Fourth Semester Examination – 2007

CHEMISTRY – II

Full Marks – 70

Time – 3 Hours

Answer Question No. 1 which is compulsory
and any **five** from the rest.

The figures in the right-hand margin
indicate marks.

1. Answer in brief :   2×10

(a) Why is chloramine better than chlorine
for sterilization of water ?

P.T.O.

(b) Why is buffer added during titration of hard water against hard water ? Which buffer is added ?

(c) Why is net calorific value less than gross calorific value ?

(d) Which is superior : water gas or producer gas and why ?

(e) Why is weight average molecular mass of a polymer always higher than number average molecular mass ?

(f) Write the monomers of :

(i) polyurethane rubber

(ii) butyl rubber

(iii) nylon 6

(iv) terylene.

(g) What is the importance of BOD measurement ?

(h) What is caustic embrittlement ?

(i) Which one is preferable and why : copper rivets in steel plate or steel rivets in copper plate ?

(j) What is the difference between corrosion of aluminium and magnesium ?

2. (a) Why is hardness of water expressed in terms of calcium carbonate equivalents ?
2

(b) What is scale ? What are the disadvantages of scale formation ?
3

(c) 50 ml of standard hard water (1 ml = 1 mg $CaCO_3$) required 90 ml of EDTA solution for detection of end point. 50 ml of water

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sample required 18 ml of EDTA solution and 50 ml of the boiled water sample required 11 ml of EDTA solution. Calculate the carbonate and non carbonate hardness of the water sample. 5

3. (a) What is cracking ? What are the advantages of catalytic cracking ? 4

(b) What are the differences between disel and gasoline fuel ? 4

(c) What are the advantages of LPG as motor fuel ? 2

4. (a) What is coking coal ? 2

(b) Discuss about Otto Hoffmann method of manufacturing of coke. 4

(c) The percentage analysis of a gas (by volume) is $H_2 = 19$, $CO = 20.9$, $N_2 = 50$,

BSCC 2201   4   Contd.

$CH_4 = 4$ and $CO_2 = 6.1$. Calculate the dry product obtained if 20% excess air is supplied for complete combustion. 4

5. (a) Discuss the biochemical effects of arsenic and fluoride. 4

(b) Discuss about the secondary sewage treatment methods. 3

(c) 20 ml of sewage water was refluxed with 0.2 N dichromate solution in presence of sulphuric acid and unreacted dichromate required 18 ml of 0.1 N FAS (Ferrous Ammonium Sulphate) solution for neutralization. Blank titration required 26 ml of same FAS solution under same condition for neutralization. Calculate the COD of the sample. 3

BSCC 2201   5   P.T.O.

6. (a) How does iron corrode in neutral or alkaline medium ? 2

(b) Explain the impressed current protection method. 3

(c) Differentiate between electrochemical series and galvanic series. 3

(d) What is Pilling-Bedworth rule ? What is its significance ? 2

7. (a) What do you mean by dead polymer ? Discuss about free radical polymerization mechanism of PVC. 3

(b) Discuss about the properties and uses of silicones. 4

(c) What is vulcanization ? What are its advantages ? 3

8. (a) What do you mean by break point chlorination ? What are its advantages ? 3

(b) Compare between permutit method and lime-soda method. 4

(c) Why is small amount of ethyl bromide added to petrol ? 3

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