

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2017 - 18 Examination

Semester:3**Subject Code: 03103201****Subject Name: Physical & Inorganic Chemistry****Date: 09/06/2018****Time: 2:00pm to 4:30pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (All are compulsory) (Each of one mark)**(15)**

1. Shape of S orbital _____
 - a) Dumbbell
 - b) Double dumbbell
 - c) Circle
 - d) Triangle
2. Human blood PH is _____
 - a) 7.5
 - b) 6
 - c) 6.5
 - d) 6
3. which is the indicator electrode
 - a) Hydrogen
 - b) redox
 - c) Ag/AgCl₂
 - d) Glass
4. What is the bond order in O₂ molecule?
 - a) 2
 - b) 1
 - c) 4
 - d) 3
5. what is the value of faraday in coulomb?
 - a) 95600
 - b) 96500
 - c) 96050
 - d) 69800
6. Explain heat of combustion.
7. What do you understand by zero order reaction?
8. Define: Propellant
9. State one application of differential thermal analysis (DTA).
10. Write-down the Nernst's equation for half-cell.
11. Degree of freedom (F)= _____
12. $\text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O} \longrightarrow$ _____
13. Second order reaction= _____
14. Bond energy of ionic bond _____ K Cal/Mole
15. Give examples of hydrogen bond _____

- Q.2** Answer the following questions. (Attempt any three) **(15)**
- A)** Define Hydrogen bonding and differentiate between intermolecular and intramolecular hydrogen bonding giving suitable example.
 - B)** Explain Nernst's equation.
 - C)** Explain entropy and free energy for thermodynamic chemical reaction.
 - D)** Give differences between fusion nuclear reaction and fission nuclear reaction
- Q.3A)** What is Phase rule and define terms used in it. What is triple point and explain one component system in detail with one example. **(07)**
- B)** Explain metallurgy? Write in detail the specific methods available to extract the metal from its Ore **(08)**
- OR**
- B)** Give a brief account of buffers. What are different types of buffers? Derive equation for pH of acidic buffers **(08)**
- Q.4A)** Derive the rate equation for the first order reaction and show that: **(07)**
- (I) Half-life is independent of initial concentration.
 - (ii) The rate constant is independent of concentration
- OR**
- A)** Define explosives? Give classification of explosives with suitable examples and write preparation of following explosives: **(07)**
- (I) PETN
 - (II) RDX
- B)** What is chromatography? Explain Gas Chromatography in brief with schematic diagram **(08)**