



The Open University of Sri Lanka  
Foundation Course in Science – 2014/2015  
Assignment Test (CAT) I

CMF 2206 - CHEMISTRY

Date: (Sunday) 1<sup>st</sup> March, 2015

Time: 9.30 am - 11.00 am

**Instruction to candidates**

- The paper consist of two parts ,Part A (20 MCQ) and Part B (2-structured essay)
- Choose the most correct answer to each question and mark a cross “X” over the answer on the answer sheet.
- Any answer with more than one cross will not be counted.
- Each correct answer will get 3 marks
- 0.5 marks will be deducted for each incorrect answer.
- The use of a non programmable electronic calculator is permitted
- Mobile phones must be switched off and kept away during examination.

විභාග අපේක්ෂකයන් සඳහා උපදෙස්

- ♦ මෙම ප්‍රශ්න පත්‍රය Part A (බහුවරණ 20 ) සහ Part B (ව්‍යුහගත රචනා 2) යන කොටස් දෙකකින් සමන්විතය.
- ♦ වඩාත්ම සුදුසු පිළිතුර තෝරා උත්තර පත්‍රයේ “X” මගින් සලකුණු කරන්න.
- ♦ එක් පිළිතුරකට වඩා සලකුණු කර ඇති පිළිතුරු සලකා බලනු නොලැබේ.
- ♦ සෑම නිවැරදි පිළිතුරක් සඳහා ලකුණු 3 ක් ලැබේ.
- ♦ සෑම වැරදි පිළිතුරක් වෙනුවෙන් ලකුණු 0.5 ක් අඩු කරනු ලැබේ.
- ♦ ප්‍රක්‍රමණය කළ නොහැකි ගණක යන්ත්‍ර භාවිතා කළ හැක.
- ♦ ජංගම දුරකථන ලග තබා ගැනීම තහනම් වේ.

**ANSWER ALL QUESTIONS**

සියලුම ප්‍රශ්න සඳහා පිළිතුරු සපයන්න.

**PART - A**

1. Which of the following is not the characteristic of alkali metals?

පහත දක්වා ඇති කුමක් ක්ෂාර ලෝහවල ලාක්ෂණික ගුණයක් නොවන්නේද?

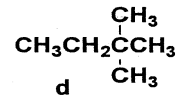
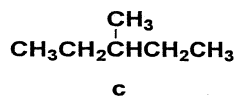
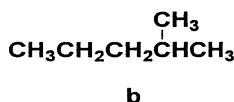
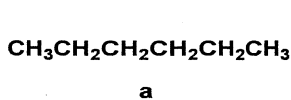
- (1) Low melting point. පහත් ද්‍රවාංකය
- (2) High ionization energy ඉහල අයනීකරණ ශක්තිය
- (3) Low electronegativity පහත් විද්‍යුත් ඊතනාවය
- (4) Their ions are isoelectronic with noble gases  
ඒවායේ අයන නිශ්ක්‍රීය වායු වල සම ඉලෙක්ට්‍රොනික ව්‍යුහ ඇත.
- (5) Non of the above ඉහත කිසිවක් නොවේ.

2. Sodium hydroxide does not react with සෝඩියම් හයිඩ්‍රොක්සයිඩ් සමඟ ප්‍රතික්‍රියා නොකරන්නේ

- (1) Cu                      (2) Al                      (3) Zn                      (4) Cl<sub>2</sub>                      (5) Fe

