

(6 pages)

Reg. No. :

Code No. : 20619 E Sub. Code : EECH 11/
FECH 11

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2025.

First/Third Semester

Chemistry

Elective – CHEMISTRY FOR PHYSICAL
SCIENCE – I

(For those who joined in July 2023 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. _____ are different atoms of the same element having the same atomic number but differing in mass number

- (a) Isobars (b) Isotones
(c) Isotopes (d) Nucleons

2. The energy equivalent of the loss in mass is known as the _____ energy of the nucleus

- (a) Binding (b) Packing
(c) Defective (d) Fission

3. _____ is very essential for rapid growth of plants

- (a) Nitrogen (b) Potassium
(c) Phosphorus (d) Calcium

4. _____ gas is a mixture of carbon monoxide and hydrogen

- (a) Gobar (b) Producer
(c) Water (d) Natural

5. When heated with sodamide, pyridine forms _____

- (a) 2 - amino pyridine
(b) piperidine
(c) pyrrolidine
(d) picramide

6. Which of the following is the nitrating reagent?
(a) HNO_3 (b) HCl
(c) H_2SO_4 (d) $\text{HNO}_3 + \text{H}_2\text{SO}_4$
7. Which of the following statements is true?
(a) Entropy is a path function
(b) Entropy is a state function
(c) Entropy is a unitless function
(d) Entropy is an intensive property
8. The phase rule is
(a) $F = C - P + 2$ (b) $F = C - P + 1$
(c) $F = C - P$ (d) $F = PC + 2$
9. The adsorbent used in column chromatography is
(a) Al_2O_3 (b) Silica
(c) Activated carbon (d) All the above
10. A typical titration is based on a reaction between titrant and an _____
(a) Reagent (b) Analyte
(c) Indicator (d) Starch

Page 3 Code No. : 20619 E

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Define :
(i) Isotones
(ii) Isobars.
Or
(b) Explain stellar energy.
12. (a) Explain :
(i) Natural gas
(ii) Water gas.
Or
(b) Write any three uses of silicones.
13. (a) Explain about Electrometric effect.
Or
(b) Write any two properties of pyridine.
14. (a) Define :
(i) Phase rule
(ii) Reduced phase rule.
Or
(b) Write any three statements of first law of thermodynamics.

Page 4 Code No. : 20619 E

[P.T.O.]

15. (a) Discuss about distillation.

Or

(b) Write any three applications of column chromatography.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Discuss about :

(i) Group displacement law

(ii) Isotopes.

Or

(b) Explain the terms :

(i) Mass defect

(ii) Binding energy.

17. (a) Write short notes on:

(i) Producer gas

(ii) LPG.

Or

(b) Give any three properties and uses of silicones.

Page 5 Code No. : 20619 E

18. (a) What is meant by aromaticity? What are the essential conditions required for molecules to exhibit aromaticity?

Or

(b) Explain the following :

(i) Hyper conjugation

(ii) Steric effect.

19. (a) Explain about Pb-Ag system.

Or

(b) Discuss about the types of systems.

20. (a) Write any five principles of volumetric analysis.

Or

(b) Discuss about the principles and applications of paper chromatography.

Page 6 Code No. : 20619 E