

MODERN INTERNATIONAL SCHOOL DWARKA (SECTOR-19), NEW DELHI	QUESTION PAPER EXAMINATION: HALF YEARLY	Manju SUB: PHYSICS (THEORY) SET - B CLASS: (XII) (SESSION: 2017/18)
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GENERAL INSTRUCTIONS: (i) All questions are compulsory. (ii) Options, if any, are clearly specified. (iii) Figures in the right hand margin indicate marks for the respective questions.	AVAILABLE TIME: 3 HRS MAXIMUM MARKS: 70
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Q U E S T I O N S	MARKS
Q-1. State two characteristics of electromagnetic waves.	1
Q-2. Write the relation between a coulomb and an ampere.	1
Q-3. What do you mean by conservation of charge?	1
Q-4. What is the relation between the peak value and the rms value of an alternating emf?	1
Q-5. What is the force of repulsion between two charges of 1C each kept 1m apart?	1
Q-6. Name the physical quantity whose SI unit is $J C^{-1}$.	1
Q-7. What is an equipotential surface?	2
Q-8. When is the magnetic flux crossing a given surface area held in the magnetic field maximum?	2
Q-9. Write down the factors on which resistivity of a conductor depends.	2
Q-10. Establish the dimensional formula for electrical conductivity.	2
Q-11. Why a dc voltmeter or ammeter can not read ac?	2
Q-12. Can a body have a charge of $0.8 \times 10^{19} C$? Justify.	3
Q-13. A wire of 12 cm length, carrying a current of 2A, placed perpendicular to a magnetic field, experiences a force of 0.8N. Calculate the magnitude of magnetic field. OR [OPTION FOR Q.No. 13] Name different types of energy losses in a transformer.	3
Q-14. Draw a neat self explanatory schematic diagram of a step-up transformer.	3
Q-15. State and explain kirchhoff's rules.	3
Q-16. State limitations of Coulomb's law.	3
Q-17. A wire of resistance 1ohm is stretched to double its length. What is the new resistance of the wire?	4

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$$\frac{ML}{A^2 L^2 X T}$$

$$\sqrt{\epsilon_0 \mu_0} = \frac{1}{c}$$

$$B = \mu_0 \frac{I}{2\pi r}$$

$$R = \frac{\rho L}{A}$$

$$R \propto L$$

$$R \propto \frac{1}{A}$$

$$R \propto \frac{1}{L^2}$$

$$R_{new} = 4R = 4 \times 1 = 4 \Omega$$

Q-18. (a) What do you mean by electromagnetic induction? 5

(b) Discuss two experiments of Faraday and Henry to explain electromagnetic induction. 5

Q-19. What is electromagnetic spectrum? Write down the main parts of electromagnetic spectrum in decreasing wave length order. Which ray is used to destroy cancer cells in medical treatment? 5

Q-20. Define dielectric constant of a medium. How is it related to relative permittivity of the medium? 5

Q-21. (a) Justify that for ac voltage applied to a resistor, Ohm's law is equally applicable. 5

(b) What do you mean by phasors? $A^2 M^{-1} L^{-1} T^{-3}$

(c) What is rms current?

Q-22. Using Gauss-theorem, derive an expression for the electric field due to a uniformly charged thin spherical shell (i) at a point outside the sphere (ii) at a point inside the spherical shell. 5

OR [OPTION FOR Q.No. 22]

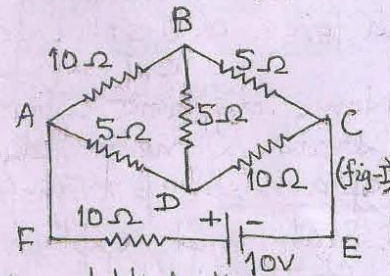
Derive the relation, $I = enAV_d$ between current (I) and drift velocity (V_d) where other symbols bear their usual meaning. 5

Q-23. Define (a) Declination (b) Angle of dip & (c) Horizontal component of earth's magnetic field. 5

OR [OPTION FOR Q.No. 23]

Differentiate between diamagnetic, paramagnetic and ferromagnetic substances with two examples of each.

Q-24. Determine the current in each branch of the circuit net-work shown in fig-1. 5



OR [OPTION FOR Q.No. 24]

Explain Biot-Savart-law and establish the relation between μ_0 and ϵ_0 . The symbols bear their usual meaning.