

**SASMIRA'S INSTITUTE OF MAN-MADE TEXTILES**

An Autonomous Institute

**Nov/Dec. 2015 Examination**DIPLOMA COURSE IN MAN-MADE TEXTILE TECHNOLOGY/  
TEXTILE CHEMISTRY/KNITTING TECHNOLOGY  
(DMTT / DMTC / DKT)**I Semester ( Scheme – 2 )**

(Time Allowed - 3 hours)

(Marks - 80)

**BASIC CHEMISTRY**

- Instructions:**
1. All Questions are compulsory.
  2. Figures to the right indicate full marks.
  3. Use separate Answer Books for Section-I & Section-II.
  4. Illustrate your answer with neat sketches wherever necessary.
  5. Assume suitable additional data, if necessary.
  6. The Atomic weight of C, H, O are 12, 1, 16 respectively.
  7. Molecular weight of  $H_2SO_4$  is 98 amu

**SECTION – I**

- |  | <b>Marks</b> |
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| <b>1. Attempt any six.</b>   | <b>12</b>    |
| a) Define calibration.   |              |
| b) State Hund's Rule and define Quantum numbers.   |              |
| c) Define Valency. Give one example.   |              |
| d) Calculate molecular weight of NaOH<br>(At.wt.of Na = 23, O = 16 & H = 1)  |              |
| e) Define Standard solution and give its types.  |              |
| f) Define buffer and electrolyte.  |              |
| g) Define Redox reactions.   |              |
| h) Define and give one example of neutralisation reaction.   |              |
| <b>2. Attempt any four.</b>  | <b>16</b>    |
| a) Describe the procedure of calibration of pH meter.  |              |
| b) Define and explain electrovalency with suitable example..   |              |
| c) Explain any two types of acid base titrations with one suitable example of each.  |              |
| d) (i) Give any two ways of expressing concentration of solution. If 9.8 gm of $H_2SO_4$ is dissolved in 250 ml solution, calculate the normality of solution (equivalent weight of $H_2SO_4 = 49$ ) |              |
| (ii) Define and give example of indicators.  |              |
| e) Explain the calibration process for weighing balance.   |              |
| f) Differentiate between reversible and irreversible reactions.  |              |

- Marks**  
**12**
- 3. Attempt any two.**
- a) (i) Calculate the pH of 0.1 M NaOH solution.  
(ii) Define acid and base according to Arrhenius and Lowry Bronsted.  
(iii) Give the importance of pH scale.
  - b) (i) State Dulong-Petit's law.  
(ii) Write differences between atom and molecule.
  - c) Explain the structure of atom.

### SECTION –II

- 4. Attempt any six.** **12**
- a) State law of Reciprocal.
  - b) Give the names of Alkali Metals. What is their outer electronic configuration?
  - c) Give two uses of sodium thiosulphate.
  - d) What is the molecular formula of sodium sulphide and sodium hydrosulphite?
  - e) What happens when hydrochloric acid reacts with barium peroxide?
  - f) Write the molecular formula and uses of sulphuric acid.
  - g) State Graham's law of Diffusion.
  - h) Define strong and weak electrolyte.
- 5. Attempt any four** **16**
- a) State and explain law of conservation of mass.
  - b) Explain the following properties with respect to alkali metals :-  
(i) Electronegativity (ii) Melting Point (iii) Boiling Point
  - c) What is the action of following sodium :-  
(i) Air (ii) Water (iii) Hydrogen (iv) Acid
  - d) Give two chemical properties, two uses and molecular formula of - (i) Sodium Carbonate (ii) Potassium dichromate
  - e) Explain the action of following on sulphuric acid :-  
(i) Salt (ii)  $\text{FeSO}_4$
  - f) What is Green House effect?
- 6. Attempt any two** **12**
- a) Define - (i) Atomicity (ii) Absolute Density (iii) Vapour Density (iv) Partial Pressure.  
State and explain Daltons law of Partial Pressure.
  - b) What are the causes of Air Pollution? Give its effects and control Measures.
  - c) Give the molecular formula, two chemical properties and application of bleaching powder.
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