2112E001

BACHELOR OF VOCATION
Solar Technology
Subject: Material Science for Solar Application
Subject Code: ST-701
Semester: Fifth
December 2021
Theory (External): 35 Marks
Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay-type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labeled

Roll Number											

SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

A. Differentiate between Alloy and mixture.

B. Define Ultimate tensile strength and toughness with the help of Stress-strain diagram of mild steel.

C. Define semi-conductors.

D. Define Photonic properties of engineering materials.

E. Define properties of glass and give applications of it in case of thermal energy storage.

F. Define solid solution.

G. Name any two types of solar dryers and explain them in brief.

H. Define SPV collectors.

I. Name any two strengthening mechanism and explain them in brief.

J. Define shear strength.

SECTION –B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)

1. Explain the fracture behaviour of different materials like Mild steel, ceramics and composites with the help of suitable diagrams.

2. Write the environmental effect of different solar materials.

3. Draw the neat atomic structure of BCC crystal structure and calculate its Packing Factor, coordinate number.

4. Define elasticity in polymers materials. Define erosion and its causes.

5. Define tracking and non-tracking concentrator and their applications.

6. Explain
   (a) Solar collector design considerations 2.5
   (b) Solar dryer 2.5

7. Write short note on
   (a) Fe-C or Fe-Fe_3C Phase diagram 2.5
   (b) Plastic Deformations in polymers 2.5

8. Define solar photovoltaic Cells. Explain applications of it in different industries.

===END OF PAPER===