E.E. Sem II / Rev

App:. chemistry II 7-6-2010



Con. 3259–10. (REVISED COURSE) AN–9847



(2 Hours) [Total Marks : 75

**N.B. :** (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions from remaining **six** questions.
(3) **Figures** to the **right** indicate **full** marks.
(4) Atomic Weights : C – 12 ; H – 1 ; O – 16 ; S – 32 ; N – 14 ; Ba – 137·3 ; Cl – 35·5.

1. Solve any **five** from the following :– **15**
   (a) Explain the advantages of galvanising over tinning.
   (b) A coal sample was subjected to the ultimate analysis, 0·5 gms of coal on combustion in bomb calorimeter and the content on treatment with $Bacl_2$ solution produce 0·06 gms of $BaSo_4$. Calculate % of sulphur in coal sample.
   (c) Give the manufacturing process of silicon carbide ceramic powder.
   (d) Explain the non hazardous chemical principle of green chemistry with suitable example.
   (e) What is cracking ? Distinguish between thermal and catalytic cracking.
   (f) What are composites ? What are their advantageous characteristics.
   (g) Explain any two characteristics of catalyst with suitable examples.

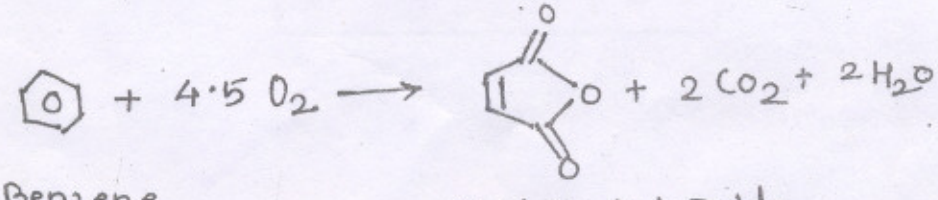
2. (a) What is petroleum ? Describe the refining of petroleum with reference to bubble tower diagram. **6**
   (b) Define corrosion and explain the corrosion due to differential areation with neat sketch. **5**
   (c) Define and explain activation energy. **4**

3. (a) Explain laminar composites and sandwich panel with suitable example. **6**
   (b) Write short note on paint ingredients and their functions. **5**
   (c) Give composition, properties and uses of High-Phosphorous bronze. **4**

4. (a) Explain in detail Fibre-reinforced composites. **6**
   (b) A coal sample was found to contain the following constituents : C – 81%, O – 8%, S – 1%, H – 5%, N – 1%, Ash – 4%. Calculate the minimum amount of air required for complete combustion of 2 kg of coal. **5**
   (c) What is powder metallurgy ? Explain cold powder extrusion moulding. **4**

5. (a) What is bio-diesel ? Explain the method to obtain bio-diesel from vegetable oil and expedite why biodiesel. **6**
   (b) What are zeolite catalyst ? Give the types of zeolites and explain the structure of sodalite as building block zeolites. **5**
   (c) What are the important applications of composites. **4**

6. (a) State the principle and explain the electroplating process with neat sketch. **6**
   (b) Calculate the Gross and Net calorific value of coal sample having the following composition : C – 85%, H – 7%, O – 3%, S – 3·5%, N – 2·1% and Ash – 4·4%. **5**
   (c) Calculate the atom economy for the following reaction. **4**



7. (a) Give the composition, properties and uses of – 6
   (i) Woods Metal
   (ii) Magnalumin
   (b) Explain the mechanism of adsorption theory of catalysis. 5
   (c) Explain how are the following factors influence the rate of corrosion. 4
   (i) Solubility of corrosion product
   (ii) Nature of ions present.