K. J. Somaiya College of Engineering, Mumbai-77
(Constituent College of Somaiya Vidyavihar University, Mumbai)

Semester: I (Oct 2021- Feb 2022)
In-Semester Examination

Class: F.Y. B. Tech. **Semester: I**
Branch: COMP, IT (A, B, C, G, H)
Full name of the course: Engineering Chemistry **Course Code: 116U06C103**
Duration: 1hr.15 min (attempting questions) **Max. Marks: 30**
+20 min (uploading)
Date: 22/12/2021

Q No	Questions	Marks
Q1	**Attempt all questions-** 1.1 Soap does not lather with hard water because of formation of _____. a. Sodium stearate b. Stearic acid c. Calcium stearate d. Sodium hydroxide 1.2 In the process of removing temporary hardness by boiling, Mg is removed as_____. a. $Mg(HCO_3)_2$ b. $Mg(OH)_2$ c. $MgCO_3$ d. $MgCl_2$ 1.3 1^oCl= _____. a. 1^oFr b. 1.43^oFr c. 0.07^oFr d. 1^oFr 1.4 Caustic embrittlement occurs due to formation of _____. a. Na_2CO_3 b. NaOH c. Na_2FeO_2 d. Na_2SO_4 1.5 Removal of HCl will require _____. a. Soda b. Lime c. Both soda and lime d. None 1.6 Which of the following statement is incorrect- Polylactic acid _____ a. is a polymer b. can be recycled c. cannot be recycled d. can be composted 1.7 Leakage of _____ is the cause of Bhopal gas tragedy. a. Methyl isocyanate b. Methyl cyanide c. Methyl cyanate d. Methyl isocyanide 1.8 Applying the 'Green Chemistry' principles, adipic acid is synthesized from _____. a. L-Tryptophan b. Benzene c. Aniline d. D-Glucose 1.9 The quantum confinement effect can be observed once the diameter of particle is _____ magnitude as the wavelength of electron.	10

	a. less than the b. more than the c. of the same d. double the 1.10 MWNT are produced by CVD at _____ ^{o}C. a. 300- 800 b. 600- 1150 c. 1000- 1200 d. 700- 1000	
Q2	**Attempt any TWO questions-** 2.1 With respect to 'Hot Soda-Lime' process- a. Draw a neat labelled diagram b. State the residual hardness of softened water c. List 2 advantages and 2 disadvantages 2.2 Classify the following into temporary and permanent impurities and calculate all types of hardness- $Mg(HCO_3)_2$ = 6.3mg/L, $Ca(HCO_3)_2$= 7.7mg/L, $MgCO_3$= 3.9mg/L, $CaCO_3$=8mg/L, $MgSO_4$= 24mg/L. 2.3 50ml sample of water required 8.4ml of M/2 EDTA for titration. After boiling, the same volume required 3ml EDTA. Calculate temporary hardness.	**5** **5** **5**
Q3	**Attempt the following questions-** 3.1 Describe the principle of 'Atom Economy' with the help of an example. 3.2 Elaborate on 'Fullerenes' as nanomaterials. **OR** 3.2 Describe the 'Arc' method for the preparation of CNTs with the help of diagram.	5 5