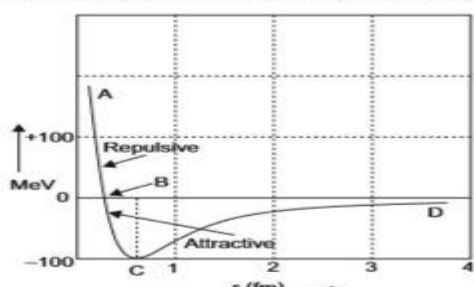


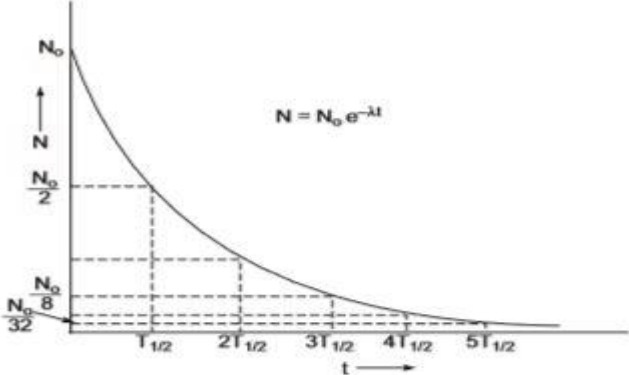
INDIAN SCHOOL MUSCAT
FINAL TERM EXAMINATION
NOVEMBER 2018

SET B

CLASS XII

Marking Scheme – PHYSICS [THEORY]

Q.NO.	Answers	Marks (with split up)
1.	50 Hz (with calculation)	1
2.	Longer wavelength scattered least	1
3.	5V OR 1.5 eV	1
4.	Ratio 1:1 because nuclear density is independent of mass number	1
5.	i) Spherical (ii) plane OR Width of slit less than or equal to wavelength of light used	½ , ½ 1
6.	Derivation of $v_d = - (e\tau/m)E$ OR Graph resistivity vs temperature semiconductor With the rise of temperature of semiconductor, number density of free electrons increase and hence resistivity decreases	2 1 1
7.	Part AB represents repulsive force and Part BCD represents attractive force. 	1

	<p>Any two characteristics of nuclear force</p> <p>OR</p> <p>Definition of Activity</p> <p>SI unit- Becquerel(= 1 disintegration/second)</p> 	<p>½ , ½</p> <p>½</p> <p>½</p> <p>1</p>
8.	<p>Derivation :</p> $r = (m^2 h^2 \epsilon_0) / \pi m e^2$ $r \propto n^2$	<p>1</p> <p>1</p>
9.	<p>(i) X-rays / Gamma rays – anyone and their one use</p> <p>(ii) Infrared/Visible rays/Microwaves- any one and their one use</p>	<p>1</p> <p>1</p>
10.	Derivation of Kinetic energy = $e\lambda / 4\pi\epsilon_0$	2
11.	<p>Electric potential due to electric dipole at axial point:-</p> <p>Diagram</p> <p>Derivation: $V = k p/r^2$</p>	<p>½</p> <p>1½</p>
12.	<p>$V_d = V/(nepl)$</p> <p>(i) when D is halved the drift velocity remains unchanged</p> <p>(ii) when l is doubled the drift velocity is halved</p>	<p>1</p> <p>1</p>

	Length AO = $(0.3/0.8) \text{ m} = 37.5 \text{ cm}$	$\frac{1}{2}$
16.	Verification of laws of refraction by Huygens' principle: Diagram showing incident and refracted wavefront verification	 1 2
17.	Derivation of equivalent emf and equivalent internal resistance $E = (E_1 r_2 + E_2 r_1) / r_1 + r_2$ $R_{eq} = r_1 r_2 / r_1 + r_2$	 2 1
18.	AC Generator: Working principle Diagram Derivation for alternating emf <div style="text-align: center;">OR</div> Transformer : Diagram Working Derivation of expression	 $\frac{1}{2}$ 1 1½ $\frac{1}{2}$ 1½ 1
19.	Diagram of the magnetic lines for diamagnetic and paramagnetic substances Explanation of magnetic behavior of both the materials	$\frac{1}{2} + \frac{1}{2}$ 1 + 1
20.	(i) $X_L = 100 \Omega$ $X_C = 500 \Omega$ $\tan \phi = -1$ $\Phi = -\pi/4$ Hence current leads voltage (ii) to make power factor unity $X_L = X_C$ $(1/\omega C) = 100$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

	$C' = 10 \mu\text{F}$ $C' = C + C_1$ $10 = 2 + C_1$ $C_1 = 8\mu\text{F}$	1 $\frac{1}{2}$
21.	Derivation of photoelectric equation Explanation why wave theory of light is not able to explain photoelectric effect OR Equations and calculation $\lambda_a / \lambda_p = 1/2\sqrt{2}$	2 $\frac{1}{2}, \frac{1}{2}$ 1 +1 1
22.	For L_1 $V_1 = 40 \text{ cm}$ For L_2 Image formed by L_1 at the focus of L_2 so after refraction from L_2 light become parallel Distance between L_1 and $L_2 = 60 \text{ cm}$ For L_3 Image formed at focus so incident light on L_3 should be parallel Distance between L_2 and L_3 can have any value	1 1 1
23.	(i) High permeability , Low coercivity and Low retentivity (any two) (ii) $B_H = 2 B$ (with calculation)	$\frac{1}{2}, 1/2$ 2
24.	Derivation of Lens maker's formula: Ray diagram Derivation OR Diffraction through single slit: Ray diagram Condition and explanation of secondary minima	1 2 1 2

