CENTRAL UNIVERSITY OF HARYANA
SCHOOL OF ENGINEERING & TECHNOLOGY
3rd Sessional Exam (July, 2023)
Paper Name: Chemistry B. Tech. (CSE) 1st Year/II Sem; Paper Code: BT CH 102A, 1 hr, 20 Marks
Note: Candidates are required to attempt all the questions.

1. Prove that O_2^{2-} is diamagnetic, while N_2^{2-} is paramagnetic? 5

2. Predict whether the cell reaction is spontaneous or not 5

   $Fe^{2+}(ag) + Ag^+(ag) \rightarrow Fe^{3+}(ag) + Ag(s)$

   (Given $E^o{}_{Fe3+/Fe2+} = 0.77$ V; $E^o{}_{Ag+/Ag} = 0.80$ V; F = 96500 C mol^{-1})

3. A) Calculate pH of 0.005 M Ca(OH)$_2$ assuming complete dissociation. 5

   B) Calculate the solubility of CaF$_2$ in solution, when solubility product is 3.45×10^{-11} at room temperature.

4. Discuss the fundamental mode of vibrations in an organic compound. 5

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