 C/m d) zero

10.Metal plates I (+σ) and II (-σ) are parallel and close to each other .On their inner faces, the plates have surface charge densities of opposite signs and of magnitude 8.85 x 10^{-20} C/m^2.What is the electric field between the plates ?

a) 10^{-8}N/C b) 10^8N/C c) zero d) 2 x 10^{-8}N/

11.In lieu of question no 10 also find out what will be the electric field to the left and to the right of the plates?

a) 2 x 10^{-7}N/C b)2 x 10^7N/C c)zero d)5 x 10^5N/C

12. Electric field intensity duo to uniformly charged thin infinite non-conducting plane sheet of surface charge density σ at a distance r is

a) σ/ϵ_0 b) $\sigma/2\epsilon_0$ c) σ / 2r d) $\sigma / 2\epsilon_0 r$

13. Dielectric constant of air is

a) $8.85 \times 10^{-12}\ C^2\ N^{-1}\ m^{-2}$ b) 1 c) infinite d) zero

14. A thin straight wire of length 30 cm is given a charge of 15μC. Calculate electric field and its direction at a distance of 10 cm from the wire

a) 9×10^6 N/C b) 4×10^2 N/C c) $9\ x910^{-6}$ N/C d) 4×10^{-2} N/C

15.Two parallel large thin metal sheets have equal surface densities of $2.56 \times 10^{-11}\ Cm^{-2}$ of opposite signs. The electric field between these sheets is

a) 1.5 N/C b) 1.5×10^{-10} N/C c) 3 N/C d) 3×10^{-10} N/C

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