Recitation 3
Physics 220B

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) A metal sphere of radius 10 cm carries a charge of +2.0 μC. What is the magnitude of the electric field 5.0 cm outside the sphere's surface? 1) _____

A) 8.0×10^7 N/C
B) 4.2×10^6 N/C
C) 8.0×10^5 N/C
D) 4.0×10^7 N/C
E) 4.0×10^5 N/C

2) Two large, flat plates are parallel to each other. Plate A , located at y = 1 cm, is along the xz-plane and carries a uniform charge density σ_A = -1.00 μC/m^2. Plate B is located at y = -1 cm and carries a uniform charge density σ_B = +2.00 μC/m^2. What is the electric field at the point of coordinates (x, y, z) = (-0.5 cm, 0 cm, 0 cm)? 2) _____

A) $(-1.19 \times 10^5$ N/C) $\hat{j}$
B) $(+1.19 \times 10^5$ N/C) $\hat{j}$
C) $(+1.13 \times 10^5$ N/C) $\hat{i}$
D) $(+1.69 \times 10^5$ N/C) $\hat{j}$
E) $(-2.83 \times 10^5$ N/C) $\hat{j}$

3) An electric field is set up between two parallel plates, each of area 2.0 m^2, by putting 1.0 μC charge on one plate and a -1.0 μC charge on the other. The plates are separated by 4.0 mm. What is the magnitude of the electric field between the plates at a distance of 1.0 mm from the positive plate? 3) _____

A) 4.2×10^4 N/C
B) 5.6×10^4 N/C
C) 0 N/C
D) 1.4×10^4 N/C
E) 3.1×10^4 N/C

4) Consider a square which is 1.0 m on a side. Charges are placed at the corners of the square as follows: +4.0 μC at (0, 0); +4.0 μC at (1, 1); +3.0 μC at (1, 0); -3.0 μC at (0, 1). What is the magnitude of the electric field at the square's center? 4) _____

A) 1.7×10^5 N/C
B) 1.1×10^5 N/C
C) 1.3×10^5 N/C
D) 1.9×10^5 N/C
E) 1.5×10^5 N/C

1) C
2) D
3) B
4) B