PHYSICS 242 BLOCK 3 DRILL SET, SPRING ‘17 NAME ______________________________

Slide this paper under the door of Marteena 308 any time *before* 7:50 AM Friday, February 3, or give it to me in Marteena 312 *by* 8:00 AM that day. Use one different equation from the Block 3 objectives for each problem.

1. An electric field does 9.63 MeV of work in moving a very small charged particle from point a to point b through a potential difference of –3.21 MV. Find the charge of the particle as a multiple of e.

EQUATION USED SOLUTION ANSWER

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2. The electric potential is given by (25 V/m^7)($xz^6 + x^3y^4$) in the region including the point (x,y,z) = (–4,3,–2) m exactly. Find the z-component of the electric field at that point. SHOW *ALL* YOUR STEPS FOR CREDIT.

EQUATION USED (**ONE** EQUAL SIGN) SOLUTION ANSWER

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3. As shown, one point charge of –4.00 nC is located at y = +5.00 mm and another point charge of +5.00 nC is located at y = –4.00 mm.. Find the electric potential energy of this system of two point charges.

THE **ONE** EQUATION USED SOLUTION ANSWER

–4.00 nC⊖

+5.00 nC⊕

4. Calculate their electric potential at y = +1.00 mm on the line between the two point charges of Problem 3 above.

EQUATION USED (**ONE** EQUAL SIGN) SOLUTION ANSWER

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5. Suppose we move along the +x-axis from x_a = 0.0 m (where the potential is 770 V) to x_b = 1.5 m. Along the x-axis in this region, the electric field has a magnitude given by (88 V/m^4)x^3 and makes an angle of 36.87˚ with the +x-direction. Find the potential at x_b = 1.5 m. SHOW *ALL* YOUR STEPS FOR FULL CREDIT.

EQUATION USED (**ONE** EQUAL SIGN) SOLUTION ANSWER

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