Sem II - CBSGS - AC II - Dec'12 30/11/12

Q.P.CODE: 25996

[Time: 2 Hours] **[Marks:60]**

Please check whether you have got the right question paper.

N.B:
1. **Question no. 1 is compulsory.**
2. **Attempt any three from remaining five questions.**
3. **Atomic weights: - H=1, C=12, N=14, O=16, S=32, Cl=35.5, Ba=137.5, mg=24, Na=23, Ca=40.**

Q.1 Answer Any **Five** from the following:- **15**

a) What is metal cladding? How is 'Alclad' obtained.
b) Define fuels. Classify them with examples.
c) Give the composition, properties and uses of wood's metal.
d) What are composites? What are their advantageous characteristics?
e) What are green solvents? Give two Industrial applications of green solvents.
f) By kjeldahl's method 1.5 gm of coal sample was analysed. The ammonia evolved was absorbed in 50 ml of 0.1 N H_2SO_4. After absorption, the excess H_2SO_4 required 34ml of 0.1N NaOH for neutralization. Calculate the percentage of Nitrogen.

Q.2 a) How do the following factors affect the rate of corrosion? **06**
i) Purity of metal.
ii) Over voltage.
iii) Relative areas of anodic and cathodic parts.
b) What is cracking? Explain fixed bed catalytic cracking with neat labelled diagram. **05**
c) Calculate the % Atom economy for the following reaction with respect to methyl-isocyanate. **04**

$CH_3NH_2 + COCl_2 \rightarrow CH_3N=C=O + 2HCl$

Methylamine methyl-isocyanate

Q.3 a) The composition of gas was found to be H_2=10%, C_2H_6=16%, CH_4=20%, CO=18%, CO_2=22%, O_2=8%,N_2=6%. Calculate the volume of air required for complete combustion of $1m^3$ of this gas. **06**
b) Explain conventional and greener route for synthesis of Adipic Acid. Highlights the green chemistry principle involved. **05**
c) What are metallic coatings? Distinguish between Galvanizing and Tinning. **04**

Q.4 a) What are the effect of following alloying elements on steel? **06**
i) Ni ii) Cr III) Co iv) Mn v) Mo vi) W
b) Explain differential aeration corrosion with the help of a suitable example. **05**
C) What is green chemistry? List the 12 principles of green chemistry. **04**

Q.5 a) What is petroleum? Describe the refining of petroleum with the help of a diagram **06**
b) What are structural composites? Give their types and applications. **05**
c) Distinguish between Brass and Bronze **04**

Q.6 a) Define an Alloy What is the purpose of making alloys? **05**
b) Define paints. Mention any four constituents of paints and state functions of each constituents. **05**
c) A coal sample contains C=65%, H=13%, O=6%, S=4%, N=12%, calculate the minimum amount of air needed for Complete combustion of 2kg of coal. **05**

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