

**K. J. Somaiya College of Engineering, Mumbai-77**

(A Constituent College of Somaiya Vidyavihar University)

Semester: August – November 2020

**In-Semester Examination****Class: F.Y B. Tech****Branch: Comps, IT****Full name of the course: Engineering Chemistry****Duration: 1hr.15 min (attempting questions)****+20 min (uploading)****Semester: I****Course Code: 116U06C103****Max. Marks: 30**

Q. No	Questions	Marks
Q1	<p>i) The presence of hardness in water can be detected by eriochrome black-T indicator. It gives _____ colour solution when treated with hard water. a) Blue b) wine-red c) pink d) colourless</p> <p>ii) Following is not the example of carbonate hardness a) <math>\text{MgCO}_3</math> b) <math>\text{Ca}(\text{HCO}_3)_2</math> c) <math>\text{NaHCO}_3</math> d) <math>\text{Mg}(\text{HCO}_3)_2</math></p> <p>iii) In the titration of hard water with EDTA, the blue colour change at the equivalence point is due to the colour of _____. a) EDTA b) EDTA-Metal complex c) EBT d) Metal solution</p> <p>iv) 5.55 mg of <math>\text{CaCl}_2</math> in 250 ml distilled water gives _____ppm harness equivalence of <math>\text{CaCO}_3</math>. a) 10 ppm b) 20 ppm c) 5 ppm d) 40 ppm</p> <p>v) 250 mg of <math>\text{CaCO}_3</math> in 500 ml distilled water give hardness of _____degree Clarke. a) 30 degree Clarke b) 35 degree Clarke c) 17.5 degree Clarke d) 25 degree Clarke</p> <p>vi) 30 degree French hardness of water is equivalent to _____ mg of <math>\text{CaCO}_3</math> present in in one liter solution. a) 30 b) 300 c) 60 d) 600</p> <p>vii) In the determination of dissolved oxygen in biological oxygen method the sample is incubated for _____days and at _____degree Celsius. a) 5 &amp; 25 b) 5 &amp; 20 c) 5 &amp; 30 d) 2 &amp; 25</p> <p>viii) _____is used as an indicator for the titration of refluxed sewage water and ferrous ammonium sulphate in the determination of chemical oxygen demand. a) EBT b) Methyl orange c) Ferroin d) methyl orange</p> <p>ix) Compression molding can be used for the fabrication of a) Thermoplastic b) Thermosetting plastic c) plastic d) All of the above</p> <p>x) Following is not the component of compounding of plastics a) Plasticizer b) Catalyst or accelerator c) Filler d) molding</p>	1M x 10

Q2	<p>Attempt any two from the following.</p> <p>i) 50 ml of standard hard water (1.2 g/lit <math>\text{CaCO}_3</math>) required 13 ml of EDTA for titration using EBT indicator. 100 ml of water sample required 18 ml of same EDTA for titration while 50 ml of boiled water sample required 6 ml of EDTA. Calculate the temporary, permanent and total hardness.</p> <p>ii) Distinguish between temporary and permanent hardness (4 points). Write the reaction of lime and soda with following impurities A) <math>\text{Mg}(\text{HCO}_3)_2</math> B) <math>\text{CO}_2</math> C) <math>\text{Al}_2(\text{SO}_4)_3</math> D) <math>\text{H}_2\text{SO}_4</math></p> <p>iii) Define the following. A) BOD B) COD 25 ml of waste water sample was refluxed with 30 ml of 0.1 N <math>\text{K}_2\text{Cr}_2\text{O}_7</math> solutions after refluxing the reaction flask required 24.2 ml of 0.1 N FAS. While 25 ml distilled water on refluxing with 30 ml <math>\text{K}_2\text{Cr}_2\text{O}_7</math> solution required 34.5 ml of 0.1 N FAS. Calculate COD.</p>	5 M x 2
Q3	<p>Attempt any two from the following.</p> <p>i) In a polymeric mixture, there are 500 molecules with molecular weight 5000, 700 molecules with molecular weight 3500 and 300 molecules with molecular weight 2000. Find <math>M_n</math>, <math>M_w</math> and P.D.I.</p> <p>ii) What is fabrication? Explain injection molding for the fabrication of plastic with neat diagram.</p> <p>iii) Explain the classification of polymer with suitable example on the basis of A) Tacticity b) Origin C) polymerization</p>	5 M x 2