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



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

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| **Code :** | **19CH1004** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ENGINEERING CHEMISTRY FOR AEROSPACE ENGINEERING** | **Max. Marks :** | **100** |

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| **Q. No.** | **Questions** | **Course Outcome** | **Marks** |
| **PART – A (10 X 1 = 10 MARKS)** | | | |
| 1. | Which is the correct example of covalent compound?  (a) NaCl (b) CH4 (c) HCl (d) NaOH | CO1 | 1 |
| 2. | Atoms undergo bonding in order to \_\_\_\_\_\_\_\_\_.  (a) Attain stability (b) Lose stability (c) Move freely (d) increase energy | CO1 | 1 |
| 3. | Hardness of water is conventionally expressed in terms of equivalent amount of  (a) H2CO3  (b) MgCO3 (c) CaCO3 (d) Na2 CO3 | CO2 | 1 |
| 4. | All carbonate and bicarbonates are \_\_\_\_\_\_\_\_\_\_\_.  (a) Alkaline (b) Acidic (c) Highly acidic (d) Neutral | CO2 | 1 |
| 5. | Nylon is a:  (a) Biological polymer (b) Synthetic polymer (c) Copolymer  (d) All the above | CO3 | 1 |
| 6. | Which is the correct example of isotactic polymer?  (a) Rubber (b) polypropylene (c) PVC (d) polystyrene | CO3 | 1 |
| 7. | Arrange wood, peat, lignite, bitminuous coal and anthracite in decreasing order of their moisture contents. | CO4 | 1 |
| 8. | What is the approximate composition in terms of hydrocarbon containing C atoms in Petrolium Ether?  (a). C2-C6 (b). C4-C8 (c). C5-C7 (d). C6-C9 | CO4 | 1 |
| 9. | In electrochemical corrosion processes corrosion take place.  (a) At the cathode (b) At the anode (c) At the cathode or anode  (d) None of the above | CO5 | 1 |
| 10. | In HCHO → HCOOH conversion, indicate whether oxidation or reduction is occurring.  (a) Redox (b) Oxidation (c) Reduction (d) both a & b | CO5 | 1 |

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| **PART – B (6 X 3 = 18 MARKS)** | | | |
| 11. | Explain why H-O-H bond angel in H2O molecule is shorter than 109.5o . | CO1 | 3 |
| 12. | Differentiate between scale and sludges. | CO2 | 3 |
| 13. | Point out any two differences between thermosetting plastics and thermoplastics. | CO3 | 3 |
| 14. | Define fuels and how its forming. | CO4 | 3 |
| 15. | Explain Redox reactions with example. | CO5 | 3 |
| 16. | Write down applications of UV spectrometer. | 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. | a. | Write down the electronic configurations for H2, Be2, C2and F2using MO theory. | CO1 | | 4 |
| b. | Draw molecular orbital diagram of O2 molecule and find out bond order and magnetic properties. | CO1 | | 8 |
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| 18. | a. | How does the boiler corrosion happen in (DO & CO2) method? | CO2 | | 4 |
| b. | A sample of water is found to contains following dissolving salts in milligrams per litre Mg(HCO3)2 = 73, CaCl2 = 111, Ca(HCO3)2 = 81. Calculate temporary and permanent hardness and total hardness. | CO2 | | 8 |
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| 19. | a. | Illustrate the Taxicity of Polymers. | CO3 | | 4 |
| b. | Explain the role of ingredients used in moulding of plastics with examples. | CO3 | | 8 |
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| 20. | a. | Write down calorific value and Dulong’s formula. | CO4 | | 4 |
| b. | Explain flue gas analysis by Orsat method and rocket propellants. | CO4 | | 8 |
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| 21. | a. | Define types of corrosion. | CO5 | | 4 |
| b. | Explain Lead acid battery and fuel cells. | CO5 | | 8 |
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| 22. | a. | Express the sp3 Hybridization with an example. | CO1 | | 4 |
| b. | Draw the MO diagram of N2 molecular and find its bond order and magnetic property. | CO1 | | 8 |
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| 23. | a. | Define addition polymer, condensation polymer and copolymer. | CO3 | | 4 |
| b. | Write down preparation, properties and uses of polyethylene, polyvinyl chloride and Bakelite. | CO3 | | 8 |
|  |  | **Compulsory:** | | | |
| 24. | a. | Arrange benzene, anapthalene, and anthracene in increasing order of λmax. | | CO6 | 4 |
| b. | Calculate (i) the frequency (ii) wave number (iii) energy in ergs for typical UV radiation of 2000 Å.  Question No.24 from Module 6 | | CO6 | 8 |