Pabna University of Science and Technology
Department of Electrical & Electronic Engineering
1st year 1st semester examination 2019 (Special)
Course Title: Chemistry
Course No: Ch-1103

Time 3.00 hours | Full Marks: 70 (35+35)

N. B: (i) Answer any three questions out of four for the each part.
(ii) Separate Answer script must be used for answering the questions of Part-A & Part-B.
(iii) Figures in the right margin indicate marks.

1.	(a)	State different methods of preparation of colloidal dispersions. Describe Bredig's arc method in detail.	7.0
	(b)	What are lyophillic colloids? Why are they called reversible colloids?	4.67
2.	(a)	Derive a mathematical relation to calculate the temperature dependence of equilibrium constant of a chemical reaction.	6.0
	(b)	Explain how equilibrium constant changes with temperature for exothermic and endothermic reaction.	5.67
3.	(a)	Define or explain the following terms : (*i*) Rate of reaction (*ii*) Order of a reaction (*iii*) Molecularity of a reaction (*iv*) Rate constant (*v*) Half life of a reaction	7.50
	(b)	Explain, with examples, zero-order reaction. Write rate law expression for it.	4.17
4.	(a)	How is the specific conductance of an electrolyte solution determined? Describe the experimental method.	6.0
	(b)	Define specific conductance and equivalent conductance. Derive the relationship between them.	5.67
5.	(a)	Give the defects of Rutherford's model of atom. What suggestions were given by Bohr to remove these defects?	5.67
	(b)	What do you understand by the term, " Quantum number". How many quantum numbers has an electron in an orbital? Explain the significance of each quantum number.	6.0
6.	(a)	Compare the properties of ionic and covalent compounds. Give two examples of each type of compounds.	6.0
	(b)	What is a co-ordinate covalent bond? How does it differ from a normal covalent bond?	5.67
7.	(a)	What do you understand by hydrogen bonds? Classify them with examples. Explain why water has abnormally high boiling point.	6.0
	(b)	Why bond angles of H2O and NH3 are 104.5° and 107° respectively although central atoms are sp^3 hybridized.	5.67
8.	(a)	What do you mean by the 'ionization potential' of an element? Why the first ionization potential of an element is less than the second ionization potential? How does the ionization potential of an element vary with atomic volume?	7.0
	(b)	What do you mean by f-block elements? Why f-block elements are called inner transition elements?	4.67

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