Register Number: ……..

B.E DEGREE EXAMINATIONS: MAY/JUNE 2014

(Regulation 2009)

Second Semester

CHY103:APPLIED CHEMISTRY

(Common to AERO, AUTO, MECH & MCT)

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. In Orsat's apparatus potassium hydroxide is used to absorb
   a) O_2 b) CO_2
   c) CO d) SO_2
2. Which one of the following has got maximum octane number
   a) *n*-heptane b) *n*-octane
   c) Iso octane d) *n*-decane
3. Lubricating oil is thickened by adding
   a) TiO_2 b) Li soap
   c) Silicone oil d) $ZnSO_4$
4. ABS is known as
   a) Acetic Butyl Sulphurdioxide b) Activated Bulk Sulphur
   c) Acrylonitrile Butadiene Styrene d) Azo Butyl Sulphate
5. In paints, which of the following is used to dissolve the film forming material?
   a) Drier b) Thinner
   c) Plasticizer d) Extender
6. Corrosion is an example of
   a) Oxidation b) Reduction
   c) Electrolysis d) Erosion
7. Fine suspended impurities present in water are removed by
   a) Sedimentation b) Sterilization
   c) Coagulation d) Filtration
8. Scale forming substances are
   a) $CaCl_2$, $MgCl_2$ b) $CaSO_4$, $Mg(OH)_2$
   c) $CaSO_4$, $MgCl_2$ d) $CaSO_4$, $CaCl_2$

9. Decomposition method of powder metallurgy is used specially to
   a) Mg and Al b) Pb and Sn
   c) Cu and Zn d) Fe and Ni carbonyls
10. In powder metallurgy, the process of completely fillings the voids and interconnected porosities is called
    a) Sizing b) Infiltration
    c) Coinings d) Impregnations

PART B (10 x 2 = 20 Marks)

11. What is cetane number?
12. Distinguish between gross and net calorific value.
13. Write the significance of oiliness of a lubricant.
14. How refractories are classified? Give an example.
15. List any four characteristics of good paints
16. Bolt and nut made of the same metal is preferred. Why?
17. What is boiler feed water?
18. What is calgon conditioning?
19. Define the term powder metallurgy.
20. What is briquetting?

PART C (5 x 14 = 70 Marks)

21. a) (i) Explain the production, composition and uses of producer gas (10)
    (ii) Calculate the net calorific values of a coal sample having the following composition. (C = 80%; O = 3%; S =3.5%; N = 2.5%; H = 7% and ash = 4.4%) (4)

    (OR)

    b) (i) How is ultimate analysis of coal carried out (7)
    (ii) Explain analysis of flue gas by Orsat apparatus (7)

22. a) (i) Describe the manufacture, characteristics and applications of High Alumina and Magnesite bricks (7)
    (ii) Explain about artificial abrasives (7)

    (OR)

    b) (i) Briefly explain polymer blend and alloys with suitable examples. (7)
    (ii) List the preparation and properties of polyamide. (7)

23.	a)	(i)	Explain the mechanism of differential aeration corrosion and pitting corrosion	(7)
		(ii)	Describe the mechanism of electrochemical corrosion	(7)
			(OR)	
	b)	(i)	Discuss the process of electroplating of copper	(7)
		(ii)	Explain how corrosion can be minimized	(7)
24.	a)	(i)	Explain the different methods of disinfection of water	(7)
		(ii)	Discuss desalination of water by reverse osmosis process	(7)
			(OR)	
	b)	(i)	Write short note on Scale and Sludge, Priming and Forming	(7)
		(ii)	Explain in detail about the demineralization of water by ion –exchange process	(7)
25.	a)	(i)	Mention the merits and demerits of Phase rule	(7)
		(ii)	How are metal powders produced by atomization and chemical methods	(7)
			(OR)	
	b)	(i)	Draw a neat phase diagram and explain the lead – silver system	(7)
		(ii)	Write a note on compacting and sintering operations employed in powder metallurgy	(7)

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