3. A reaction between an acid and alcohol produces an ester and  
අම්ලයක් මධ්‍යසාර සමඟ ප්‍රතික්‍රියා කර එස්ටරයක් හා තවත් ද්‍රව්‍යයක් ලබාදේ. එම ද්‍රව්‍යය වන්නේ
- (1) carbon dioxide (2) water (3) glycerol (4) ethanol (5) ether
4. The compound  $\text{CH}_3\text{COOCH}_3$  is classified as  
 $\text{CH}_3\text{COOCH}_3$  සංයෝගය වර්ගීකරණය කර ඇත්තේ පහත දැක්වෙන කුමක් ලෙසද?
- (1) an acid (2) an alcohol (3) an ester (4) a hydrocarbon. (5) a ketone
5.  $\text{C}_2\text{H}_4 + \text{H}_2 \longrightarrow \text{C}_2\text{H}_6$  The above reaction is an example of  
දී ඇති ප්‍රතික්‍රියාව පහත දැක්වෙන කුමක් සඳහා නිදසුනක් වේද?
- (1) addition (2) substitution (3) saponification (4) esterification (5) Condensation
6. Which one of the following metals is the **most** reactive?  
වඩාත්ම ප්‍රතික්‍රියාශීලී වන්නේ පහත දක්වා ඇති කිනම් ලෝහයද?
- (1) Li (2) Na (3) K (4) Cs (5) Rb
7. Which of the following are **incorrectly** paired?  
පහත දක්වා ඇති කිනම් යුගලය වැරදිලෙස යුගලගත කර ඇත්තේද?
- (1) Na, alkali metal (2) Br, halogen (3) Mg, alkaline earth metal  
(4) Ar, noble gas (5) Sn, lanthanide
8. The balanced molecular equation for complete neutralization of  $\text{H}_2\text{SO}_4$  by  $\text{KOH}$  in aqueous solution is  
ජලීය  $\text{KOH}$  සහ ජලීය  $\text{H}_2\text{SO}_4$  අතර සිදුවන සම්පූර්ණ උදාසීනකරනය දක්වන සමතුලිත සමීකරණය වන්නේ
- (1)  $\text{H}_2\text{SO}_4(\text{aq}) + 2 \text{KOH}(\text{aq}) \rightarrow 2 \text{H}_2\text{O}(\text{l}) + \text{K}_2\text{SO}_4(\text{s})$   
(2)  $\text{H}^+(\text{aq}) + \text{KOH}(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l}) + \text{K}^+(\text{aq})$   
(3)  $\text{H}_2\text{SO}_4(\text{aq}) + 2 \text{OH}^-(\text{aq}) \rightarrow 2 \text{H}_2\text{O}(\text{l}) + \text{SO}_4^{2-}(\text{aq})$   
(4)  $\text{H}^+(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow 2 \text{H}_2\text{O}(\text{l})$   
(5)  $\text{H}_2\text{SO}_4(\text{aq}) + 2 \text{KOH}(\text{aq}) \rightarrow 2 \text{H}_2\text{O}(\text{l}) + \text{K}_2\text{SO}_4(\text{aq})$

9. Consider the following molecules, all with molecular formula  $\text{C}_6\text{H}_{14}$   
 $\text{C}_6\text{H}_{14}$  අණුක සූත්‍රය සහිත පහත දැක්වෙන අණු සලකා බලන්න.



Which has the highest boiling point? ඉහලම තාපාංකය ඇති ද්‍රව්‍යය කුමක්ද?

- (1) a (2) b (3) c (4) d  
(5) All have the same boiling point because they have the same molecular formula

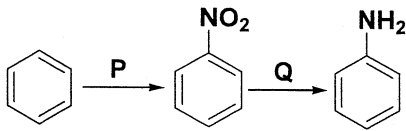
10. A sample of nitrogen collected in the laboratory occupies a volume of 725 cm<sup>3</sup> at a pressure of 9.74 x 10<sup>4</sup> Pa. What volume will the gas occupy at a pressure of 1.40 x 10<sup>5</sup> Pa, assuming the temperature remains constant?

විද්‍යාගාරයේ එකතු කළ නයිට්‍රජන් නියැදියක් 9.74 x 10<sup>4</sup> Pa පීඩනයේදී 725 cm<sup>3</sup> පරිමාවක් ගනී. උෂ්ණත්වය නියතව පවතින විටදී පීඩනය 1.40 x 10<sup>5</sup> Pa වූ විට වායුව අත් කර ගන්නා පරිමාව කොපමණද?

- (1) 504.4 cm<sup>3</sup>      (2) 530.4 cm<sup>3</sup>      (3) 305.0 cm<sup>3</sup>      (4) 706.6 cm<sup>3</sup>      (5) 1040 cm<sup>3</sup>

11. Select the correct reagents P and Q for the following reaction

පහත දැක්වෙන ප්‍රතික්‍රියාව සඳහා අවශ්‍ය P සහ Q ප්‍රතිකාරක නිවැරදි ලෙස තෝරන්න.



- (1) P = conc. HNO<sub>3</sub>    Q = Sn/HCl      (2) P = NaNO<sub>3</sub>    Q = Sn/HCl  
 (3) P = NaNO<sub>3</sub>    Q = NaNH<sub>2</sub>      (4) P = conc. H<sub>2</sub>SO<sub>4</sub>    Q = Sn/HCl  
 (5) P = conc. HNO<sub>3</sub>/ conc. H<sub>2</sub>SO<sub>4</sub>    Q = Sn/HCl

12. The value of standard pressure is සම්මත පීඩනයේ අගය වන්නේ

- (1) 760 Pa      (2) 1.01 x 10<sup>5</sup> bar      (3) 760 bar      (4) 1.01 x 10<sup>5</sup> Pa      (5) 76 mmHg

13. A sample of gas at 1.013 x 10<sup>4</sup> Pa had a volume of 12.5 dm<sup>3</sup> at 77 °C. What would its volume be at 27 °C at the same pressure?

