

EXAM1

class2013	
R#	exam1
R00037897	50
R00223777	50
R00287049	67
R00715213	83
R00761392	83
R00785134	17
R00838484	17
R00859969	17
R00870071	50
R00894889	50
R00895168	83
R00895511	100
R00897586	34
R00900602	
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R00906938	100
R00915262	83
R00921430	100
R00921736	100
R00923038	100
R00928851	50
R00940836	83
R00943226	50
R00976816	100
R00981453	83
R00982692	17
R00997132	83
R01006514	34
R01011603	67
R01023637	84
R01025726	34
R01066687	67
R01073358	83
R01298882	100

Summer 2013. Exam 1. QQ 1-3

<p>1) Two small charged objects attract each other with a force F when separated by a distance d. If the charge on each object is reduced to one-fourth of its original value and the distance between them is reduced to $d/2$ the force becomes:</p> <ol style="list-style-type: none"> 1. $F/16$ 2. $F/8$ 3. $F/4$ 4. $F/2$ 5. F 	<p>2) Charge Q is distributed uniformly throughout a spherical insulating shell. The net electric flux in $\text{N} \cdot \text{m}^2/\text{C}$ through the inner surface of the shell is:</p> <ol style="list-style-type: none"> 1. 0 2. Q/ϵ_0 3. $2Q/\epsilon_0$ 4. $Q/2\epsilon_0$ 5. $Q/2\pi\epsilon_0$ 	<p>3) Total negative charge on the electrons in 1 kg of helium (atomic number 2, molar mass 4) is:</p> <ol style="list-style-type: none"> 1. 48C 2. $2.4 \times 10^7 \text{C}$ 3. $4.8 \times 10^7 \text{C}$ 4. $9.6 \times 10^6 \text{C}$ 5. $1.9 \times 10^6 \text{C}$
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<p>4) A conducting sphere of radius 1 cm has a charge of $1.0 \times 10^{-9} \text{C}$ deposited on it. The magnitude of the electric field in N/C just outside the surface of the sphere is:</p> <ol style="list-style-type: none"> 1. 0 2. 450 3. 900 4. 4500 5. 80,000 	<p>5) Charge is distributed uniformly along a straight wire. The electric field 2 cm from the wire is 20 N/C. The electric field 4 cm from the wire is:</p> <ol style="list-style-type: none"> 1. 120 N/C 2. 80 N/C 3. 40 N/C 4. 10 N/C 5. 5 N/C 	<p>6) A 3.5-cm radius hemisphere contains a total charge of $6.6 \times 10^{-7} \text{C}$. The flux through the rounded portion of the surface is $9.8 \times 10^3 \text{N} \cdot \text{m}^2/\text{C}$. The flux through the flat base is:</p> <ol style="list-style-type: none"> 1. 0 2. $+2.3 \times 10^4 \text{N} \cdot \text{m}^2/\text{C}$ 3. $-2.3 \times 10^4 \text{N} \cdot \text{m}^2/\text{C}$ 4. $-9.8 \times 10^4 \text{N} \cdot \text{m}^2/\text{C}$ 5. $+9.8 \times 10^4 \text{N} \cdot \text{m}^2/\text{C}$
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