

College of Engineering, Pune
END Semester Exam – Nov. 2012

Civil

F. Y. B. Tech.

Chemistry

Day & Date- Friday, 30//11/12

Time: - 10 AM-1PM

Maximum Marks: 50

Duration – 3 hrs.

Instructions:

1 Solve all the questions

2 Figure to right indicates full marks.

3 Do not keep mobile phones with you; the handsets will be permanently retained by exam cell.

4 Draw figures where ever necessary

Q.1		Suggest most suitable material/ method for applications given below with explanation of the key property in the use(any two)	4
	A	Alloy for containers used for sterilization of surgical instruments	
	B	Best method of water treatment to give zero residual hardness	
	C	Graphite as a lubricant and diamond as a cutting tool	
	D	What is meant by cetane number of diesel? What is its commercial significance?	2
	E	Draw a neat diagram of any reversible battery and write down the reactions that take place in the battery	4
Q.2		Fill in the blanks and rewrite the sentences (any 10)	
	A	NaCl has ----- crystal structure.	
	B	Crystal defects are more prominent in -----	
	C	Water system is ----- component system.	
	D	Plain carbon steel is ----- alloy.	
	E	Calgon process removes ----- from water.	
	F	Best method of water softening is-----	
	G	Complete the reactions below: M-----→ ----+ ---- Y+ ne-----→-----	
	H	F= -- - ----+2	
	I	Corrosion leads to formation of -----.	
	J	Electrochemical cell should have -----.	
	K	Types of chemical bonds are-----.	
	L	Stainless steel is an alloy of -----.	

	M	Diamond has ----- structure.	
	N	Graphite is -----of carbon.	
	O	Most significant fraction of crude oil is -----.	
Q.3	a	Compare between classical methods of chemical analysis against instrumental methods.	2
	b	Explain any one method of obtaining pure gasoline with suitable diagram	4
	c	Compare between various fuel cells on the basis of performance indicators.	4
Q.4	a	You are given a weak acid and weak base explain the entire process how will you estimate concentration of the given acid by using appropriate electro-analytical technique. OR	6
	a	What is knocking of gasoline? Why and when does it happen for light vehicles? How to reduce the knocking tendency of gasoline? What are popular anti-knocking agents? Why use of TEL is banned? Explain octane number of gasoline	6
	b	What are the characteristics of good classical fuel and what are the characteristics of good batteries?	4
Q.5	a	Why UV is a suitable technique to determine functional group of an organic chemicals but not suitable for identifying carbon –carbon single bond or carbon – hydrogen single bond in the same chemical.	3
	b	Draw a neat sketch /schematic of a double beam spectrophotometer OR	4
	b	Explain the instrument and procedure that can be used for estimation of halide concentration from sea water.	4
	c	A well water sample is to be used for boiler steam generation, how will you establish suitability for its use or which water treatment will you use if it's found to have high hardness and high alkalinity	3