WINTER– 12 EXAMINATION

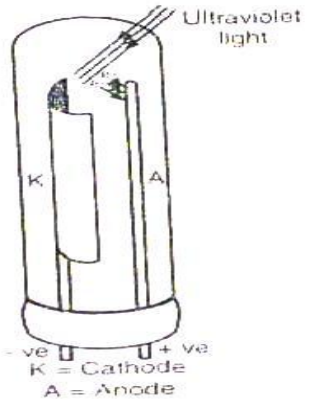
Subject Code: 12001 **Model Answer**

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
1)	1)	**Fundamental quantity** **Derived quantity** Fundamental quantity: - Length, Time, Mass, Luminous intensity. Derived quantity:-Force, Acceleration, volume, Pressure, Work.	1 1	2
	2)	**Each Definition** **Factor of Safety:** It is the ratio of ultimate stress to working stress. **OR** It is the ratio of maximum load that the structure can bear to the actual load on the structure. **Elastic limit:-** Elastic limit is defined as the maximum stress corresponding to the limiting value of the load which when applied & then removed does not produce any permanent deformation in a body. OR The maximum value of stress up to which the body shows elastic behavior is called the elastic limit.	1	2
	3)	**Each Definition** **Cohesive Force** It is the force of attraction between two molecules of same substance. OR The molecules of liquid exert force of attraction on one another called cohesive force. **Adhesive Force** It is the force of attraction between two molecules of different substance.	1	2
	4)	**Formula** **Meaning** Formula of critical velocity is given as $V_c = \eta R / \rho r$ Where, V_c -Critical Velocity of flow of liquid. ρ- Density of the liquid r – Radius of the tube. η – Coefficient of viscosity of liquid. R- Reynolds number.	1 1	2

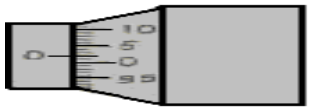
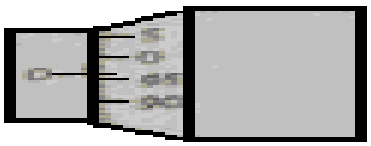
Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
	5)	**Reason** 1) We know that, the material which does not allow the passage of heat from it is called as Bad Conductor. 2) Since, glass is a bad conductor of heat, the vacuum between the walls acts as an insulator. 3) Therefore, the thermos flask consists of doubled walled glass vessel with vacuum between walls.	2	2
	6)	**Reason** In case of C_v the supplied heat is used only to increase the temperature of gas by 1^0C In case of C_p the supplied heat is used i) to increase the temperature by 1^0C ii) to increase the volume of gas at constant pressure Therefore additional amount of heat is required for doing the work at constant pressure. Therefore specific heat at constant pressure (C_p) is greater than specific heat at constant volume (C_v)	2	2
	7)	**Definition** **Resonance: -** If the frequency is forced upon a body and if the forced frequency matches (is equal to) the natural frequency of the body, the body vibrates with large amplitude. This phenomenon is called as resonance. OR It is also defined as a phenomenon in which a body vibrates with large amplitude due to the effect of a forced frequency which is equal to natural frequency of the body.	2	2

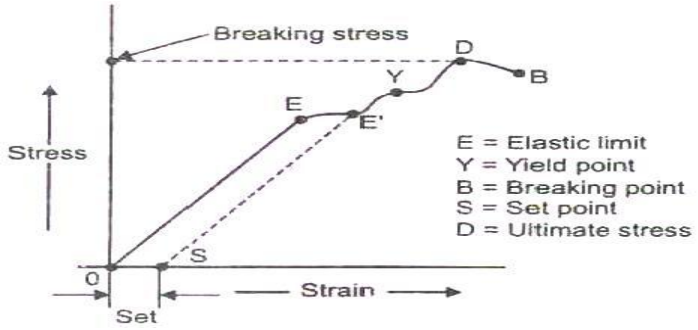
Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
	8)	**Two Points**	2	2