උෂ්ණත්වය 77 °C සහ පීඩනය 1.013 x 10<sup>4</sup> Pa වන විටදී වායු නියැදියක පරිමාව 12.5 dm<sup>3</sup> වේ. එම පීඩනයේදී උෂ්ණත්වය 27 °C වූ විට එහි පරිමාව කොපමණ වේද

- (1) 10.7 dm<sup>3</sup>      (2) 1.07 dm<sup>3</sup>      (3) 4.37 dm<sup>3</sup>      (4) 12.13 dm<sup>3</sup>      (5) 3.76 dm<sup>3</sup>

14 The halide ions in the order of increasing degree of polarization.

හේලයිඩ අයනවල ධ්‍රැවීකරණ අංකය වැඩිවන අනුපිලිවෙලින් දක්වා ඇත්තේ

- (1) I<sup>-</sup> < Br<sup>-</sup> < Cl<sup>-</sup> < F<sup>-</sup>      (2) F<sup>-</sup> < Cl<sup>-</sup> < Br<sup>-</sup> < I<sup>-</sup>      (3) F<sup>-</sup> < Cl<sup>-</sup> < I<sup>-</sup> < Br<sup>-</sup>  
 (4) F<sup>-</sup> < I<sup>-</sup> < Br<sup>-</sup> < Cl<sup>-</sup>      (5) I<sup>-</sup> < Cl<sup>-</sup> < Br<sup>-</sup> < F<sup>-</sup>

15. The reagent which does not give a precipitate with a solution of BaCl<sub>2</sub> is.

BaCl<sub>2</sub> ද්‍රාවණයක් සමඟ අවක්ශේපයක් ලබා නොදෙන ප්‍රතිකාරකය වන්නේ

- (1) aqueous K<sub>2</sub>SO<sub>4</sub>      (2) aqueous CsNO<sub>3</sub>      (3) aqueous K<sub>2</sub>CO<sub>3</sub>  
 (4) aqueous AgNO<sub>3</sub>      (5) aqueous Na<sub>2</sub>SO<sub>3</sub>

16. The correct increasing order of basicity of

**CH<sub>3</sub>NH<sub>2</sub>, (CH<sub>3</sub>)<sub>3</sub>N, (CH<sub>3</sub>)<sub>2</sub>NH and NH<sub>3</sub> is**

ඉහත දක්වා ඇති ද්‍රව්‍යයන් ගේ භාෂ්මිකතාව වැඩිවන නිවැරදි අනුපිලිවෙල වන්නේ

- (1) NH<sub>3</sub> < (CH<sub>3</sub>)<sub>3</sub>N < CH<sub>3</sub>NH<sub>2</sub> < (CH<sub>3</sub>)<sub>2</sub>NH
- (2) NH<sub>3</sub> < CH<sub>3</sub>NH<sub>2</sub> < (CH<sub>3</sub>)<sub>2</sub>NH < (CH<sub>3</sub>)<sub>3</sub>N,
- (3) NH<sub>3</sub> < (CH<sub>3</sub>)<sub>2</sub>NH < CH<sub>3</sub>NH<sub>2</sub> < (CH<sub>3</sub>)<sub>3</sub>N,
- (4) (CH<sub>3</sub>)<sub>3</sub>N < (CH<sub>3</sub>)<sub>2</sub>NH < CH<sub>3</sub>NH<sub>2</sub> < NH<sub>3</sub>
- (5) (CH<sub>3</sub>)<sub>3</sub>N < CH<sub>3</sub>NH<sub>2</sub> < (CH<sub>3</sub>)<sub>2</sub>NH < NH<sub>3</sub>,

18. Calculate the mole fraction of neon in a container with a total pressure of  $1.03 \times 10^5$  Pa. The partial pressure of neon is  $5.15 \times 10^4$  Pa.

