

Total No. of Question : [4]

Registration No. :

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Programme Name : F.Y.B.Tech
Regular F.Y.B.Tech. Sem. II ESE (2022 - 23) July 2023
II SEMESTER (2022 BATCH)
221FYL111-Applied Chemistry

Duration : 2 Hours

Marks : 50

Instructions :

(Q1) All Questions are compulsory [20.0]

(1.1) A water sample on analysis has been found to contains following salts; [6.0]

CaSO₄= 136 mg/lit. KCl = 123 mg/lit.

Mg(HCO₃)₂= 146 mg/lit. CaCl₂= 111 mg/lit.

MgCl₂= 95 mg/lit. Ca(HCO₃)₂= 162 mg/lit

Calculate temporary, permanent and total hardness of water.

CO :- 111.1

Blooms Taxonomy :- Remember, Understand, Apply

(1.2) Explain construction and working of glass electrode with diagram. [7.0]

CO :- 111.2

Blooms Taxonomy :- Remember, Understand

(1.3) What are plastics? Compare thermo-softening and thermosetting plastics. [7.0]

CO :- 111.3

Blooms Taxonomy :- Remember, Understand

(Q2) Attempt any two of the following [10.0]

(2.1) Explain principle, construction, and working of Boy's calorimeter with schematic diagram. [5.0]

CO :- 111.4

Blooms Taxonomy :- Remember, Understand, Apply

(2.2) Enlist twelve principles of green chemistry and explain any three principles. [5.0]

CO :- 111.4

Blooms Taxonomy :- Remember, Understand, Apply

(2.3) The following data were obtained in Boy's gas calorimeter experiments. [5.0]

Volume of gas used= 0.11 m³at STP

Weight of water heated= 25 Kg

Temperature of inlet water =25.7⁰C

Temperature of outlet water = 41.2⁰C

Weight of steam condensed = 0.024 Kg
Calculate high and low calorific value per m³ at STP
Take latent heat of condensation of steam is 587 Kcal/Kg

CO :- 111.4

Blooms Taxonomy :- Remember, Understand, Apply

(Q3) Attempt any two of the following [10.0]

(3.1) Discuss properties and applications of graphite. [5.0]

CO :- 111.5

Blooms Taxonomy :- Remember, Understand

(3.2) Explain structure and properties of Carbon-nanotubes. [5.0]

CO :- 111.5

Blooms Taxonomy :- Remember, Understand

(3.3) Define nanomaterial. Explain Top-down and Bottom-up approaches for synthesis of nanomaterial. [5.0]

CO :- 111.5

Blooms Taxonomy :- Remember, Understand

(Q4) Attempt any two of the following [10.0]

(4.1) Write an informative note on H₂-O₂ fuel cells. [5.0]

CO :- 111.6

Blooms Taxonomy :- Remember, Understand

(4.2) Explain construction and working of nickel-cadmium battery. [5.0]

CO :- 111.6

Blooms Taxonomy :- Remember, Understand

(4.3) Discuss in detail carbon-zinc cell. [5.0]

CO :- 111.6

Blooms Taxonomy :- Remember, Understand
