SESSIONAL EXAMINATION-2021, S. B. DEORAH COLLEGE

CHEMISTRY (Major, 6th Semester)

PAPER M 604 (Inorganic Chemistry)

Total Marks: 30 ***Time: 90 mins***

1. What is meant by lanthanide contraction? **1**
2. Name the metal ion present in the metalloenzyme carbonic anhydrase. **1**
3. What is a radioactive disintegration series? **1**
4. What is the unit of radioactivity? **1**
5. On what factor does the half-life of a radioactive substance depends? **1**
6. Write the ground term a metal ion with d^5 electronic configuration. **1**
7. Explain why an aqueous solution of $CoCl_2.6H_2O$ is faint pink but that of $[CoCl_4]^-$ is intense blue. **2**
8. Explain the term inert and labile complex. **2**
9. Draw an Orgel diagram for metal complex having d^2 configuration in octahedral environment. **2**
10. Discuss the selection rules for electronic transitions in coordination complexes. **3**
11. What are nuclear reactions and the Q-values associated with them? How do nuclear reactions differ from chemical reactions? **2+3**
12. A freshly cut piece of wood gives 16100 counts of β-emissions per minute per kg and an old wooden bowl gives 13200 counts per minute per kg. Calculate the age of the wooden bowl. The half-life period of ^{14}C is 5568 years. **5**
13. What is the reaction involved in nitrogen fixation? What is the enzyme that catalyzes this reaction? Compare and contrast this reaction with Haber's process of ammonia synthesis. **5**