නියොන් අඩංගු භාජනයක සම්පූර්ණ පීඩනය  $1.03 \times 10^5$  Pa වන අතර නියොන් වායුවේ ආංශික පීඩනය  $5.15 \times 10^4$  Pa වේ නම් භාජනයේ ඇති නියොන් මෙහෙල භාගය වන්නේ

- (1) 1.0                      (2) 0.2                      (3) 0.15                      (4) 0.25                      (5) 0.5

19. The order of reactivity of alkali metals towards water is

ක්ෂාරීය ලෝහ ජලය සමඟ දක්වන ප්‍රතික්‍රියාශීලීතාවය අනුපිලිවෙලින් දක්වන්නේ

- (1) Li < Na < K < Rb < Cs                      (2) Cs < Li < Na < K < Rb
- (3) Li < Cs < Na < K < Rb                      (4) Li < K < Na < Rb < Cs
- (5) Li < Na < Rb < K < Cs

20 which of the following is the chemical formula of the compound

**Potassium hexacyanonickelate(II)**

පහත දක්වා ඇති කුමක් **Potassium hexacyanonickelate(II)** හි රසායනික සූත්‍රය වන්නේ ද

- (1) K<sub>6</sub>[Ni(CN)<sub>6</sub>]                      (2) K<sub>6</sub>[Ni(CN)<sub>4</sub>]                      (3) K<sub>4</sub>[Ni(CN)<sub>6</sub>]
- (4) K<sub>4</sub>[Ni(CN)<sub>4</sub>]                      (5) K<sub>4</sub>[Ni(CN)<sub>6</sub>(H<sub>2</sub>O)<sub>6</sub>]

The Open University of Sri Lanka  
Foundation in Science – 2014/ 2015  
CMF 2206 – Chemistry  
Assignment Test I

Index No.

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Name :- .....

This question paper consists of 2 **PARTS A & B.**

**PART A** carries 20 multiple choice questions

**PART B** carries two structured type questions.

**ANSWER ALL QUESTIONS**

**INSTRUCTIONS:**

Each item is a statement or question that may be answered by one of the five responses given.

There is only **one best** answer to every question. Mark a cross (X) over the most suitable answer. For

each correct response, **03** marks will be awarded. For each incorrect response, **0.5** marks will be deducted.

- |     |   |   |   |   |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
|-----|---|---|---|---|---|---|-----|---|---|---|---|---|---|-----|---|---|---|---|---|---|
| 1.  | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 2.  | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 3.  | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
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| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 7.  | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 8.  | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 9.  | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 10. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 11. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 12. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 13. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 14. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 15. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 16. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 17. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 18. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 19. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 20. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |

Unattempted Questions

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Correct Answers

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Wrong Answers

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Marks

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**PART – B**

- 1.(a) .A sample of nitrogen gas occupies a volume of  $2.0 \text{ dm}^3$  at  $57^\circ\text{C}$  and a pressure of  $3.3 \times 10^5 \text{ Pa}$ . What will be its volume if we increase the temperature to  $147^\circ\text{C}$  and the pressure change to  $1.4 \times 10^5 \text{ Pa}$ .

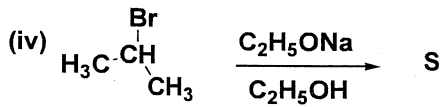
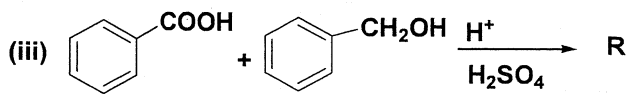
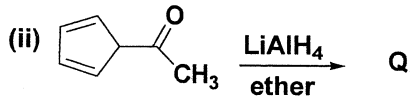
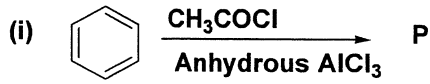
නයිට්‍රජන් වායු නියැදියකට  $57^\circ\text{C}$  උෂ්ණත්වයේ හා  $3.3 \times 10^5 \text{ Pa}$  පීඩනයේදී  $2.0 \text{ dm}^3$  ක පරිමාවක් ඇත. උෂ්ණත්වය  $147^\circ\text{C}$  දක්වා වැඩි කර පීඩනය  $1.4 \times 10^5$  දක්වා වෙනස් කළහොත් එය අත්කරගන්නා පරිමාව කොපමණ වේද?

- (b). Determine the oxidation number of iron in  $[\text{Fe}(\text{CN})_6]^{4-}$   
 $[\text{Fe}(\text{CN})_6]^{4-}$  හි අයන් වල ඔක්සිකරණ අංකය නිර්ණය කරන්න.

- (c) Write the complete balance equation for thermal decomposition of  $\text{CaCO}_3$  and  $\text{KNO}_3$   
 $\text{CaCO}_3$  සහ  $\text{KNO}_3$  වල තාප විඝෝෂනය සඳහා වන සම්පූර්ණ සමතුලිත සමීකරණ ලියා දක්වන්න.

