COMSATS University Islamabad
Sahiwal Campus
Department of Computer Sciences
Sessional II Fall 2019

Course Title:	Applied Physics for Engineers				Course Code:	Phy121	Credit Hours:	3
Course Instructor:	Sabeen Amin				Programme Name:	CSCS		
Semester:	FA19	Batch:	B22	Section:		Date:		
Time Allowed:	1.5 hours				Maximum Marks:		30	
Student's Name:					Reg. No.	CUI//SWL		

Important Instructions / Guidelines:
Mobile phones are not allowed. Calculators must not have any data/equations etc. in their memory.

Q1: If filamentary current is flowing in a straight wire, then **write** to find the magnetic field intensity at a short differential length.

(5 marks)
CLO1/C1/PLO1

Q2: A straight, horizontal segment of copper wire carries a current I=28A. **Solve** by finding the magnitude and direction of the magnetic field need to float the wire i.e. to balance its weight. Its linear mass density is 46.6 g/m.
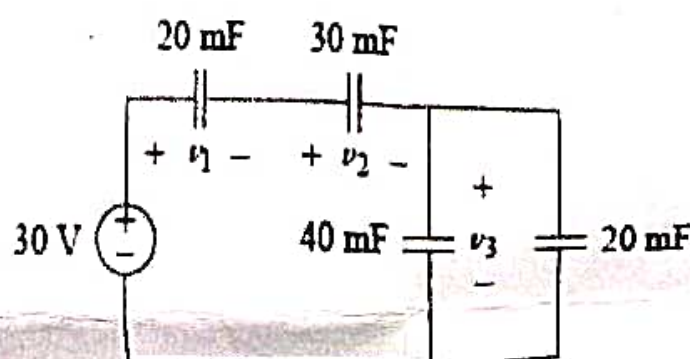
(5 marks)
CLO2/C2/PLO2

Q3: **Solve** by finding the magnitude of an isolated positive point charge for the electric potential at 15cm from the charge to be +120v? Assume that V=0 at infinity.

(5 marks)
CLO2/C2/PLO2

Q4: **Write** by finding the voltage across each capacitor in the given figure.

(5 marks)
CLO1/C1/PLO1

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Course Instructor:	Sabeen Amin				Programme Name:	BSCS		
Semester:	FA19	Batch:	B22	Section:	ß	Date:	08-10-2019	
Time Allowed:	1 hour				Maximum Marks:		20	
Student's Name:					Reg. No.	CUI//SWL		

Important Instructions / Guidelines:
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Q1: Define the followings. **(5 marks)**

1. Coulomb's law
2. Gauss's law
3. Torque
4. Conservation of Energy
5. Electric Field Intensity

Q.2: The average distance b/w the electron and proton in the hydrogen atom is 5.3×10^{-11} m. what is the magnitude of the average electrostatic force that acts b/w these two charges? **(5 marks)**

Q.3: In a uniform electric field near the surface of Earth, a particle having a charge of -2.0×10^{-9}C is acted on by a downward electric force of 3.0×10^{-6}N. **(5 marks)**

1. Find the magnitude of the electric field.
2. What are the magnitude and direction of the electric force exerted on a proton placed in this field?
3. What is the gravitational force on the proton?
4. What is the ratio of the electric force to the gravitational force in this case?

Q4: Calculate the electric field at infinite sheet of charges. **(5 marks)**

Q5: **D** ne the followings.

- Gauss's law for magnetism
- Lorentz force
- Magnetic flux
- Mutual inductance
- Capacitance

(5 marks
CLO1/C1/PLO

Q6: **Write** by finding the magnetic force on a current carrying wire.
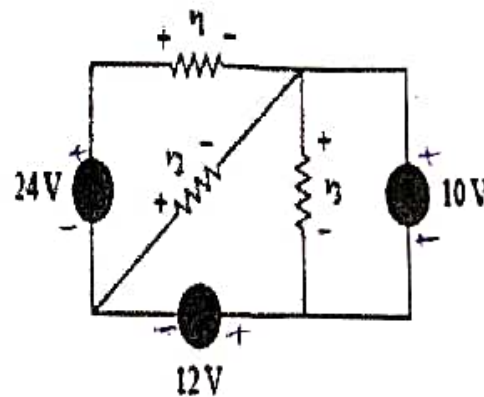
(5 mar
CLO1/C1/PL

Q6: In a typical lightening flash, the potential difference between discharge points is about 1.0×10^9 V and the quantity of charge transferred is about 30C. Solve to find energy is released?

(5 marks)
CLO2/C2/PLO2

Q7: A rectangular block of iron bar has dimensions 1.2cm×1.2cm×15cm. Solve to find the resistance of the block measured between the square ends. Solve to find resistance between two opposing rectangular faces? The resistivity of the iron at room temperature is 9.68×10^{-8} Ωm.

(5 marks)
CLO2/C2/PLO2

Q8: Write to find v_1 through v_3 in the given figure.

(6 marks)
CLO1/C1/PLO1

Q9: Explain Ampere's law.

(5 marks)
CLO2/C2/PLO2

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Course Instructor:	Sabeen Amin			Programme Name:	BSCS			
Semester:	FA19	Batch: B22	Section:	B		Date:		
Time Allowed:	3 hours			Maximum Marks:			50	
Student's Name:				Reg. No.	CUI//SWL			

Important Instructions / Guidelines:
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Q1: Write to find what occurs when there is a change in magnetic flux while current is flowing in a coil.
(10 marks)
CLO1/C1/PLO1

Q2: A straight, horizontal segment of copper wire carries a current I=28A. **Solve** to find the magnitude and direction of the magnetic field need to float the wire i.e. to balance its weight. Its linear mass density is 46.6 g/m.
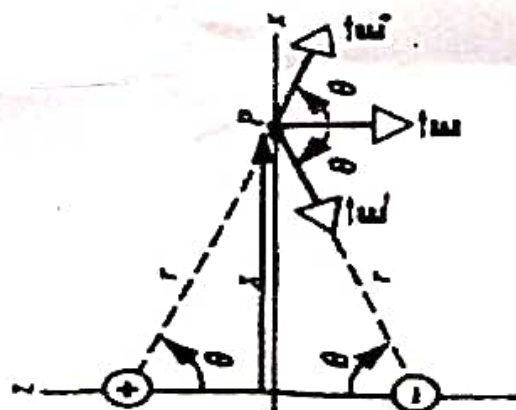**(5 marks)**
CLO2/C2/PLO2

Q3: A transverse sinusoidal wave is generated at one end of a long horizontal string by a bar that moves the end up and down through a distance of 1.30 cm. The motion is continuous and is repeated regularly 125 times per second. If the distance between adjacent wave crests is observed to be 15.6 cm, **write** to find the amplitude, frequency, speed and wave length of the wave motion.
(4 marks)
CLO1/C1/PLO1

Q4: Write the relationship between Gauss's law and Coulomb's law.
(5 marks)
CLO1/C1/PLO1

Q5: **Solve** to find the electric field E of the dipole at point P a distance x along the perpendicular bisector of the dipole, as shown in the fig.

(5 marks)
CLO2/C2/PLO2