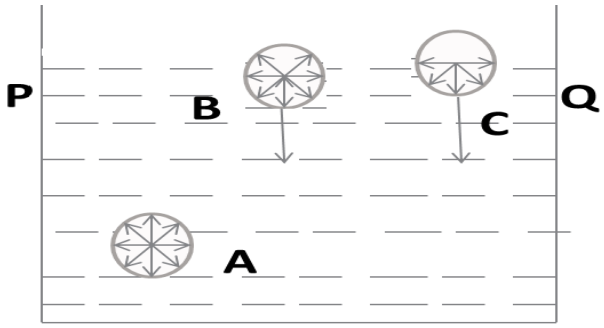
Spontaneous Emission	Stimulated Emission
After completion of life time the excited atom comes to ground state spontaneously emitting a photon hυ. This is known as spontaneous emission	The process of forced emission of photon due to incident photon is called stimulated emission.
The emitted light have different wavelength	The emitted light have same wavelength
The emitted light have different phase(incoherent)	The emitted light have same phase. (Coherent).
The emitted light is not monochromatic.	The emitted light is monochromatic.
Ordinary light is obtained	LASER light is obtained

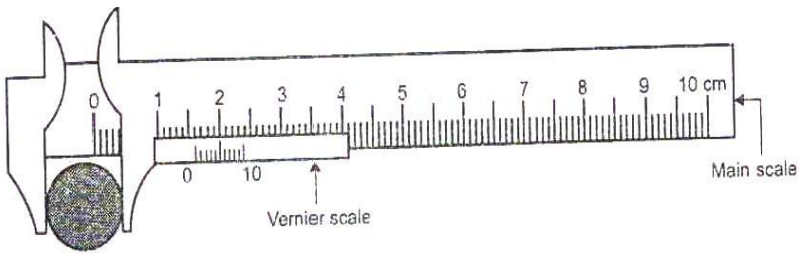
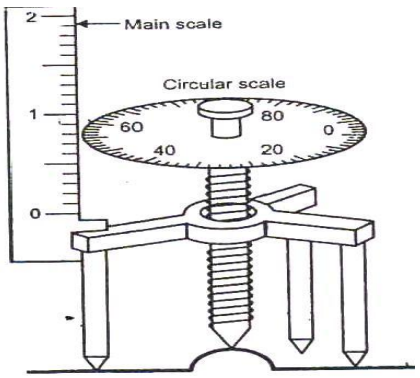
	9)	**Each Definition** **Node:** The points in the stationary wave which have resultant displacement zero are called Nodes. **Antinode:** The points in the stationary wave which have resultant displacement maximum are called Antinodes.	1	2
	10)	**Neat labeled diagram:** 	2	2

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
	11)	**Formula** **Ans with unit** Given: $\gamma = 30 \times 10^{-6} /^0K$ $\beta = ?$ We have, $\alpha : \beta : \gamma = 1 : 2 : 3$ $\frac{\beta}{\gamma} = \frac{2}{3}$ $\therefore \beta = \frac{2\gamma}{3}$ $\beta = \frac{2 \times (30 \times 10^{-6})}{3}$ $\beta = 20 \times 10^{-6} /^0 K$	1 1	2
	12)	**Formula** **Ans with unit** Given: $n = 91.1$ KHz $= 91.1 \times 10^3$ Hz $v = 3 \times 10^8$ m/s $\lambda = ?$ Formula: $v = n\lambda$ $\lambda = \frac{v}{n}$ $= \frac{3 \times 10^8}{91.1 \times 10^3}$ $= 0.0329 \times 10^5$ m	1 1	2

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
2	1)	Least Count(LC) = Pitch/Total number of divisions on circular scale.	1	4
		No zero error: Zero of axial line is coinciding with zero of circular scale	1	
		 (a)		
		Zero error = No error and Zero correction (z) = 0		
		Positive zero error: Zero of circular scale is below the axial line	1	
		 (b)		
		2nd division of circular scale coincide with axial line Zero error = + (2 X LC) and Zero correction (z) = - (2 X LC)		
		Negative zero error: Zero of circular scale is above the axial line	1	
		 (c)		
		96th division of circular scale coincide with axial line Zero error = - [(n-96) X LC] and Zero correction (z) = + [(n-96) X LC]		
	2)	**Definition**	1	4
		Range	1	
		Least Count	1	
		Reading	1	
		Error: An error is fault, which may occur even in the most careful observation OR The error is a deviation of measurement from standard value.		
		Range: 0 - 5V Least Count : 0.1 V Reading: 2.8 V		