2. (a). Predict the products (P-S) of the following reactions.

පහත දැක්වෙන (P-S) දැක්වූ වන ඵල පුරෝකථනය කරන්න.



(b) Write the electronic configuration of following ions  $\text{Cu}^{2+}, \text{Fe}^{3+}$  [Atomic number of Cu – 29 ,Fe – 26]  
 $\text{Cu}^{2+}$  සහ  $\text{Fe}^{3+}$  අයනවල ඉලෙක්ට්‍රෝනික වින්‍යාසය ලියන්න.



The Open University of Sri Lanka  
Foundation Course in Science – 2014/2015  
Assignment Test (CAT) I

CMF 2206 - CHEMISTRY



Date: (Sunday) 1<sup>st</sup> March, 2015

Time: 9.30 am - 11.00 am

**Instruction to candidates**

- The paper consist of two parts ,Part A (20 MCQ) and Part B (2-structured essay)
- Choose the most correct answer to each question and mark a cross “X” over the answer on the answer sheet.
- Any answer with more than one cross will not be counted.
- Each correct answer will get 3 marks
- 0.5 marks will be deducted for each incorrect answer.
- The use of a non programmable electronic calculator is permitted
- Mobile phones must be switched off and kept away during examination.

**ANSWER ALL QUESTIONS**

எல்லா வினாக்களுக்கும் விடையளிக்கുക.

**PART - A**

1. Which of the following is not the characteristic of alkali metals?  
கீழ் வருவனவற்றில் கார உலோகங்களின் இயல்பு அல்லாதது எது?
  - (1) Low melting point. தாழ்ந்த உருகு நிலை
  - (2) High ionization energy உயர் அயனாக்கல் சக்தி
  - (3) Low electronegativity தாழ்ந்த மின் எதிர்த்தன்மை
  - (4) Their ions are isoelectronic with noble gases  
இவற்றின் அயன்கள் விழுமிய வாயுக்களுடன் சம இலத்திரன்களைக் கொண்டுள்ளன.
  - (5) Non of the above மேற்கூறிய எதுவுமல்ல.
2. Sodium hydroxide does not react with  
சோடியமைதரொட்சைட் கீழ் வருவனவற்றில் எதுவுடன் தாக்கமடையாது.
  - (1) Cu
  - (2) Al
  - (3) Zn
  - (4) Cl<sub>2</sub>
  - (5) Fe
3. A reaction between an acid and alcohol produces an ester and  
அமிலத்திற்கும் அற்ககோலுக்கும் இடையிலான தாக்கத்தில் உருவாக்கப்படுவது எகத்தரும்.
  - (1) carbon dioxide
  - (2) water
  - (3) glycerol
  - (4) ethanol
  - (5) ether
4. The compound CH<sub>3</sub>COOCH<sub>3</sub> is classified as  
CH<sub>3</sub>COOCH<sub>3</sub> என்ற மூலக்கூறு பின்வருவனவற்றுள் எதுவுள் பாகுபடுத்தப்படுகிறது.
  - (1) an acid
  - (2) an alcohol
  - (3) an ester
  - (4) a hydrocarbon.
  - (5) a ketone



5.  $C_2H_4 + H_2 \longrightarrow C_2H_6$  The above reaction is an example of  
 $C_2H_4 + H_2 \longrightarrow C_2H_6$  இத்தாக்கம் பின்வருவனவற்றுள் எதற்கு உதாரணமாகும்.

(1) addition (2) substitution (3) saponification (4) esterification (5) Condensation

6. Which one of the following metals is the **most** reactive?  
 கீழ்வரும் உலோகங்களில் தாக்குதிறன் கூடியது எது?

(1) Li (2) Na (3) K (4) Cs (5) Rb

7. Which of the following are **incorrectly** paired?  
 கீழ்வருவனவற்றுள் தவறாக சோடியாக்கப்பட்டது எது?

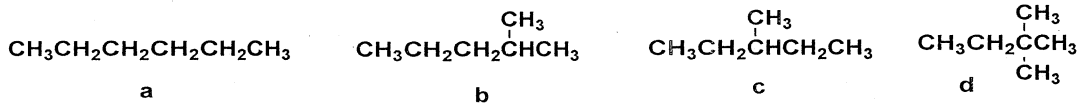
(1) Na, alkali metal (2) Br, halogen (3) Mg, alkaline earth metal  
 (4) Ar, noble gas (5) Sn, lanthanide

8. The balanced molecular equation for complete neutralization of  $H_2SO_4$  by KOH in aqueous solution is

$H_2SO_4$  ஆனது KOH நீர்க்கரைசலினால் முற்றாக நடுநிலையாக்கல் தாக்கத்திற்கான சமப்படுத்தப்பட்ட சமன்பாடு.

