KFUPM	Phys102-242	Quiz-0408
Physics Department	Sec:04-05-06	04-Apr-2025

NAME _____

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STUDENT NUMBER

SECTION NUMBER

TEST CODE No.

1 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 26 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 51 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 76 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 101 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

2 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 27 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 52 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 77 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 102 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

3 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 28 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 53 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 78 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 103 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

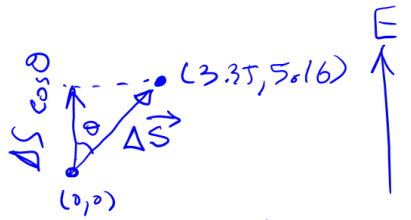
Q1. A charge of +67.6 nC is placed at the origin in a uniform electric field that is directed along the positive y-axis and has a magnitude of 2.73×10^4 V/m. The work, in the unit mJ, done by the electric field when the charge moves to the point (3.35 m, 5.16 m) is:

A) -9.52
B) 9.52
C) 6.18
D) -6.18
E) 11.4

$W_{field} \equiv -\Delta U = -q\Delta V$

$= -q(-\vec{E}\cdot\Delta\vec{S})$

$= qE\Delta S\cos\theta = (67.6\times10^{-9})(2.73\times10^{4})(5.16) = 9.52\,mJ$



Q2. An isolated conducting sphere has a radius of $R = 0.726$ m and a charge of +12.4 nC. Point A is at $3R$ from the center of the sphere. If V_C is the electric potential at the sphere center, what is the electric potential difference $V_C - V_A$, in the unit V?

A) 154
B) 51.2
C) 102
D) 32.2
E) 42.5

$V_C - V_A = \frac{kq}{R} - \frac{kq}{3R} = \frac{2}{3}\frac{kq}{R} = 102\ V$

23 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 48 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 73 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 98 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 123 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

24 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 49 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 74 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 99 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 124 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

25 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 50 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 75 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 100 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ 125 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