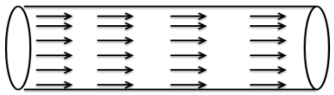
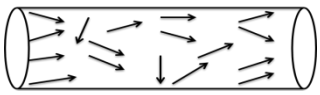
Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
	3)	**Neat labeled diagram** **Explanation**  A graph or diagram of stress and strain is shown as above. **OE** Portion is straight line which indicates that stress is proportional to strain. Therefore the wire obeys Hooke's law upto the point E this point is called elastic limit. **EE'** Portion is curved towards strain axis this shows that increase in strain is more, than increase in stress. In this region stress is not proportional to strain. Between any point E and E' if all load is removed then some permanent elonganation/ Expansion / increase in length takes place in the wire this is called set. When wire is again loaded, a new straight line SE' is obtained which obey Hooke's law. Some portion after the point Y is almost parallel to strain axis this shows that strain increases without increase in stress just like wire flows. This is called plastic flow. The point at which the plastic flow begins is called yield point. During the plastic flow the wire becomes thin and thin. Some weak points called neck are formed in the wire. At weakest point (neck), wire breaks. The maximum stress upto which wire can be loaded or wire can bear is called breaking stress. Point B is breaking point. Before point B the point D is ultimate stress point. It is the max. stress the wire is capable of with standing.	1 3	4
	4)	**Formula** **Substitution** **Ans with unit** **Given:** d = 3mm ,radius (r) = 1.5mm = 1.5 X 10^{-3} m L = 4 m l =2.5 X 10^{-3} m F = 10 N Y =?	1 1 2	4

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
2)	4)	Formula: $$Y = \frac{FL}{Al} = \frac{FL}{\pi r^2 l}$$ $$Y = \frac{10 \times 4}{3.14 \times \left(1.5 \times 10^{-3}\right)^2 \times 2.5 \times 10^{-3}}$$ $$Y = 2.26 \times 10^9 \frac{N}{m^2}$$		
	5)	**Diagram** **Explanation** **Laplace's molecular theory of surface tension** 1. Consider three molecules A, B & C of the liquid. A sphere of influence is drawn as shown in fig. 2. The sphere of influence of molecule 'A' is completely inside the liquid, so it is equally attracted in all directions by the other molecules lying within its sphere. Hence the resultant force acting on it is zero. 3. The part of the sphere of influence of molecule 'B' lies outside the liquid & the major part lie inside the liquid. Therefore resultant force acting on it is directed downward. 4. For Molecule 'C' half of its sphere of influence lies inside the liquid and half lies outside the liquid. So, the maximum resultant downward force is acting on molecule'C'  **Fig: Laplace molecular theory**	1½ 2½	4

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
		5. Thus molecule A experiences zero resultant force, B experience downward resultant force, C experience more downward resultant force. In short molecules below imaginary line PQ experience zero resultant force and molecules about line PQ experience some or more downward resultant force. 6. Thus molecules which lie on the surface of liquid (surface film) experience downward resultant force and are being pulled inside the liquid. To balance this downward force, molecules come closer to each other. This reduces the surface area of liquid. 7. This gives rise to surface tension. It is the contraction force which decreases the surface area of the liquid.		
	6)	**Each neat labeled diagram** Vernier Caliper:  Spherometer:  OR any other relevant diagram	2	4