- (1)  $H_2SO_4(aq) + 2 KOH(aq) \rightarrow 2 H_2O(l) + K_2SO_4(s)$   
 (2)  $H^+(aq) + KOH(aq) \rightarrow H_2O(l) + K^+(aq)$   
 (3)  $H_2SO_4(aq) + 2 OH^-(aq) \rightarrow 2 H_2O(l) + SO_4^{2-}(aq)$   
 (4)  $H^+(aq) + OH^-(aq) \rightarrow 2 H_2O(l)$   
 (5)  $H_2SO_4(aq) + 2 KOH(aq) \rightarrow 2 H_2O(l) + K_2SO_4(aq)$

9. Consider the following molecules, all with molecular formula  $C_6H_{14}$   
 பின்வரும் மூலக்கூறுகளை கருதுக. எல்லாவற்றினதும் மூலக்கூற்றுச் சூத்திரம்  $C_6H_{14}$



Which has the highest boiling point? இவற்றுள் கொதிநிலை கூடியது எது?

- (1) a (2) b (3) c (4) d  
 (5) All have the same boiling point because they have the same molecular formula

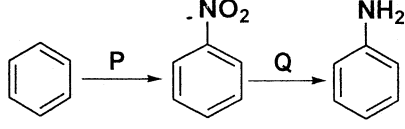
10. A sample of nitrogen collected in the laboratory occupies a volume of  $725 \text{ cm}^3$  at a pressure of  $9.74 \times 10^4 \text{ Pa}$ . What volume will the gas occupy at a pressure of  $1.40 \times 10^5 \text{ Pa}$ , assuming the temperature remains constant?

ஆய்வுகூடத்தில் சேகரிக்கப்பட்ட நைதரசன் மாதிரி  $9.74 \times 10^4 \text{ Pa}$  அழுக்கத்தில்  $725 \text{ cm}^3$  ஐ அடைக்கிறது.  $1.40 \times 10^5 \text{ Pa}$  அழுக்கத்தில் எவ்வளவு கனவளவை அடைக்கும் வெப்ப நிலை மாறிலி எனக் கருதுக.

- (1)  $504.4 \text{ cm}^3$  (2)  $530.4 \text{ cm}^3$  (3)  $305.0 \text{ cm}^3$  (4)  $706.6 \text{ cm}^3$  (5)  $1040 \text{ cm}^3$

11. Select the correct reagents P and Q for the following reaction

பின்வரும் தாக்கத்திற்கான சோதனைப் பொருள் P ஐயும் Q ஐயும் தெரிவு செய்க.



- (1) P = conc. HNO<sub>3</sub>    Q = Sn/HCl                      (2) P = NaNO<sub>3</sub>    Q = Sn/HCl  
 (3) P = NaNO<sub>3</sub>    Q = NaNH<sub>2</sub>                      (4) P = conc. H<sub>2</sub>SO<sub>4</sub>    Q = Sn/HCl  
 (5) P = conc. HNO<sub>3</sub>/ conc. H<sub>2</sub>SO<sub>4</sub>    Q = Sn/HCl

12. The value of standard pressure is நியம அழுக்கத்தின் பெறுமதி

- (1) 760 Pa    (2) 1.01 x 10<sup>5</sup> bar    (3) 760 bar    (4) 1.01 x 10<sup>5</sup> Pa    (5) 76 mmHg

13. A sample of gas at 1.013 x 10<sup>4</sup> Pa had a volume of 12.5 dm<sup>3</sup> at 77 °C. What would its volume be at 27 °C at the same pressure?

ஒரு வாயு மாதிரி 12.5 dm<sup>3</sup> இலும் 77 °C இலும் 1.013 x 10<sup>4</sup> Pa அழுக்கத்தைக் கொண்டிருந்தது. 27 °C இலும், சம அழுக்கத்திலும் எவ்வளவு கனவளவைக் கொண்டிருக்கும்.

