

ASSIGNMENT 03

Chapter 21

P1:

- P2:** a) Electrostatic
b) Gravitational
c) Gravitational
d) Gravitational

P3:

- a) $x = -14 \text{ cm}$
b) $y = 0$

P4:

- a) $F_x = 0.17 \text{ N}$
b) $F_y = -0.046 \text{ N}$

P5:

P6: $d = 2 \text{ m}$

P7: $d = 1.52 \times 10^{-14} \text{ m}$

P8:

- a) $F = 1.60 \text{ N}$
b) $F_y = 2.77 \text{ N}$

P9:

- a) The minimum is found between $5.0 \text{ m} \geq x \geq 0$.
b) The maximum is found to be at $x = d/2$ or roughly 12 cm .

P10: $F_g/Fe = 4.4 \times 10^{-40}$

P11:

P12: $F = (2.3\hat{i} - 2.4\hat{j}) \text{ N}$

P13:

- a) -191 N
b) 188 N

P14:

- a) $208\hat{j} \text{ N}$
b) $80\hat{i} - 277\hat{j} \text{ N}$

Chapter 22(ELECTRIC FIELD)

P15: $F_g/Fe = 5.6 \times 10^{-13}$

P16: $E = 3.5 \times 10^3 \hat{i} - 3.6 \times 10^3 \hat{j} \text{ N/C}$

P17: $V_f = 1.3 \times 10^5 \text{ m/s}$

P18: $Q = 1.11 \times 10^{-10} \text{ C}$

P19) (a) $(-2.64 \times 10^{10} \hat{j}) \text{ Q/L}^2$ **(b)**

P20: $(6.19 \times 10^5 \text{ N/C}) \hat{i}$

P21: 2.72L

P22:

a) $5.58 \times 10^{-11} \text{ N/C}$

b) $1.02 \times 10^{-7} \text{ N/C}$

P23:

a) 160 N/C

b) 45° counter clock wise from +ve x axis

Chapter 23(GAUSS LAW)

P24: $10.2 \text{ N.m}^2/\text{C}$

P25: $-2.26 \times 10^5 \text{ N.m}^2/\text{C}$ (inward)

P26:

a) $-3 \mu\text{C}$

b) $13 \mu\text{C}$

P27: $2.07 \times 10^5 \text{ N.m}^2/\text{C}$

P28:

a) $3.7 \times 10^{-5} \text{ N.m}^2/\text{C}$

b) $4.10 \times 10^5 \text{ N.m}^2/\text{C}$

P29: $4.92 \times 10^{-6} \text{ C/m}$

P30:

a) $6.78 \times 10^6 \text{ N.m}^2/\text{C}$

b) $1.13 \times 10^6 \text{ N.m}^2/\text{C}$

c) Yes for (b)

P31:

a) 11.3 N/C (b) 7.23 N/C