

**2024/TDC (CBCS)/EVEN/SEM/  
CHMDSE-601T/309**

**TDC (CBCS) Even Semester Exam., 2024**

**CHEMISTRY**

**( 6th Semester )**

**Course No. : CHMDSE-601T**

**( Inorganic Materials of Industrial Importance )**

**Full Marks : 50**

**Pass Marks : 20**

**Time : 3 hours**

**The figures in the margin indicate full marks  
for the questions**

**UNIT—I**

**1. Answer any three of the following questions :**

**1×3=3**

(a) What do you mean by non-silicate glasses?

(b) What is the use of photosensitive glass?

(c) Mention one use of carbon nanotube.

(d) What is the role of gypsum in the manufacturing of cement?

2. Answer any one of the following questions : 2
- (a) What are the basic raw materials used for the manufacture of glass?
- (b) What is meant by setting of cement?
3. Answer any one of the following questions : 5
- (a) (i) What are ceramic materials? 1
- (ii) What are the properties of ceramics? 3
- (iii) Write two uses of ceramics. 1
- (b) What is Portland cement? Discuss the general composition of Portland cement. How is cement made coloured? 1+2+2=5

## UNIT—II

4. Answer any three of the following questions : 1×3=3
- (a) Give an example of a straight fertilizer.
- (b) What is the role of nitrifying bacteria in the soil?
- (c) Write down the chemical composition of triple superphosphate.
- (d) What are NPK fertilizers?

5. Answer any one of the following questions : 2
- (a) How is ammonium nitrate prepared?
- (b) Give the essential qualities of a good fertilizer.
6. Answer any one of the following questions : 5
- (a) Describe the preparation of calcium ammonium nitrate (CAN). Why is it considered as a good fertilizer? 3+2=5
- (b) (i) How is urea manufactured? 2
- (ii) Explain about different types of potassic fertilizers. 3

## UNIT—III

7. Answer any three of the following as directed : 1×3=3
- (a) Give an example of thinner for water-based paint.
- (b) What is pigment?
- (c) What is toner?
- (d) The most common inorganic pigment used in paint is \_\_\_\_\_. ( $\text{TiO}_2$  /  $\text{CaO}$ )
- (Choose the correct option)

8. Answer any one of the following questions : 2

- (a) What is surface coating and why is it necessary?
- (b) Discuss the important characteristics of zinc oxide pigment.

9. Answer any one of the following questions : 5

- (a) What are the requirements of a good paint? Describe the environmental issues associated with paint. 2+3=5
- (b) Describe about metal spraying and anodizing.

#### UNIT—IV

10. Answer any three of the following questions :

1×3=3

- (a) What is photovoltaic cell?
- (b) Write one use of lead-acid battery.
- (c) What is solar cell?
- (d) What is the role of an electrolyte inside the battery?

11. Answer any one of the following questions : 2

- (a) What are primary and secondary batteries?
- (b) How does solid-state battery work?

12. Answer any one of the following questions : 5

- (a) What is the lithium-ion battery? Briefly describe its working principle. 1+4=5
- (b) (i) Write a short note on polymer cell. 3
- (ii) What are the advantages of fuel cells? 2

#### UNIT—V

13. Answer any three of the following as directed : 1×3=3

- (a) What is an alloy?
- (b) Which element has the highest percentage in stainless steel?
- (c) What is annealing?
- (d) Brass is an alloy of \_\_\_\_ and \_\_\_\_.

(Fill in the blanks)



14. Answer any one of the following questions : 12

(a) Write about decarburization reaction.

(b) What are the advantages of stainless steel?

15. Answer any one of the following questions : 5

(a) (i) What are the two common classifications of alloy? Give one example of each type. 2

(ii) Write a note on gold alloy. 3

(b) (i) How is silicon removed during the manufacturing of steel? 2

(ii) Discuss the composition and properties of different types of steel. 3

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