- (1) 10.7 dm<sup>3</sup>    (2) 1.07 dm<sup>3</sup>    (3) 4.37 dm<sup>3</sup>    (4) 12.13 dm<sup>3</sup>    (5) 3.76 dm<sup>3</sup>

14 The halide ions in the order of increasing degree of polarization.

பின்வரும் அலசன் அயன்களின் முனைவுத்தன்மை அதிகரிக்கும் ஒழுங்கு,

- (1) I<sup>-</sup> < Br<sup>-</sup> < Cl<sup>-</sup> < F<sup>-</sup>                      (2) F<sup>-</sup> < Cl<sup>-</sup> < Br<sup>-</sup> < I<sup>-</sup>                      (3) F<sup>-</sup> < Cl<sup>-</sup> < I<sup>-</sup> < Br<sup>-</sup>  
 (4) F<sup>-</sup> < I<sup>-</sup> < Br<sup>-</sup> < Cl<sup>-</sup>                      (5) I<sup>-</sup> < Cl<sup>-</sup> < Br<sup>-</sup> < F<sup>-</sup>

15. The reagent which does not give a precipitate with a solution of BaCl<sub>2</sub> is.

BaCl<sub>2</sub> நீர்க்கரைசலுடன் வீழ்படிவொன்றைக் கொடுக்காத சோதனைப்பொருள்

- (1) aqueous K<sub>2</sub>SO<sub>4</sub>                      (2) aqueous CsNO<sub>3</sub>                      (3) aqueous K<sub>2</sub>CO<sub>3</sub>  
 (4) aqueous AgNO<sub>3</sub>                      (5) aqueous Na<sub>2</sub>SO<sub>3</sub>

16. The correct increasing order of basicity of

CH<sub>3</sub>NH<sub>2</sub>, (CH<sub>3</sub>)<sub>3</sub>N, (CH<sub>3</sub>)<sub>2</sub>NH and NH<sub>3</sub> is

கீழே தரப்பட்டவற்றின் காரத்தன்மை அதிகரிக்கும் ஒழுங்கு

- (1) NH<sub>3</sub> < (CH<sub>3</sub>)<sub>3</sub>N < CH<sub>3</sub>NH<sub>2</sub> < (CH<sub>3</sub>)<sub>2</sub>NH  
 (2) NH<sub>3</sub> < CH<sub>3</sub>NH<sub>2</sub> < (CH<sub>3</sub>)<sub>2</sub>NH < (CH<sub>3</sub>)<sub>3</sub>N,  
 (3) NH<sub>3</sub> < (CH<sub>3</sub>)<sub>2</sub>NH < CH<sub>3</sub>NH<sub>2</sub> < (CH<sub>3</sub>)<sub>3</sub>N,  
 (4) (CH<sub>3</sub>)<sub>3</sub>N < (CH<sub>3</sub>)<sub>2</sub>NH < CH<sub>3</sub>NH<sub>2</sub> < NH<sub>3</sub>  
 (5) (CH<sub>3</sub>)<sub>3</sub>N < CH<sub>3</sub>NH<sub>2</sub> < (CH<sub>3</sub>)<sub>2</sub>NH < NH<sub>3</sub>,

18. Calculate the mole fraction of neon in a container with a total pressure of  $1.03 \times 10^5$  Pa. The partial pressure of neon is  $5.15 \times 10^4$  Pa.

மொத்த அழுக்கம்  $1.03 \times 10^5$  Pa ஐக் கொண்டுள்ள கொள்ளளவி ஒன்றினுள் உள்ள நியோன் வாயுவின் மூல் பின்னத்தைக் கணிக்க. நியோனின் பகுதி அழுக்கம்  $5.15 \times 10^4$  Pa

- (1) 1.0                      (2) 0.2                      (3) 0.15                      (4) 0.25                      (5) 0.5

19. The order of reactivity of alkali metals towards water is

கார உலோகங்களின் நீருடனான தாக்குதிறன் ஒழுங்கு,

- (1)  $\text{Li} < \text{Na} < \text{K} < \text{Rb} < \text{Cs}$                       (2)  $\text{Cs} < \text{Li} < \text{Na} < \text{K} < \text{Rb}$   
(3)  $\text{Li} < \text{Cs} < \text{Na} < \text{K} < \text{Rb}$                       (4)  $\text{Li} < \text{K} < \text{Na} < \text{Rb} < \text{Cs}$   
(5)  $\text{Li} < \text{Na} < \text{Rb} < \text{K} < \text{Cs}$

20 which of the following is the chemical formula of the compound

**Potassium hexacyanonickelate(II)**

**Potassium hexacyanonickelate(II)** இன் இரசாயனச் சூத்திரம் பின்வருவனவற்றுள் எது?

- (1)  $\text{K}_6[\text{Ni}(\text{CN})_6]$                       (2)  $\text{K}_6[\text{Ni}(\text{CN})_4]$                       (3)  $\text{K}_4[\text{Ni}(\text{CN})_6]$   
(4)  $\text{K}_4[\text{Ni}(\text{CN})_4]$                       (5)  $\text{K}_4[\text{Ni}(\text{CN})_6(\text{H}_2\text{O})_6]$

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 Assignment Test I

Index No.

