Physics – Midterm 1 (20 marks)

Student's Name: _____

Grade 10th

مدارس البكالوريا
BACCALAUREATE SCHOOLS

19th October, 2025

Q1) Define the following:

Charge by Induction: _____

Electric Field: _____

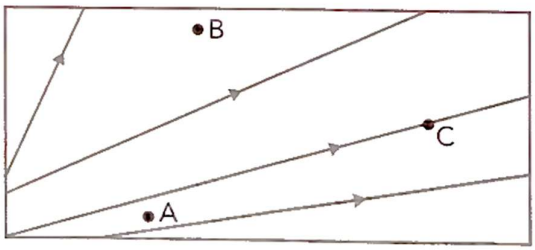
Insulator: _____

Capacitor: _____

Q2)

Two point charges are arranged in a line with point P, which is on the right. The point charges are $q_1 = 7 \times 10^{-6}$ C and $q^2 = -7 \times 10^{-6}$ C. Charge q_1 is 0.12 m to the left of charge q_2 and charge q_2 is 0.12 m to the left of point P. Determine the magnitude of the net electric field at point P.

Q3) A sample of some electric field line is shown in the diagram, rank the magnitude of electric field at points A, B, and C from largest to smallest (explain your answer)



Q4)

During an experiment, students placed a small polyester ball over a PVC pipe, where it is observed to remain at rest 55 cm from the pipe. The mass of the polyester ball is 0.75 grams. Determine the charge on the ball. Assume that the ball and the pipe have the same charge.

Q5) Determine if the statement is true or false, and if false correct the statement:

As the electric field lines becomes more spaced out, the field gets stronger. (_____)

Charging objects is possible because of gaining or losing of electrons. (_____)

Electric force occurs between any two objects that has mass (_____)

The unit of measure of electric force is Coulomb (C) (_____)

Q6)

Three point charges are arranged in a straight line. The charges are $q_1 = 8\ \mu C$, $q_2 = -8\ \mu C$, and $q_3 = 8\ \mu C$. Charge q_1 is 8.00 cm from charge q_2, and charge q_3 is 8.00 cm from charge q_2. Determine the magnitude of the net electric force on charge q_1.