WALCHAND COLLEGE OF ENGINEERING

(Government Aided Autonomous Institute)
Visharambag, Sangli – 416415

First Year B.Tech. Group B (Civil, Mech, ELE &CSE)
ESE , ODD SEMESTER, AY 2023-24
Engineering Chemistry (6CH101)

ESE

Reregistered Candidates **PRN:** _____

Day & Date: Wednesday, 20/12/2023 Time : 10.00 am to 12.00 noon

Max Marks: **50**

IMP: Verify that you have received question papers with correct course code, branch etc.

Instructions
a) All questions are compulsory.
b) Writing question number on answer book is compulsory otherwise answers may not be assessed.
c) Assume suitable data wherever necessary.
d) Figures to the right of question text indicate full marks.
e) Mobile phones, smart gadgets and programmable calculators are strictly prohibited.
f) Except PRN anything else writing on question paper is not allowed.
g) Exchange/Sharing of stationery, calculator etc. not allowed.

			Marks	
		Text on the right of marks indicates course outcomes (Only for faculty use)		
Q1	**A)**	Calculate the molarity and normality of a solution, if 28 gm of KOH dissolved in 100 ml of distilled water in a 250 ml beaker and finally diluted to 500 ml volumetric flask using method of dilution of solution . (Mo. Wt. KOH = 56)	**4**	CO3
	B)	A 0.7336-g sample of an alloy containing copper and zinc is dissolved in 8 M HCl and diluted to 500 mL in a volumetric flask. In one analysis, the zinc in a 125.00-mL portion of the solution is precipitated as $ZnNH_4PO_4$, and subsequently isolated as $Zn_2P_2O_7$, yielding 0.1163 g. The copper in a separate 125.00-mL portion of the solution is treated to precipitate CuSCN, yielding 0.2383 g. Calculate the %w/w Zn and the %w/w Cu in the sample. FW= Zn=65.38,$Zn_2P_2O_7$= 304.72, Cu= 63.54 CuSCN= 121.64	**4**	CO3
	C)	Find out Temporary, Permanent and Total hardness of mere boiled and filtered water containing following impurities. $CaSO_4$:13.6 mg/l(MW136), $MgSO_4$:12 mg/l (MW120), $CaCl_2$:11.1 mg/l(MW:111), NaCl 5.85mg/L(MW: 58.5) , Na_2CO_3 10.6mg/L (MW:106)	**4**	CO3
	D)	Calculate hardness of prepared standard hard water in mg/ L, if 0.5gm of $CaCO_3$ powder was dissolved in minimum quantity of HNO_3 and solution was diluted to 500ml in volumetric flask	**2**	CO3
	E)	With neat label diagram of sulphur system, discuss triple points in it.	**6**	CO2
Q2	**A)**	Define monomer and polymer and Distinguish between Addition and Condensation polymer	**6**	CO2
	B)	Write properties and uses of PVC	**4**	CO1
Q3	**A)**	Give reason with TGA Thermograms showing thermal events like: Which events will causes no change in mass during thermogravimetry? , Which events will causes Decreasing in mass during thermogravimetry? Which event will causes Increase in mass during thermogravimetry?	**4**	CO2

Q4 A) Explain with sketch the use of forced convection air in cooling of electronic systems. 5 CO

B) Explain different types of Drive systems of Robot. 5 CO

C) Differentiate between Rolling contact bearing and Sliding contact bearing 5 CO

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