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
3	1)	**Each Definition** **Stress: Stress** is defined as the restoring force per unit cross-sectional area of a body. **Strain:** Strain is defined as the change in dimension per unit original dimension of a body. **Restoring Force:** The force which is developed in a body in ordered to regain its original size and shape after removal of external force is called restoring force. **Deforming Force:** It is an external force which changes the shape or size of the body after its applications.	1	4
	2)	**Reason** The free surface of liquids has property called surface tension. According to Laplace's molecular theory of surface tension the molecules which lie on the surface of liquid (surface film) experience downward resultant force and are being pulled inside the liquid. To balance this downward force, molecules come closer to each other. Therefore free surface of liquid behaves like a stretched elastic membrane. This reduces the surface area of liquid. Since spherical shape is the only shape which has minimum surface area, therefore the shape of liquid drop is spherical in nature.	4	4
	3)	**Formula** **Substitution** **Ans with unit** **Given:** h_1 = 2cm =2 X 10^{-2} m diameter 1= 2.6 mm; radius, r_1 = 1.3mm = 1.3 X 10^{-3} m diameter 2 = 2 mm; radius, r_2= 1mm = 1 X 10^{-3} m h_2 =?	1 1 2	4

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
3	3)	Formula: $h_1 r_1 = h_2 r_2$ $\therefore h_2 = \frac{r_1 h_1}{r_2}$ $h_2 = \frac{1.3\times10^{-3}\times2\times10^{-2}}{1\times10^{-3}}$ $h_2 = 2.6\times10^{-2}\,m$		
	4)	**Any 4 points**	4	4
	5)	**Formula** **Substitution** **Ans with unit** **Given:** Diameter = 3mm $\therefore$ Radius ,r = 1.5 X 10^{-3} m d =7.8 X 10^3 kg/m^3 ρ=1.2 X 10^3 kg/m^3 v = 0.231 m/s η =?	1 1 2	4

Stream line flow	Turbulent flow
The path of every particle is same	The path of every particle is different
The velocity of particle is constant in magnitude and direction	The velocity of particle at each point is not constant
Flow is regular	Flow is irregular
No circular currents or eddies are developed	Random circular currents called vertices are developed
The liquid flow is streamline upto critical velocity.	The flow becomes turbulent after critical velocity.
Eq. - The flow of liquid through pipe	Eq.- Water fall
	

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
3	5)	Formula: $\eta = \frac{2r^2(d-\rho)g}{9v}$ $\eta = \frac{2\times(1.5\times10^{-3})^2(7.8-1.2)\times10^3\times9.8}{9\times0.231}$ $\eta = 140\times10^{-3}$ $\eta = 0.14$ N-s/m^2		
	6)	**Formula** **Substitution** **Ans with unit** **Given:** V_1 = 90 C.C. V_2 =? T_1 =17 ^{0}C = 290 ^{0}K T_2 =0 ^{0}C = 273 ^{0}K P_1 = 735 mm P_2 = 76 cm of Hg = 760 mm Formula: $\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$ $\therefore V_2 = \frac{P_1V_1T_2}{P_2T_1}$ $\therefore V_2 = \frac{735\times90\times273}{760\times290}$ $\therefore V_2 = 81.94 C.C.$	1 1 2	4

<table>
<tr><th>Que. No.</th><th>Sub. Que.</th><th>Stepwise Solution</th><th>Marks</th><th>Total Marks</th></tr>
<tr><td>4</td><td>1)</td><td>Any four points

<table>
<tr><th>ISOTHERMAL PROCESS</th><th>ADIABETIC PROCESS</th></tr>
<tr><td>volume & pressure changes at constant temperature</td><td>volume & pressure changes at changing temperature</td></tr>
<tr><td>Gas is filled in a good conductor of heat</td><td>Gas is filled in a bad conductor of heat.</td></tr>
<tr><td>Transfer of heat takes place.</td><td>There is no transfer of heat.</td></tr>
<tr><td>Volume changes are made slowly</td><td>Volume changes are made rapidly</td></tr>
<tr><td>Gas obeys Boyle's law i.e. PV= constant</td><td>Gas does not obeys Boyle's law
Here PV^{γ} = constant</td></tr>
<tr><td>Expansion of gas takes place</td><td>Compression of gas takes place</td></tr>
<tr><td>Ex. Boiling of water</td><td>Ex. Bursting of cycle tyre</td></tr>
</table></td><td>4</td><td>4</td></tr>
<tr><td></td><td>2)</td><td>Formula
Substitution
Ans with unit
Given:
P_1 = 76 cm of Hg P_2 = 1.8 atm = 136.8 cm of Hg
T_1 =27 ^{0}C = 300 ^{0}K T_2 =?</td><td>1
1
2</td><td>4</td></tr>
</table>

