Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **18CH1003** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ENGINEERING CHEMISTRY** | **Max. Marks :** | **100** |

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| **Q. No.** | **Questions** | **Course Outcome** | **Marks** |
|  | **PART – A (10X1=10 MARKS)** | | |
| 1. | Identify the number of covalent bonds in methane. | CO1 | 1 |
| 2. | The hybridization of Carbon in diamond and graphite is \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_ respectively. | CO1 | 1 |
| 3. | The additive used to increase the cross linking reaction in thermosetting polymer is\_\_\_\_\_\_\_\_\_\_. | CO2 | 1 |
| 4. | Give an example for natural polymer. | CO2 | 1 |
| 5. | How are nanomaterials classified based on their dimension? | CO3 | 1 |
| 6. | Expand CVD and XRD. | CO3 | 1 |
| 7. | Expand the term: TEL. | CO4 | 1 |
| 8. | The amount of heat required to raise the temperature of 1 gram of water through 1oC is called \_\_\_\_\_\_\_\_\_\_\_. | CO4 | 1 |
| 9. | Sensors which transform the effect of the electrochemical interaction analyte – electrode into a useful signal are known as \_\_\_\_\_\_\_\_\_\_. | CO5 | 1 |
| 10. | The formula to calculate the EMF of the cell is \_\_\_\_\_\_\_\_\_\_. | CO5 | 1 |

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|  | **PART – B (6 X 3 = 18 MARKS)** | | |
| 11. | Differentiate between inter and intra molecular hydrogen bonding. | CO1 | 3 |
| 12. | Discuss the applications of PVC in detail. | CO2 | 3 |
| 13. | Expand SAM. Give example. | CO3 | 3 |
| 14. | Calculate the GCV of coal having the following compositions. Carbon = 80%, Hydrogen = 6%, Sulphur = 5%, Nitrogen = 6%, Ash = 4%, latent heat of steam = 587 cal/g. | CO4 | 3 |
| 15. | Give any two significances of electrochemical series. | CO5 | 3 |
| 16. | Describe briefly about colloidal solution. | CO6 | 3 |

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|  | **PART – C (6 X 12= 72 MARKS)**  **(Answer any five Questions from Q.no 17 to 23. Q.No 24 is a Compulsory Question)** | | | |
| 17. |  | Give a detailed account of ionic bonding and hydrogen bonding. | CO1 | 12 |
| 18. | a. | Describe the advantages of vulcanization of rubber briefly. | CO2 | 6 |
| b. | Explain the preparation, properties and uses of epoxy resin. | CO2 | 6 |
| 19. |  | List out the applications of nanomaterials in day today life. | CO3 |  |
| 20. |  | Illustrate ultimate analysis with its significance. | CO4 | 12 |
| 21. |  | Discuss in detail about the biogas plant with neat diagram. Give its limitations and advantages. | CO4 | 12 |
| 22. |  | Describe the construction of H2- O2 fuel cell. Give its advantages. | CO5 | 12 |
| 23. |  | Derive Nernst Equation for single electrode potential. Give its applications. | CO5 | 12 |
|  | **Compulsory:** | | | |
| 24. | a. | Differentiate between physisorption and chemisorption. | CO6 | 6 |
| b. | Write a note on the applications of colloids in various fields. | CO6 | 6 |