	Sanjay Ghodawat University, Kolhapur Established as State Private University under Govt. of Maharashtra. Act No XL, 2017		2019-20
	Year and Program: 2019-20 T. Y. B.Sc.	School of Science	Department of Chemistry
Course Code: CHS 303	Course Title: Inorganic chemistry	Semester – V	
Day and Date: Thursday 21/11/19	End Semester Examination	Time: 1/2 hrs, Max Marks: 100 1030am to 11am.	
PRN:	Seat No:	Section A Marks out of 20:	
Jr. Supervisor sign:		Student Sign:	

Section A


- Instructions:** 1) All Questions are compulsory.
 2) For MCQs mark tic (✓) for correct answer. No marks for multiple tics (✓).
 3) Section A should be submitted to Jr Supervisor immediately after first 30 min.

Q.1	Choose the correct alternative for the following.	Marks 20	Bloo m's level	CO
1	Which allotrope of carbon has a two dimensional sheet like structure? a) Diamond b) Coke c) Graphite d) Coal	1	L1	1
2	Aluminium and beryllium have similar properties because _____ a) They have same polarizing power b) They have same charge c) They have similar electronic configuration d) They belong to same group	1	L2	1
3	The structure of diborane has _____ a) Four bridged hydrogen and two terminal hydrogen b) Two bridged hydrogen and four terminal hydrogen c) Three bridged hydrogen and three terminal hydrogen d) Two bridged hydrogen and three terminal hydrogen	1	L1	1
4	Carbonyls in which one metal atom is linked with number of CO groups _____ is called _____ nuclear carbonyls. a) Poly b) Tri c) Bi d) Mono	1	L1	2

- 5 In organometallic compounds the M-L-M bridge bonding is indicated by suffix _____ 1 L2 2
 a) η
 b) L
 c) Γ
 d) μ
- 6 Which of the following compound obeys 18 electron rule? 1 L2 2
 a) $[(C_2H_4) Fe (CO)_3]$
 b) $[V(CO)_6]$
 c) $Fe(CO)_5$
 d) $Mo(CO)_6$
- 7 Sodium pump transports _____ ion into the cell. 1 L1 3
 a) Na
 b) Ca
 c) K
 d) Mg
- 8 There are _____ heme groups in hemoglobin. 1 L1 3
 a) 3
 b) 1
 c) 2
 d) 4
- 9 Generally, Na^+ is present in extracellular part while _____ is present in the intracellular part in the biological process. 1 L2 3
 a) K^+
 b) Ca^{2+}
 c) Fe^{3+}
 d) Mg^{2+}
- 10 In blood iron is stored as _____ 1 L2 3
 a) Transferrin
 b) Hemoglobin
 c) Ferritin
 d) Fe(II) myoglobin
- 11 Biological functions of carbonic anhydrase and carboxy peptidase are 1 L2 3
 a) Interconversion of CO_2 and carbonates and gene regulation
 b) Gene regulation and hydrolysis of peptide bond
 c) Gene regulation and Interconversion of CO_2 and carbonates
 d) Interconversion of CO_2 and carbonates and hydrolysis of peptide bond.

- 12 The function of hemoglobin is to _____
 a) Transport O_2
 b) Store O_2
 c) Transport N_2
 d) Store N_2 1 L2 3
- 13 The elements which are absolutely necessary for life process are _____
 a) Trace
 b) Essential
 c) Both trace and essential
 d) Non essential 1 L2 3
- 14 Silicones are the examples of _____ polymer.
 a) Organic
 b) Analytical
 c) Inorganic
 d) Biological 1 L2 4
- 15 _____ do not form Clathrates.
 a) Kr and Ne
 b) Xe and Rn
 c) Ar and Kr
 d) He and Ne 1 L2 4
- 16 Examine which pairing is incorrect?
 a) $[XeF_5]^-$; pentagonal planar
 b) XeO_3 ; trigonal planar
 c) XeF_4 ; square planar
 d) $[XeF_3]^+$; T-shaped 1 L2 4
- 17 Polymeric organo-silicon compounds containing Si-O-Si bonds are called _____
 a) Siloxanes
 b) Silicates
 c) Silicones
 d) Polysilicates 1 L1 4
- 18 Phosphonitrilic polymers contain structural units of unsaturated _____ linkages.
 a) $\begin{array}{c} | \\ -C=N- \end{array}$
 b) $-B=N-$
 c) $-P=N-$
 d) $\begin{array}{c} | \\ -P=N- \\ | \end{array}$ 1 L2 4

- 19 _____ allotrope of phosphorous has only P_4 tetrahedral molecule. 1 L2 4
- a) Red
 - b) Black
 - c) White
 - d) Orthorhombic
- 20 _____ is a class of compounds in which one element/compound is placed inside the cage like structure of another compound. 1 L1 4
- a) Clathrates hydride
 - b) Gas clathrates
 - c) Hydrates
 - d) Clathrates

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Course Code: CHS 303	Course Title: Inorganic chemistry	Semester – V	
Day and Date: Thursday 21/11/19	End Semester Examination	Time: 2 hrs, Max Marks: 100 11am to 1.30pm	
PRN:	Seat No:	Section B Marks out of 80	

Section B

		Marks	level	CO
Q.2	Attempt any two of the following.	12		
a)	Explain the anomalous behavior of boron and lithium.	6	L2	1
b)	Write a note on 1. Inert pair effect 2. Catenation	6	L1	1
c)	Discuss the structure, preparation and application of carboranes.	6	L2	1
Q.3	Attempt any two of the following.	12		
a)	Explain the structure of $\text{Fe}(\text{CO})_5$ on the basis of VBT.	6	L3	2
b)	Give preparation and reactions of ferrocene.	6	L2	2
c)	What are organometallic compounds? Explain their classification on the basis of types of bonds.	6	L2	2
Q.4	a) Attempt any two of the following.	12		
i)	Discuss the nature of the toxicity of Hg, Cd and As metals.	6	L2	3
ii)	Describe the structure and function of carbonic anhydrase with mechanism.	6	L3	3
iii)	Discuss the mechanism of intake of oxygen by hemoglobin and myoglobin.	6	L4	3

b)	Attempt any four of the following.	16		
i)	Illustrate the applications of iron in bio-system.	4	L3	3
ii)	Discuss essential and trace elements in biochemical process.	4	L2	3
iii)	Draw the structure of Hemoglobin and Myoglobin.	4	L3	3
iv)	Explain the biological role of Al and Co elements.	4	L2	3
v)	Give an schematic representation of Na^+/K^+ transport.	4	L2	3

Q.5 a)	Attempt any two of the following.	16		
i)	What are silicates? Explain the types of silicates with suitable examples.	8	L1	4
ii)	Draw the molecular shapes of XeOF_2 , XeF_6 , XeO_3F_2 and XeF_2 .	8	L3	4
iii)	Define inorganic polymers? Illustrate the types of inorganic polymers.	8	L1	4
b)	Attempt any three of the following.	12		
i)	Explain preparation and structure of XeF_4 .	4	L2	4
ii)	Write a note on Borazines.	4	L1	4
iii)	Compare organic polymer and inorganic polymer.	4	L4	4
iv)	Discuss the properties and uses of noble gases.	4	L3	4