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
4	2)	Formula: $\frac{P_1}{T_1} = \frac{P_2}{T_2}$ $T_2 = \frac{P_2 T_1}{P_1}$ $T_2 = \frac{136.8 \times 300}{76}$ $T_2 = 540^0 K$ $T_2 = 267^0C$		
	3)	**Each Definition**	1	4
		Unit	1	
		Steady State: It is state at which all amount of heat energy absorbed by the element becomes equal to amount of heat energy given out. **Temperature Gradient:** It is change in temperature per unit of length of the rod/ conductor. **Coefficient of Thermal Conductivity:** The amount of heat conducted in 1 sec in steady state of temperature through unit cross-sectional area of an element of material of unit thickness with unit temperature difference between its opposite faces. OR It is the amount of heat flowing through a rod of unit area, in 1s for unit temperature gradient at steady state. **SI unit** : watt/m^0 K		
	4)	**Formula** **Substitution** **Ans with unit** **Given:** L_1 = 90 cm $t_1 = 20^0C$ L_2 = ? $t_2 = 80^0C$ $\alpha = 0.000012 /^0C$	1 1 2	4

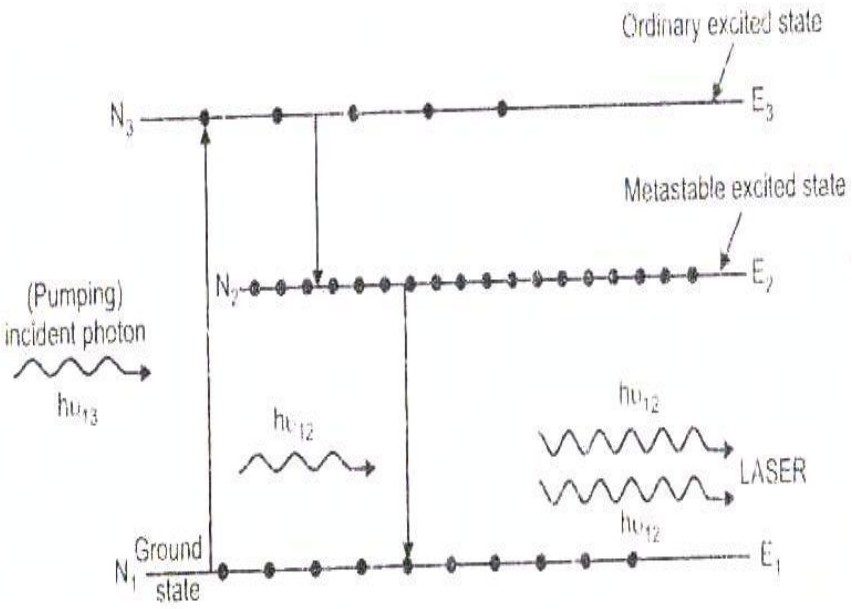
Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
4	4)	Formula $\alpha = \frac{L_2 - L_1}{L_1(t_2 - t_1)}$ $L_2 = L_1\left[1+\alpha(t_2 - t_1)\right]$ $L_2 = 90\left[1+0.000012(80-20)\right]$ $L_2 = 90.06\,\text{cm}$		
	5)	**Each Condition** **Conditions for Constructive interference** 1) The two waves must be in phase. 2) The path difference of two waves must be integral multiple of wavelength (λ). OR p.d. =nλ Where, n= 0,1,2….. **Conditions for Destructive interference** 1) The two waves must be out of phase. **2)** The path difference of two waves must be odd multiple of half wavelength (λ/2). OR p.d. $=\left(n-\frac{1}{2}\right)\lambda$ Where, n= 1,2,3…..	**1**	4
	6)	**Each Definition** **Refraction:** It is phenomenon in which direction of light ray changes due to change of medium. OR The bending of light when it is passes from one medium to another medium is called refraction. **Polarization:** Polarization is characteristics of transverse waves in which vibrations of the waves are restricted to one particular direction or particular plane. **Diffraction**: When light falls on obstacle or small aperture whose size is comparable with wavelength of light, then the light bends round the corners of the obstacles and enters in geometrical shadow. This bending of light is called diffraction. **Interference:** The phenomenon of producing brightness or darkness due to superposition of waves is called interference of light.	**1**	4

