

**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?

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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?

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(Continued)

(3)

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 _____. (TiO_2 / CaO)
 (Choose the correct option)

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(Turn Over)

(4)

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?

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(Continued)

(5)

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)

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(Turn Over)

14. Answer any *one* of the following questions : 2

(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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