G.N. National Public School

Physics Assignment-4

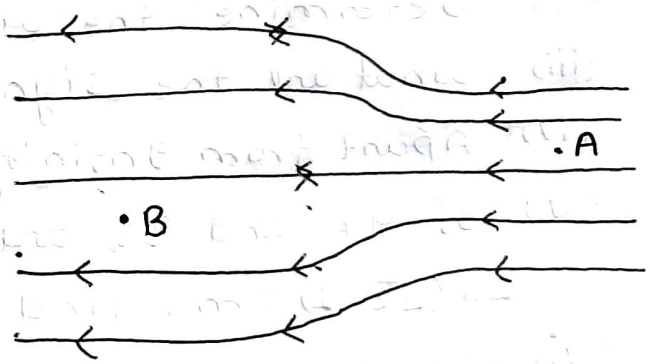
Topic- Electric field lines

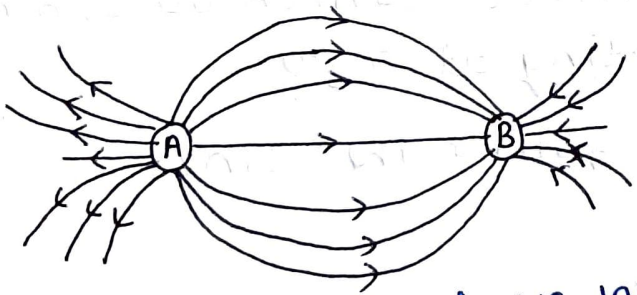
Q.1:- Sketch the pattern of electric field lines due to
(i) A conducting sphere having negative charge.
(ii) An electric dipole

Q.2:- A charged particle is free to move in an electric field. will it always move along an electric line of force?

Q.3:- In the electric field shown in figure, the electric field lines on the left have thrice the seperation as that between those on right if the magnitude of the field at point A is 30 N/C, calculate the force experienced by a proton placed at point B?

Q:-4:- The spatial distribution of electric field due to two charges (A, B) is shown in figure which one of the following statement is correct?

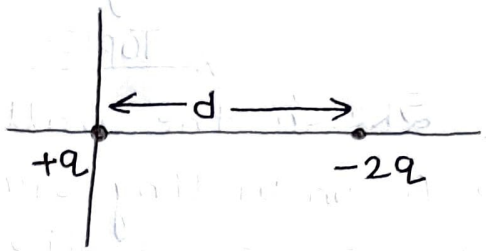




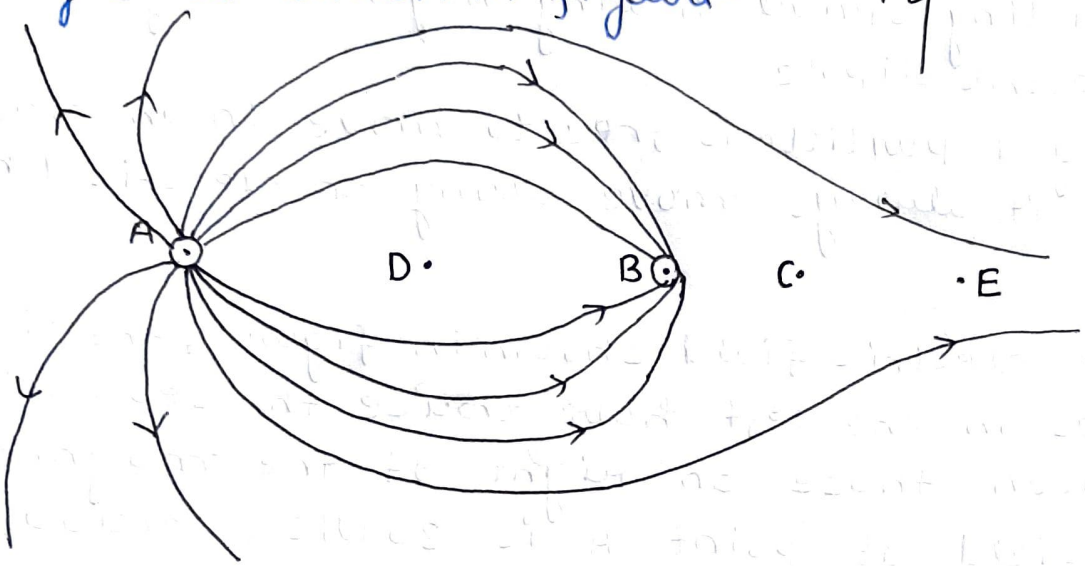
(A) A is +ve and B is -ve, $|A|>|B|$ (B) A is -ve and B is +ve, $|A|=|B|$
(C) Both are +ve but $|A|>|B|$ (D) Both are -ve but $|A|>|B|$

Q:-5:- charges $+q$ and $-2q$ are fixed at distance d apart as shown in figure -
(i) sketch the pattern of electric field lines using the concept of neutral point.

(ii) where should a charge particle q be placed so that it experiences no force?



Q:-6: The field lines for two point charges are shown in figure-



(i) Is the field uniform?

(ii) Determine the ration q_A/q_B?

(iii) what are the sign of q_A and q_B?

(iv) Apart from infinity, where is the neutral point?

(v) If q_A and q_B are seperated by a distance $10(\sqrt{2}-1)$ cm, find the position of neutral point?

(vi) where will the lines meet which are coming from A and are not meeting at q_B?

(vii) will a positive charge follow the lines of force if free to move?

Q.7: A metallic sphere has a point charge q kept inside its cavity. sketch Rough Representation of electric lines of force?

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