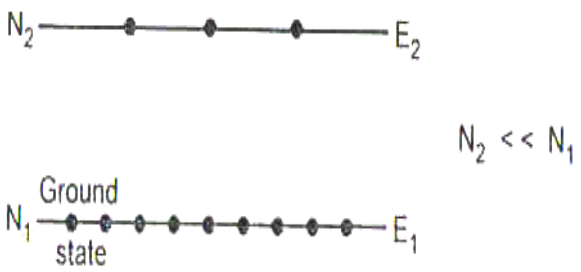
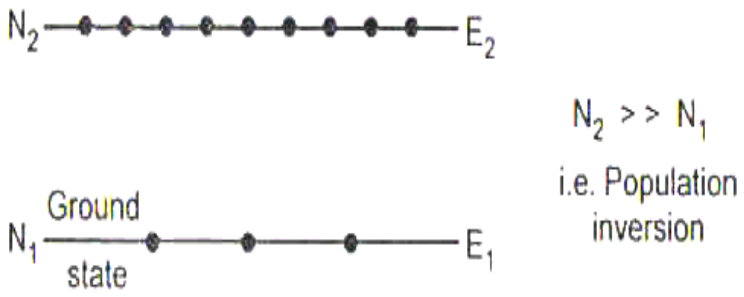
Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
5	1)	**Four Properties** i) **The light is coherent:** The light with waves, all exactly in same phase ii) **The light is monochromatic:** The light whose waves all have the same frequency or wavelength iii) **The light has unidirectionality:** The light produces sharp focus. iv) **The beam is extremely intense:** The light has extreme brightness.	4	4
	2)	**i)Law** **Formula** **ii)Substitution** **Answer** **i)Snell's Law** For any two media the ratio of sine of angle of incidence to sine of angle of refraction is constant. **OR** For any two media, the sine of angle of incidence is proportional to sine of angle of refraction. **Formula:** sini α sinr OR $\mu = \frac{\sin i}{\sin r}$ **ii)Given:** **i=45^0** **r = 30^0** **μ =?** $\mu = \frac{\sin i}{\sin r}$ $\mu = \frac{\sin 45}{\sin 30}$ $\mu = 1.4142$	1 1 1 1	4

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
5	3)	**Any four points**	1 for each	4

Transverse Wave	Longitudinal Waves
The wave in which direction of vibration of particles of material medium is perpendicular to the direction of propagation of wave is called transverse wave.	The wave in which direction of vibration of particles of material medium is parallel to the direction of propagation of wave is called longitudinal wave.
Wave travels in form of alternate crests and trough	Wave travels in form of alternate compressions and rarefactions.
Density and pressure of medium remain same throughout the wave	Density and pressure of medium changes.
Wave travels through solid only.	Wave travels through liquids and gases.
e.q. Light wave	e.q. Sound waves

