



INDIAN SCHOOL MUSCAT

SECOND PERIODIC ASSESSMENT

PHYSICS

CLASS: 12

Sub.Code: 042

Time Allotted: 50mts.

19.05.2019

Max .Marks: 20

GENERAL INSTRUCTIONS:

All questions are compulsory.

There are 11 questions in all.

Question no 1 to 5 carry one mark each.

Question no 6 to 18 carry two marks each.

Question no 9 to 11 carry three marks each.

$$\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{ Nm}^2 \text{C}^{-2} \text{ N} \quad \epsilon_0 = 8.854 \times 10^{-12} \text{ C}^2 \text{N}^{-1} \text{m}^{-2}$$

1.	Define the term mobility of charge carriers in a conductor. Write its SI unit.	1
2.	What do you mean by dielectric strength of a dielectric?	1
3.	Give an example of a material each for which temperature coefficient of resistivity is (i) positive , (ii) negative	1
4.	How does the energy stored in a capacitor change if after disconnecting the battery, the plates of a charged capacitor are moved farther?	1
5.	Express dielectric constant of a medium in terms of capacitance. What is its SI unit?	1
6.	Two conducting wires X and Y of same diameter but different materials are joined in series across a battery. If the number density of electrons in X is twice that in Y , find the ratio of drift velocity of electrons in the two wires.	2
7.	Derive an expression for the capacitance of a parallel plate capacitor, whose plates are separated by a dielectric medium.	2
8.	The plot of the variation of potential difference across a combination of three identical cells in series, versus current is shown in figure. What is the emf and internal resistance of each cell?	2

9.	<p>Two cells of emfs E_1 and E_2 having internal resistances r_1 and r_2 respectively are connected in parallel as shown. Deduce the expressions for the equivalent emf and equivalent internal resistance of a cell which can replace the combination between the points A and B.</p>	3
10.	<p>Two parallel plate capacitors X and Y have the same area of plates and same separation between them. X has air between the plates while Y contains a dielectric medium of $\epsilon_r = 4$</p> <p>(i) Calculate the capacitance of each capacitor if equivalent capacitance of the combination is 4 microfarad.</p> <p>(ii) Calculate the potential difference between plate X and Y.</p>	3
11.	<p>Derive an expression for drift velocity of free electrons in a conductor in terms of relaxation time of electron.</p>	3