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Name :- .....

This question paper consists of 2 **PARTS A & B**.

**PART A** carries 20 multiple choice questions

**PART B** carries two structured type questions.

**ANSWER ALL QUESTIONS**

**INSTRUCTIONS:**

Each item is a statement or question that may be answered by one of the five responses given. There is only **one best** answer to every question. Mark a cross (X) over the most suitable answer. For each correct response, **03** marks will be awarded. For each incorrect response, **0.5** marks will be deducted.

- |     |   |   |   |   |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
|-----|---|---|---|---|---|---|-----|---|---|---|---|---|---|-----|---|---|---|---|---|---|
| 1.  | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 2.  | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 3.  | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
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| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 7.  | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 8.  | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 9.  | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 10. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 11. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 12. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 13. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 14. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 15. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 16. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 17. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 18. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 19. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 20. | <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> | 1 | 2 | 3 | 4 | 5 |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |
| 1   | 2   | 3 | 4 | 5 |   |   |     |   |   |   |   |   |   |     |   |   |   |   |   |   |

Unattempted Questions

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Correct Answers

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Wrong Answers

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Marks

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**PART – B**

- 1.(a) A sample of nitrogen gas occupies a volume of  $2.0 \text{ dm}^3$  at  $57^\circ\text{C}$  and a pressure of  $3.3 \times 10^5 \text{ Pa}$ . What will be its volume if we increase the temperature to  $147^\circ\text{C}$  and the pressure change to  $1.4 \times 10^5 \text{ Pa}$ .

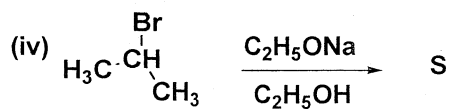
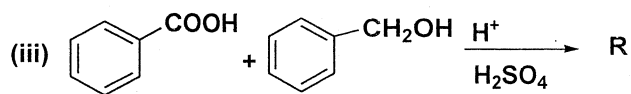
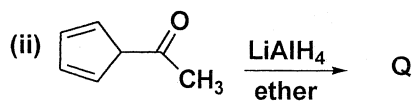
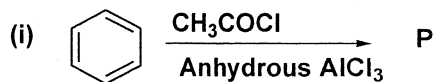
ஒரு நைதரசன் வாயு மாதிரி  $57^\circ\text{C}$  இலும்  $3.3 \times 10^5 \text{ Pa}$  அழுக்கத்திலும்  $2.0 \text{ dm}^3$  கனவளவை அடைக்கிறது. வெப்ப நிலையை  $147^\circ\text{C}$  ற்கும் அழுக்கம்  $1.4 \times 10^5$  ற்கும் மாற்றமடைகின்ற போது அதன் கனவளவு எவ்வளவு?

- (b). Determine the oxidation number of iron in  $[\text{Fe}(\text{CN})_6]^{4-}$   
 $[\text{Fe}(\text{CN})_6]^{4-}$  இல் இரும்பின் ஒட்சியேற்ற எண்ணைக் கணிக்கുക.

- (c) Write the complete balance equation for thermal decomposition of  $\text{CaCO}_3$  and  $\text{KNO}_3$   
 $\text{CaCO}_3$  இனதும்  $\text{KNO}_3$  இனதும் வெப்பப் பிரிகைக்கான பூரணமாக்கப்பட்ட சமப்படுத்திய சமன்பாட்டை எழுதுக.

2. (a). Predict the products (P-S) of the following reactions.

கீழ்வரும் தாக்கங்களுக்கான விளைவுகளை (P-S) கண்டுபிடிக்க.



(b) Write the electronic configuration of following ions  $\text{Cu}^{2+}, \text{Fe}^{3+}$  [Atomic number of Cu – 29, Fe – 26]

கீழே தரப்பட்ட அயன்களின் இலத்திரன் நிலையமைப்பை எழுதுக.  $\text{Cu}^{2+}$  மற்றும்  $\text{Fe}^{3+}$  (அணு எண் Cu – 29, Fe – 26)