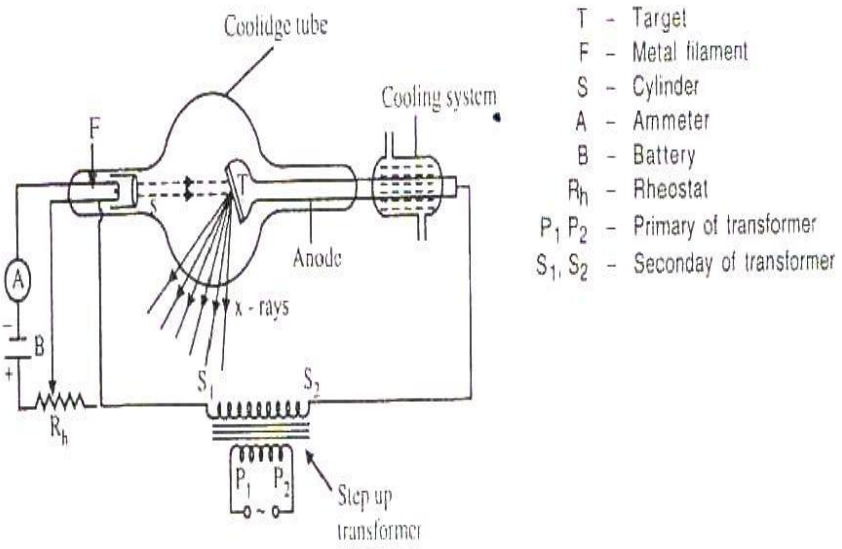
	4)	**Each Formula** **Each Ans with unit** **Given:** n = 512Hz l = 17 cm D = 2.3 cm v =? e =? Formula: Velocity, v =4nl v = 4 X 512 X 17 v = 34816 cm/s End Correction, e = 0.3XD e = 0.3 X 2.3 e = 0.69 cm	1 1	4

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
5	5)	**Diagram of Optical pumping** **Explanation of Optical pumping** **Diagrams of Population inversion** **Explanation of Population inversion** **Optical pumping:**  The process of raising the atoms from lower energy state to higher energy state using light medium is called as optical pumping. Let E_1, E_2 & E_3 are the energy levels & N_1, N_2 & N_3 are the number of concentrations of atoms in E_1, E_2 & E_3 respectively. Due to optical pumping ground state atoms jumps to excited state E_3.As the life time completes atom jumps to the energy level E_2.But E_2 is meta-stable state so, the atom can stay for longer time. When the population of energy level E_2 becomes more than that of E_1 then population inversion takes place & atom jumps towards ground state with emission of LASER light.	1 1 1 1	4

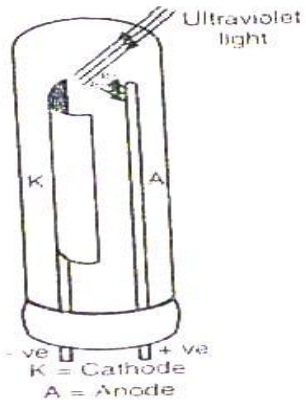
Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
5	5)	**Population inversion:** Population means number of active atoms occupying an energy state. Usually population of ground state is high & that of excited state is low as shown in figure below.  In order to produce stimulated emission properly, population of excited state should be greater than that of ground state. Making population of excited state more than that of ground state is called population inversion.i.e. $N_2 >> N_1$  .		

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
5	6)	**Each Definition** **One example of each Definition** **Free vibrations:** The vibrations performed by a body when only once disturbed from its equilibrium position and vibrates with a natural frequency are called free vibrations. **Example:** 1. Cricketers hanging ball 2. Vibrating tuning fork 3. Vibrations of air column **Forced vibrations**: When a body is continuously disturbed by a periodic force, then the particle cannot vibrate with its natural frequency but it starts vibrating with the frequency of periodic force. These vibrations are called forced vibrations. **Example:** 1. Concrete bridge in earth quake 2. Vibrations of air column under vibrating tuning fork 3. Kid swimming after applied external periodic force. Any other relevant definition or example.	1 1	4
6)	1)	**i) Planck's hypothesis** **ii) Relation with meaning of symbol** **Planck's Hypothesis:** 1. Energy is not emitted or absorbed continuously but in a discrete units or packets 2. Each packet is called photon or quanta. 3. The photons are electrically neutral. 4. The photon travels with speed of light i.e. ($3X10^8$m/s) the radiation is like a shower of photons.	2 2	4

