# 2017

## 3rd Semester

## CHEMISTRY

### PAPER—SEC1

### (Honours)

*Full Marks* : 40 *Time* : 2 Hours

*The figures in the right-hand margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

### *Industrial Chemistry*

1. Answer any *five* questions : 5×1

(a) What is rust? Write its chemical formula.

(b) What is Zeotite?

(c) What is glass wool?

(d) Define thermal sapling of refractory material.

(e) What is the importance of BOD?

(Turn Over)

(f) What is the effect of pH on corrosion?

(g) What is the composition of clay?

(h) What is the main advantage of reverse osmosis process over ion-exchange process in purification of water?

**2.** Answer any *five* questions : 5×2

(a) State two harmful effects of silica present in water.

(b) What is dry corrosion? Explain with an example.

(c) Give an account of two major characteristics of refractory material.

(d) Why is $NH_3 - NH_4Cl$ buffer solution added during determination of hardness of water by EDTA titration? Name the indicator used in this titration.

(e) What is meant by corrosion inhibitors? Give example.

(f) Name two major polluting elements found in electronic waste. State their harmful effect.

(g) What are the different colours used in fire extinguisher containers? What are their significance?





(h) What is flash point? How is it different from fire point?

**3.** Answer any *three* questions : 3×5

(a) What is glass? What are the raw materials used in the manufacture of glass? What is the difference between soft glass and hard glass. 1+2+2

(b) (i) What do mean by sanitary landfilling? 2

(ii) Discuss the advantages and problems associated with sanitary landfilling. 3

(c) (i) What are the different types of fire-extinguisher? 2

(ii) Explain the working principle of any one of them. 3

(d) (i) Write about the different types of stainless steel. 3

(ii) Why stainless steel possess highest corrosion resistance? 2

(e) (i) Define corrosion of metals. 2

(ii) Explain the electrochemical theory of wet corrosion, giving its mechanism. 3

4. Answer any *one* question : 1×10

(a) How are the following materials prepared industrially? State their uses.

(i) Hydrogen peroxide ;

(ii) Carborandum. 5+5

(b) (i) What are refractories? How are they classified on the basis of chemical properties? Give suitable example of each class. 1+3

(ii) Write short notes on :

A) Silica refractory

B) Porcelain enamel. 3+3

(c) (i) What do you know about disinfection of municipal water by chlorine. 3

(ii) What is meant by Break-point Chlorination and Dechlorination? 2+2

(iii) 50ml. of a sample of municipal water on being treated with excess KI requires 1.5 ml of (N/50) sodium thiosulphate solution to titrate the





liberated $I_2$. Calculate the free chlorine in the sample in ppm unit. 3

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## *Pharmaceutical Chemistry*

1. Answer any *five* questions : 5×1

(a) What is the medicinal use of Trimethoprim?

(b) What do you mean by antipyretic agent?

(c) Name one drug used as central nervous system agent.

(d) What is the medicinal use of AZT-Zidovudine drug?

(e) Define aerobic fermentation.

(f) What is the general mlecular formula of penicillin?

(g) Name one drug used for antiviral medication.

(h) Draw the structure of Vitamin C

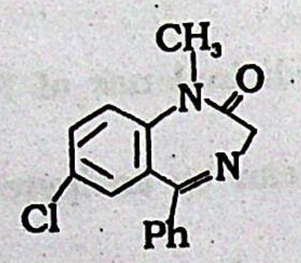
2. Answer any *five* questions : 5×2

(a) Write down the structure and medicinal use of ibuprofen.

(b) Glyceryl trinitrate is used for treatment of Cardiovascular diseases. Explain.

(c) Outline the one-step synthesis of aspirin from salicylic acid.

(d) Identify the drug and provide its medicinal use.




(e) Provide the structure and medicinal use of sulphacetamide.

(f) Distinguish between acrobic and anacrobic fermentation.

(g) What is Dapsone? What is its medicinal use?

(h) Name and draw the structure of an antibiotic used to treat typhoid.





**3.** Answer any *three* questions : 3×5

(a) Describe the process of production of ethyl alcohol by fermentation. 5

(b) What are Sulphonamides? Provide the structure and medicinal use of any one sulphonamide. 3+2

(c) Give a brief account of the production of Vitamin B12 by microbial fermentation. 5

(d) What is phenobarbital? Outline the synthesis of phenobarbital. 2+3

(e) How can you synthesize paracetamol from 4-aminophenol? Describe the medicinal uses of paracetamol. 2+3

**4.** Answer any *one* question : 1×10

(a) Give one example with structure of the following drugs : 2×5

(i) Analgesic agents

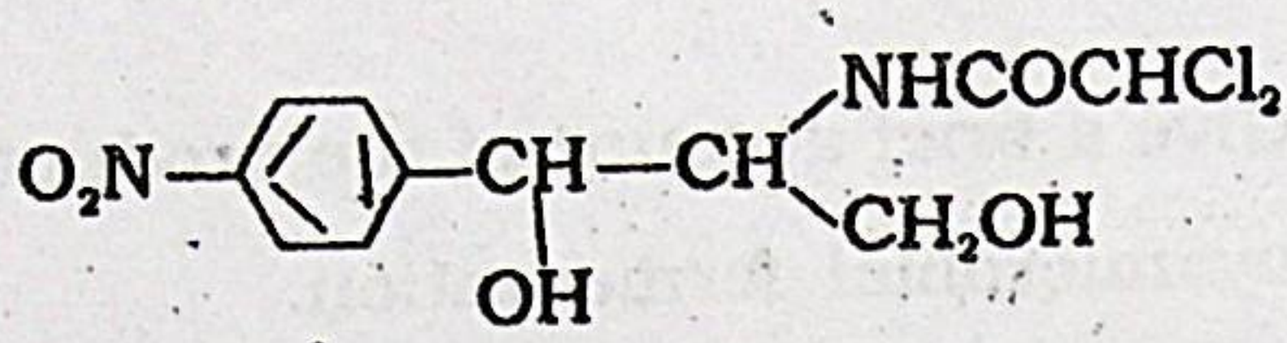
(ii) Anti-inflammatory agents

(iii) Antileprosy agents

(iv) Antibacterial agents

(v) Antipyretic agents.

(b) Identify the following drug and provide its synthesis and medicinal use 1+6+3




(c) (i) What was the world's first antibiotic? Give its structure.

(ii) Write a short note on lysine fermentation process.

(iii) Give the medicinal use of chloromycetin.

2+6+2