

On behalf of Mumbai University

VESIT

Internal Test

SEM 1

2015-16

Odd

Time: 1hr

Marks 15

Atomic Wts (Ca =40, Mg=24, Na= 23, S=32, C=12, N=14, O=16, H=1, Cl=35.5, Al=27, Fe=56, Si=14) $Al = 27$.

Answer any Five

- 1) Give two reactions to explain Softening of Permanent hardness by soda. [10]
- 2) Give structure of cation Exchange and anion exchange resins.
- 3) Calculate the amount of lime required for softening of 5000 lit of hard water containing the following impurities,
 $CaCl_2 = 111$ ppm, $CaSO_4 = 136$ ppm, $Fe_2O_3 = 56$ ppm, $NaCl = 58.5$ ppm, $SiO_2 = 5$ ppm
111 P *136* *160* *58.5*
- 4) Why zeolite is regenerated after use, Give reactions for same.
- 5) Give reactions for water purification by Bleaching powder.
- 6) After treating 10^4 liters of water by cation exchanger, cationic resin required 200 liters of 0.1N HCl. Find the hardness of above sample of water.
- 7) Write short note on COD.

Q2 Attempt a or b

[5]

- a) Calculate the amount of lime (90% pure) and soda (90% pure) required to soften 500,000 liters of water containing following impurities in ppm, $MgCl_2 = 19$ $CaSO_4 = 27.2$, $H_2SO_4 = 4.9$, $Al^{+3} = 6$
70/100 *6/100*
- b) 0.28g of $CaCO_3$ was dissolved in HCl and solution is made up to 1 liter with distilled water. 100 ml of above solution required 28ml of EDTA solution. 100ml of hard water sample required 33ml of EDTA solution After boiling of this water cooling and filtering 100ml of this solution on titration required 10 ml of EDTA solution calculate each type of hardness of water.

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