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
6	1)	5. The energy E associated with each photon is directly proportional to frequency of light. $E \alpha \upsilon$ $E = h\upsilon$ **Relation for energy of photon:** $E = h\upsilon$ where, E – Energy of photon h – Planck's constant υ – frequency of radiation		
	2)	**i)Definition** **ii)Formula, Conversion(Given) And Answer with unit** **Work Function:** It is defined as the energy required to detach or knock out the electron from the atom. **Given:** $\omega_0 = 2.2eV = 2.2 \times (1.6 \times 10^{-19})\ joule$ $\omega_0 = 3.52 \times 10^{-19}\ joule$ $\lambda_0 = ?$ $h = 6.625X10^{-34}$ J-s $c = 3\ X10^{8}$ m/s **Formula:** $\omega_0 = h\upsilon_0$ $\omega_0 = h\frac{c}{\lambda_0}$ $\therefore \lambda_0 = \frac{hc}{\omega_0}$ $\therefore \lambda_0 = \frac{6.625 \times 10^{-34} \times 3 \times 10^{8}}{2.2 \times 1.6 \times 10^{-19}}$ $\therefore \lambda_0 = 5.6463 \times 10^{-7}\ m = 5646 A^0$	1 1 for each	4

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
6	3)	**Diagram** **Principle** **Working** **Diagram:**  **Principle:** When fast moving electrons are suddenly stopped then X-rays are produced. **Working:** When the cathode is heated by electric current it produced electron due to thermionic emissions. The beam of electron is then focused on the anode (target). The electrons from cathode are accelerated by applying of high voltage between cathode & anode using step up transformer. When these fast moving electrons are suddenly stopped by tungsten anode, they lose their kinetic energy and x rays are produced from the target. Some amount of Kinetic energy is converted to large amount of heat. By controlling the filament current, the thermionic emission of electron hence intensity of X- rays can be controlled.	2 1 1	4

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
6	4)	**Any Four uses** **Uses Of X-rays:** 1. X- rays are used to detect the cracks in the body of aero plane or motor car 2. X- rays are used to detect the manufacturing defects in rubber tyres or tennis ball in quality control 3. X – rays are used to detect flows or cracks in metal jobs. 4. X- rays are used to distinguish real diamond from duplicate one 5. X- rays are used to detect smuggling gold at airport and docks (ship) yard. 6. X-rays are used to detect cracks in the wall 7. X- ray radiography is used to check the quality of welded joints. 8. X – Rays are used in surgery to detect bone fracture. 9. X- Rays are used to cure skin diseases and destroy tumours. 10. X – Rays are used to cure diseases like cancer 11. X – Rays are used to detect bullets position inside the body. (Any relevant uses to be considered)	1 for each	4

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
6	5)	**Construction** 2 **Diagram** 1 **Working** 1 **Construction:** It consists of cathode (K) & anode (A) enclosed in an evacuated glass bulb. Semi-cylindrical cathode coated with photosensitive material from inner side. Anode is a rod of platinum kept along the axis of cathode. Cathode is connected to the negative terminal & anode is connected to the positive terminal of high tension battery through milliammeter. **Diagram:**  **Working:** When light is allowed to fall on cathode it emits photoelectrons. These photoelectrons are attracted by anode. The photoelectric current flows through the circuit & milliammeter shows the deflection.		

Que. No.	Sub. Que.	Stepwise Solution	Marks	Total Marks
6)	6)	**Given**	1	4
		Formula	1	
		Substitution	1	
		Answer with unit	1	
		Given:		
		V = 30KV= 30 X 10^3 V		
		λ_{min} = 0.414 A^0 = 0.414 X 10^{-10} m		
		e =1.6 X 10^{-19} C		
		c = 3 X 10^8 m/s		
		h =?		
		Formula:		
		$\lambda_{min} = \frac{hc}{eV}$		
		$\therefore h = \frac{eV\lambda_{min}}{c}$		
		$\therefore h = \frac{1.6\times10^{-19}\times30\times10^{3}\times0.414\times10^{-10}}{3\times10^{8}}$		
		$\therefore h = 6.624\times10^{-34}\ Js$		

Important Instructions for Examiners

1) The definitions given herein are just sample definition format and not to be treated as standard format. Student may write definition in the other words. Such definitions are to be considered and give appropriate marks.
2) Wherever labeled diagrams are asked in the question, marks to be given for the neat-labeled diagram. If, in case, student has drawn only the diagram without labeling, appropriate marks to be deducted.