2021

CHEMISTRY — HONOURS

Paper: DSE-B-2

(Novel Inorganic Solids)

Full Marks: 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer question no. 1 and any eight questions from the rest (question nos. 2 to 13).

1.	Answer any ten	questions:	1×10

- (a) Cite an example of an inorganic solid material produced by hydrothermal method.
- (b) What are biosensors?
- (c) Mention one technological importance of an one-dimensional metal.
- (d) Indicate the special feature of liquid crystal display (LCD).
- (e) Cite one example of an one-dimensional nanomaterial.
- (f) What is the importance of intercalation in the synthetic process?
- (g) What is meant by antisical nanomaterial?
- (h) Mention an environmental effect on composite.
- (i) Cite an example of a cation exchange resin.
- (j) Elucidate the importance of gold nanoparticles.
- (k) Give two examples of engineered nanomaterials.
- (l) Give an example of refractory material and mention its one use.
- 2. (a) What are the applications of bionanocomposite materials in the current world?
 - (b) What are the steps for solid state synthesis method?

3+2

- **3.** (a) How coloured solid can be obtained by mixing different inorganic pigments? Mention one technological importance of it.
 - (b) Discuss the role of biopolyphosphate as a bionanomaterial.

3+2

- 4. (a) What are different types of inorganic liquid crystals? Give one example of each of them.
 - (b) What are fullerides? Mention one technological importance of it.

3+2

Please Turn Over

V(5th S	Sm.)-	Chemistry-H/DSE-B-2/CBCS (2)	
5.	(a)	What is meant by inorganic nanowires? Mention the different types of nanowires.	
	(b)	Indicate the structural features of inorganic nanowires.	3+2
6.	(a)	Give a comparative account of plain steel and alloy steel with respect to their composition characteristic and application.	tion,
	(b)	What is heat and beat method for the preparation of inorganic solids?	3+2
7.	(a)	What are the four classes of matrix composites? Give one example of each.	
	(b)	What is the composition of magnelium? What is its use?	3+2
8.	(a)	Describe the three main parts of a fibre reinforced composite.	
	(b)	Mention the advantages of fibre reinforced composite.	3+2
9.	(a)	What are conventional engineering materials? Explain their limitations.	
	(b)	Write down the composition of bronze. Mention its use.	3+2
10.	(a)	Describe the method of preparation of silver nanoparticles. Mention its one significant use.	
	(b)	What is grey cast iron? Mention one of its use.	3+2
11.	(a)	What are the advantages of cast iron? Why does it has limited engineering applications?	
	` ′	How does a solid electrolyte work?	3+2
12.	(a)	How polyparaphenylene can be synthesized? Is it conductive? Explain.	
		What is conducting polymer? Mention one of its significant application.	3+2

3+2

(b) What are the raw materials required for the preparation of traditional ceramics?

13. (a) Distinguish between ceramics and refractory.