

No Preview  
Available

Total No. of Question : [4]

Registration No. :

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**Programme Name : F.Y.B.Tech**  
**Regular F.Y.B.Tech. ESE Sem. I (A.Y.2023-24) Dec.2023**  
**I SEMESTER ( 2023 BATCH)**  
**231FYL112-Applied Chemistry**

Duration : [ 02:00 PM - 04:00 PM ]

Date : 21 Dec, 2023

Day : Thursday

Marks : 50

**Instructions :**

(Q1) All Questions are compulsory [20.0]

(1.1) Calculate temporary and permanent Hardness of water sample having following [7.0]

analysis in mg/l.

$\text{Mg}(\text{HCO}_3)_2 = 70 \text{ mg/l}$

$\text{Ca}(\text{HCO}_3)_2 = 185 \text{ mg/l}$

$\text{CaSO}_4 = 150 \text{ mg/l}$

$\text{MgSO}_4 = 30 \text{ mg/l}$

$\text{CaCl}_2 = 110 \text{ mg/l}$

**CO :- 112.1**

**Blooms Taxonomy :- Understand**

(1.2) Discuss in detail Construction, working and applications of UV-visible [7.0]  
spectrophotometer with neat labeled diagram

**CO :- 112.2**

**Blooms Taxonomy :- Understand**

(1.3) Explain in brief composition, properties and applications of Fiber Reinforced plastic [6.0]  
(FRP)

**CO :- 112.3**

**Blooms Taxonomy :- Understand**

(Q2) All Questions are compulsory [10.0]

(2.1) Define Fuel. Enlist any five characteristics of good fuels. [5.0]

**CO :- 112.4**

**Blooms Taxonomy :- Understand**

(2.2) Following observations were made in Boyles Gas Calorimeter experiment [5.0]

Volume of gas used =  $0.1 \text{ m}^3$  at STP

Weight of water heated = 25 kg

Initial temperature of water = 20 °C

Final Temperature of water = 33 °C

Weight of steam condensed = 0.025 kg

Calculate gross and net calorific value. Take latent heat of vaporization as 540 kcal/kg.

**CO :- 112.4**

**Blooms Taxonomy :- Understand**

**OR [ 2.2 / 2.3 ]**

(2.3) Explain in brief Construction and Working of H<sub>2</sub>-O<sub>2</sub> fuel cells. [5.0]

**CO :- 112.4**

**Blooms Taxonomy :- Understand**

(Q3) All Questions are compulsory [10.0]

(3.1) Define Nanomaterials. Explain Synthesis approaches of nanomaterials. [5.0]

**CO :- 112.5**

**Blooms Taxonomy :- Understand**

(3.2) Discuss in detail characteristics and Applications of Fullerenes [5.0]

**CO :- 112.5**

**Blooms Taxonomy :- Understand**

**OR [ 3.2 / 3.3 ]**

(3.3) Discuss in detail characteristics and Applications of Nanowires. [5.0]

**CO :- 112.5**

**Blooms Taxonomy :- Understand**

(Q4) Attempt any two out of three questions [10.0]

(4.1) Explain Construction and working of Carbon zinc cell with labled diagram. [5.0]

**CO :- 112.6**

**Blooms Taxonomy :- Understand**

(4.2) Enlist any five applications of lithium ion Batteries. [5.0]

**CO :- 112.6**

**Blooms Taxonomy :- Understand**

(4.3) Define Green Chemistry. Enlist any five principles of Green Chemistry. [5.0]

**CO :- 112.6**

**Blooms Taxonomy :- Understand**

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