



Maximum

Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)
Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination – June / July 2021
II Semester

Class : I UG
Major : Chemistry

Time : 3 Hours
Max. Marks : 100

18BCHC05 Basic Concepts of Chemistry - II

Part A
Choose the Correct Answer

10 x 1 = 10

- The "magic numbers" for atoms are
a. Numbers of electrons that confer atomic stability
b. Numbers of protons and/or neutrons that confer nuclear stability
c. n/p ratios that confer nuclear stability
d. Atomic masses that confer nuclear stability
CO1 K1
- Which isotope below has the highest nuclear binding energy per gram?
a. ${}^4\text{He}$
b. ${}^{16}\text{O}$
c. ${}^{32}\text{S}$
d. ${}^{55}\text{Mn}$
CO1 K1
- A radioactive source has a half-life of 80 Seconds. How long will it take for 7/8 of the source to decay?
a. 10 Seconds
b. 70 Seconds
c. 240 Seconds
d. 640 Seconds
CO2 K2
- Which nuclear fuel is usually used in thermal nuclear reactor to create fission?
a. U^{234}
b. U^{235}
c. U^{236}
d. U^{237}
CO2 K1
- Hydrolysis of $\text{CH}_3\text{CH}_2\text{NO}_2$ with 85% H_2SO_4 gives which of the following compound?
a. $\text{CH}_3\text{CH}_2\text{OH}$
b. C_2H_6
c. $\text{CH}_3\text{CH}=\text{NOH}$
d. CH_3COOH
CO3 K2
- When $-\text{COOH}$ is attached directly to the benzene ring the acid is called
a. Aliphatic
b. Alicyclic
c. Carboxylic
d. Aromatic
CO3 K1
- Acetoacetic ester is an example of
a. Methylene compounds
b. Active methylene compounds
c. Heterocyclic compound
d. Asymmetric compound
CO4 K1
- The ethyl derivative of acetoacetic ester on hydrolysis in the presence of strong alkali gives
a. Acetic acid
b. Acetic acid + Proponic acid
c. Butyric acid
d. Ethanoic acid
CO4 K2
- Fog is an example of which type of colloidal system?
a. Gas in liquid
b. Solid in gas
c. Gas in gas
d. Liquid in gas
CO5 K1
- Which of the following properties of colloids does not depend on the charge on particles?
a. Coagulation
b. Electro-osmosis
c. Electrophoresis
d. Tyndall effect
CO5 K2

Part B
Answer ALL questions

5 x 6 = 30

Each answer should not exceed 400 words or two pages

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|--------|---------------------------------------------------------------------|--------|
| 11. a. | Define i) Bonding Energy ii) n/p Ratio
(or) | CO1 K2 |
| 11. b. | Explain Radiotherapy. | CO1 K1 |
| 12. a. | Compare Half-life and average life.
(or) | CO2 K1 |
| 12. b. | Write about rock dating method. | CO2 K2 |
| 13. a. | Write Hell VolhardZelinsky reaction.
(or) | CO3 K2 |
| 13. b. | How the substituent are affect the acidity of the carboxylic acids. | CO3 K1 |
| 14. a. | Write Synthesis mechanism of 1,3 – dithianes.
(or) | CO4 K1 |
| 14. b. | Write preparation of malonic ester. | CO4 K2 |
| 15. a. | Write General applications of colloids.
(or) | CO5 K1 |
| 15. b. | Write properties of colloids. | CO5 K2 |

Part C
Answer ALL questions

5 x 12 = 60

Each answer should not exceed 800 words or four pages

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|--------|---------------------------------------------------------------------------------------------------------|--------|
| 16. a. | Explain any two Isotope separation methods.
(or) | CO1 K4 |
| 16. b. | Explain i. Aston's mass spectrograph ii. Dempster's mass spectrograph | CO1 K3 |
| 17. a. | Explain Nuclear reactor's
i) Core
ii) Moderator
iii) Control rods
iv) Nuclear fuels
(or) | CO2 K2 |
| 17. b. | Compare nuclear fission and nuclear fusion reactions. | CO2 K3 |
| 18. a. | Explain alkyl versus acyl substitution.
(or) | CO3 K3 |
| 18. b. | Write i. Reformatsky reaction ii. Trans Esterification | |

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|-----|----|-------------------------------------------------------------------------------------|--------|
| 19. | a. | List out the synthetic applications of acetoacetic ester.
(or) | CO3 K2 |
| 19. | b. | How the alkylation and acylation of enamines taking place. | CO4 K3 |
| 20. | a. | Explain i. Donnan membrane equilibrium ii. General applications of colloids
(or) | CO4 K2 |
| 20. | b. | Explain i. Brownian movement ii. Hardy Schulze law iii. Gold number | CO5 K3 |
