Scheme – I

Sample Question Paper

Program Name : **Diploma in Chemical Engineering**

Program Code : **CH**

Semester : **Second**

22233

Course Title : **Chemistry of Engineering Materials**

Max. Marks : **70** **Time: 3 Hrs.**

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1 Attempt the following **2M x 5** **10 Marks**

a. Define the Bragg's Law.
b. Draw NaCl crystal structure
c. Name two thermal properties of engineering materials.
d. Define thermal conductivity of material.
e. List the major constituents of ceramic
f. Give the structure of Nylon 6,6
g. Write the types of steels

Q.2 Attempt the following **4 M x 3=** **12 Marks**

a. Differentiate Nano structure and Microstructure.
b. Describe the Heat capacity as an extensive property.
c. Explain chemical reactivity of iron with air.
d. Define Tensile strength and Yield strength
g. List the factors affecting the rate of corrosion

Q.3 Attempt the following **4 M x 3=** **12 Marks**

a. Classify ceramic with examples
b. Explain the condensation polymerization for phenyl formaldehyde.
c. Differentiate the mechanism of corrosion in acidic and alkaline medium with example
d. Differentiate ferrous and non-ferrous material

Q.4 Attempt the following **4 M x 3=** **12Marks**

a. Describe the crystal structure of glass using bragg's law
b. Describe the procedure to calculate the density of air
c. Calculate the heat in Joules, required to raise the temperature of 25 grams of water from 0 °C to 100 °C.
   Data: specific heat of water = 4.18 J/g·°C
d. Differentiate metals and non metals with respect to its physical and chemical

properties.

Q.5 **Attempt the following** **6 M x 2= 12 Marks**

a. Differentiate addition and condensation polymerization process with suitable examples.

b. Explain the importance of Ziggler Natta Catalyst in copolymerization reaction.

c. Classify the alloy of steels on the basis of it's constitution

Q.6 **Attempt the following** **6 M x 2= 12 Marks**

a. Explain rusting process on iron with the help of electrochemical theory.

b. Explain the effects of following chemical elements on iron

1. Chromium 2. Nickel 3. Silicon 4. Magnesium

c. Explain the cladding mechanism for preparation of alloy steel.

Scheme – I

Sample Test Paper - I

Program Name : **Diploma in Chemical Engineering**

Program Code : **CH**

Semester : **Second**

22233

Course Title : **Chemistry of Engineering Materials**

Max. Marks : **20** **Time: 1 Hour**

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR. **08 Marks**

a) Define the Bragg's Law.

b) Name two thermal properties of engineering materials.

c) Differentiate Nano structure and Microstructure.

d) Define thermal conductivity of material.

e) Define Tensile strength and Yield strength

f) Draw NaCl crystal structure

Q.2 Attempt any THREE. **12 Marks**

a) Calculate the heat in Joules, required to raise the temperature of 25 grams of water from 0 °C to 100 °C.

Data: specific heat of water = 4.18 J/g·°C

b) Describe the procedure to calculate the density of air.

c) Describe the crystal structure of glass using bragg's law

d) Describe the Heat capacity as an extensive property.

e) Explain chemical reactivity of iron with air.

f) Define Nanostructure. Write the characteristics of nanostructure.

Scheme – I

Sample Test Paper - II

Program Name : **Diploma in Chemical Engineering**

Program Code : **CH**

Semester : **Second**

22233

Course Title : **Chemistry of Engineering Materials**

Max. Marks : **20** **Time: 1 Hour**

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR. **08 Marks**

a) List the major constituents of ceramic.

b) Write the types of steels.

c) List the factors affecting the rate of corrosion.

d) Give the structure of Nylon 6,6.

e) Give classification of ceramic.

f) Define corrosion.

Q.2 Attempt any THREE. **12 Marks**

a) Explain the condensation polymerization for phenyl formaldehyde.

b) Differentiate the mechanism of corrosion in acidic and alkaline medium with example

c) Differentiate ferrous and non-ferrous material

d) Differentiate addition and condensation polymerization process with suitable examples.

e) Explain the effects of following chemical elements on iron

1.Chromium 2. Nickel 3. Silicon 4. magnesium

f) Explain the cladding mechanism for preparation of alloy steel.