1(a) Define a **Coulomb**. (1 mark)

b) Explain how body may be charged,

(i) By rubbing

(ii) By induction

(iii) And it remains at zero potential. (09 marks).

(d) i) Explain what happens when a positively charged conductor is placed near a neutral metal pin pointing towards it. (3marks)

(ii) Describe an experiment to demonstrate that a neutral material has equal positive and negative charges. (4marks)

(i) In figure 3, charges of +6μC, – 3μC, +4μC and – 8μC are placed at points A, B, C and D respectively where AB = 6 cm, BC = 4 cm and CD = 5 cm.

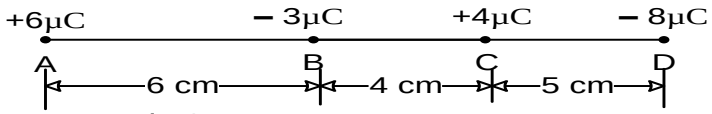

Fig.3

Find the acceleration of the – 3μC charge placed at B and having a mass of 1.80×10^{-19} kg. (5 marks)

2.(a) (i) State Coulomb's law of electrostatics. (1 mark)

(ii) With the aid of a labeled diagram, describe the mode of action of a Van-de-graaf generator. (4 marks)

(iii) State two practical applications of the above machine. (1 marks)

(iv) Explain how lightning can cause severe damage to buildings. Name one devise that can be used to prevent such damage and explain how it operates. (5 marks)

b) Describe an experiement to show that when two bodies are rubbed together they acquire equal and opposite charges. (04 marks)

(c) Two insulated metallic spheres P and Q have their centres separated by 500mm in air. Calculate the repulsive force between them given that each has a charge of 60nC. What will be the force if they are placed in a media of dielectric constant 10. (04 marks)

(d) Describe an experiment to show that excess charge reside outside a hollow conductor. (05 marks)

Enjoy