

**Set-III**

**Q. Paper Code:**

**22FY106202**

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

**KASABA BAWADA KOLHAPUR-416006**

**(An Autonomous Institute)**

F. Y. B. Tech (All), Sem-I

**Backlog Exam (END SEMESTER EXAMINATION), August. – 2022**

Course Name: Engineering Chemistry, Course Code: 201GEL106

Seat No:

**Day and Date: Tuesday,23/08/2022**

**Time: 10.00 am to 12.00 pm Max. Marks- 50**

***Instructions:***

1. *Question No. 1 is compulsory.*
2. *Figure to the right indicate full marks.*
3. *Give suitable general Instructions*

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| **BT** | **CO’s** | **Q.No.** |  | | **Marks** |
|  |  | **Q.1** | **All Questions are compulsory** | | **20** |
|  |  | **a** | Calculate the carbonate and non-carbonate hardness of a sample of water containing   1. Mg(HCO3)2=12 mg/l 2. Ca(HCO3)=15 mg/l 3. CaCl2=10 mg/l 4. MgSO4=20 mg/l |  | **6** |
|  |  | **b** | Give applications of GLC  Explain source, prism and sample holder used in Single beam spectrophotometer. | **7** |
|  |  | **c** | Explain preparation, properties and applications of Phenol formaldehyde resin. | **7** |
|  | | | | | |
|  |  | **Q.2** | **Attempt (any one optional question mandatory for sub questions) following** | | **10** |
|  |  | **a** | Define Fuel cell. Give construction and working of Hydrogen oxygen Fuel cell.  OR  Define Calorific Value and explain units used to measure calorific value. |  | 4 |
|  |  | **b** | The following observations were made in Boys Gas calorimeter experiment   1. Volume of gas burnt=0.1 m3 2. Mass of water heated =24 kg 3. Rise in temp of water =120 C 4. Weight of steam condensed =0.024 kg 5. Latent heat of steam=580 kcal/kg   Calculate gross and net calorific values of the gas | 6 |
|  | | | | | |
|  |  | **Q.3** | **Attempt (any one optional question mandatory for sub questions) following** | | **10** |
|  |  | **a** | Explain structure of CNT  OR  Give applications of Nanowires |  | 3 |
|  |  | **b** | Explain Properties and applications of Grahene | 7 |
|  | | | | | |
|  |  | **Q.4** | **Attempt (any one optional question mandatory for sub questions) following** | | **10** |
|  |  | **a** | Give Construction and working of primary Lithium cell. |  | 5 |
|  |  | **b** | Explain construction and working of rechargeable alkaline storage battery  OR  Explain five principles of green chemistry | 5 |

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