**D.Y.PATIL COLLEGE OF ENGINEERING & TECHNOLOGY**

**Set-: I**

**Q. Paper Code:**

**23FY111101**

**KASABA BAWADA KOLHAPUR-416006**

**(An Autonomous Institute)**

F. Y. B. Tech

**END SEMESTER EXAMINATION (ESE), March. – 2023**

Course Name: **Applied Chemistry**, Course Code: **221FYL111**

Seat No:

**Day and Date: Friday, 03.03.2023**

**Time: 2.00 pm to 4.00 pm Max. Marks- 50**

***Instructions:***

1. *Figure to the right indicate full marks.*
2. *Give suitable general Instructions*
3. *Any other Course Specific Instructions*

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| --- | --- | --- | --- | --- | --- |
| **BT** | **CO’s** | **Q.No.** |  | | **Marks** |
|  |  | **Q.1** | **All Questions are compulsory** | | **20** |
|  | **CO2** | **a** | Calculate the carbonate and non-carbonate hardness of a sample of water containing following salts.   |  |  |  | | --- | --- | --- | | Sr.No. | Salts | Qty.in ppm | | 1 | MgCI2 | 95 | | 2 | MgSO4 | 48 | | 3 | Ca( HCO3)2 | 16.2 | | 4 | Mg( HCO3)2 | 14.6 | | 5 | KCI | 12 |   Express your results in ppm, Clarke’s degree and French degree. |  | **6M** |
| **1,2** | **CO1** | **b** | Explain principle, instrumentation and working of GLC with schematic diagram and applications. | **7 M** |
| **1,2** | **CO1** | c | What are plastics? Distinguish between Thermoplastic and Thermosetting. | **7 M** |
|  | | | | | |
|  |  | **Q.2** | **All Questions are compulsory (**internal sub question permitted for optional questions either a or b) | | **10** |
| **1,2** | **CO2** | **a** | What are the characteristics of good fuel? |  | **4** |
| **1,2** | **CO1** | **b** | The following observation were made in Boy’s gas calorimeter experiment  1)Volume of gas used = 0.1m3 at STP  2)Weight of water heated = 25kg  3)Initial temperature of water = 200 C  4)Final temperature of water = 330 o C  5)Weight of steam condensed = 0.025kg  Calculate the gross and net calorific value per cubic meter at STP of sample gas. Take latent heat of vaporization as 580 kcal/kg. | **6** |
|  | | | | | |
|  |  | **Q.3** | **All Questions are compulsory (**internal sub question permitted for optional questions either a or b) | | **10** |
| **1,2** | **CO1** | **a** | What is graphite? Give its characteristics and applications. |  | **3** |
| **1,2** | **CO1** | **b** | What are the carbon nanotubes? Explain their types with respect to their structure and applications in detail? | **7** |
|  | | | | | |
|  |  | **Q.4** | **Attempt any two out of three questions** | | **10** |
| **1,2** | **CO1** | **a** | What are lithium batteries? Mention few outstanding features in comparison with conventional batteries. |  | **5** |
| **1,2** | **CO1** | **b** | What is a primary battery? Mention few examples. What are limitations of primary cells? | **5** |
| **1,2** | **CO1** | **C** | What are fuel cells? Give its classification advantages and applications. | **5** |

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