Reg. No.: | | | | | | | | | |

G.T.N. ARTS COLLEGE (AUTONOMOUS)

(Affiliated to Madurai Kamaraj University || Accredited with 'B' Grade by NAAC)

END SEMESTER EXAMINATION - NOVEMBER - 2021

(UNDER OUTCOME BASED EDUCATION (OBE) PATTERN)

Programme : M.Sc. Physics | **Date : 05.02.2022**

Course Code : 20PPHE31 | **Time : 10:00 AM - 1:00 PM**

Course Title : Crystal Growth and thin films technology | **Max. Marks : 60**

Q. No.	SECTION - A (10 * 1 = 10 Marks) Answer ALL Questions	CO(s)	K - Level
1.	Conductivity and turbidity methods are more suitable for materials having _____ . 1.high solubility 2.low solubility 3.high impurity 4.low impurity	CO1	K2
2.	_____ theories are based on the considerations of the crystal surface structure. 1.Crystal growth 2.Solid 3.Liquid 4.Fluid	CO1	K1
3.	A _____ is a highly viscous two-component system of a semi-solid nature, rich in liquid and having a large number of pores in it. 1.gel 2.crystal 3.critical nucleus 4.fluid	CO2	K2
4.	In high temperature solution growth method, a _____ is used as the solvent and the growth takes place well below the melting point of the solute. 1.vapour 2.liquid 3.solid (molten salt/flux) 4.fluid	CO2	K1
5.	_____ is the amount of current that flows through the material or device when no radiation is incident on it. 1.Photo current 2.Ionization 3.Dark current 4.Impurity level	CO3	K2
6.	_____ is an important and popular tool for structural elucidation n and compound identification. 1.Atomic Absorption Spectroscopy 2.Ultraviolet-Visible spectroscopy 3.Infrared spectroscopy 4.Photo detection technology	CO3	K1
7.	Semiconductor thin film technology mainly refers to _____application. 1.Photovoltaic 2.corrosion 3.gas sensor 4.decorative	CO4	K2
8.	_____ is a process in which a gas diffuses into the solid absorbing medium. 1.Absorption 2.Absorbate 3.Absorbent 4.Adsorption isotherm	CO4	K1

9.	Cadmium Sulphide solar cells are clearly heterojunction cell with CdS having energy gap of _____.	CO5	K2
	1.2.42eV 3.2.43eV	2.2.41eV 4.2.40eV	
10.	Which of the following statement is true?	CO5	K1
	1.Solar cell technology has the advantage of reduced parasitic capacitive couplingbetween components and minimized lead resistance and inductance. 3.Crystal physics technology has the advantage of reduced parasitic capacitive couplingbetween components and minimized lead resistance and inductance.	2.Nanotechnology has the advantage of reduced parasitic capacitive couplingbetween components and minimized lead resistance and inductance. 4.Thick film technology has the advantage of reduced parasitic capacitive couplingbetween components and minimized lead resistance and inductance.	

Q. No.	SECTION - B (5 * 4 = 20 Marks) Answer ALL Questions	CO(s)	K - Level
11. (a)	Construct the process of nucleation in crystal growth.	CO1	K2
	[OR]		
(b)	What are the effects of soluble impurities on nucleation?	CO1	K2
12. (a)	Investigate the hydrothermal growth method.	CO2	K3
	[OR]		
(b)	Compare high temperature solution growth and hydrothermal growth.	CO2	K3
13. (a)	Give the brief detail about atomic absorption spectroscopy.	CO3	K2
	[OR]		
(b)	Draw the schematic representation of a UV-Vis-NIR spectrometer.	CO3	K2
14. (a)	Analyse structural defects in thin films.	CO4	K4
	[OR]		
(b)	Explain the electrical conduction in semiconducting films.	CO4	K4
15. (a)	Briefly explain the term ' Thin film Solar cell technology '.	CO5	K3
	[OR]		
(b)	Give a brief description about how thin film has found application in sensor of gas detection.	CO5	K3

Q. No.	SECTION - C (3 * 10 = 30 Marks) Answer any of 3	CO(s)	K - Level
16.	Discuss the Turbidity and Dilatometer method to measure the induction period.	CO1	K2
17.	Describe any two solution growth technique.	CO2	K3
18.	Illustrate photoconductivity and photo conduction.	CO3	K2
19.	Explain the Langmuir theory of condensation in detail.	CO4	K4
20.	Priorities any three applications of thin films in everyday life.	CO5	K5

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