



17208

21718

2 Hours / 50 Marks

Seat No.

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- 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) *Use of Non-programmable Electronic Pocket Calculator is **permissible**.*
 - (6) *Mobile Phone, Pager and any other Electronic Communication devices are **not permissible** in Examination Hall.*

Marks

1. Attempt any nine of the following :

18

- a) Define i) flux ii) slag.
- b) Write the names of any two different zones of blast furnace with their temperature.
- c) What are the types of heat treatment methods ?
- d) Define corrosion. State its two main types.
- e) Define Paint. Write the names of any two constituents of paints.
- f) Why galvanized containers are not used for storage for food ? Explain.
- g) Give one advantage and one disadvantage of metal cladding.
- h) List the common types of impurities present in water.
 - i) Write any two advantages of zeolite process for water purification.
 - j) Write down the chemical reactions for sterilization of water using chlorine gas.
- k) Define setting and hardening of cement.
 - l) Note down any two properties of fat lime.

2. Attempt any four of the following :

16

- a) Draw a neat labelled diagram of blast furnace. Name the products of blast furnace.
- b) Differentiate between Annealing and Normalizing.
- c) What is tempering ? Why steel is tempered after quenching ? What are its effects on steel ?

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- d) Explain hydrogen evolution mechanism of electrochemical corrosion.
- e) Name the types of oxide films formed in atmospheric corrosion with examples. Which oxide film is more protective ? Why ?
- f) Describe the process of metal cladding with suitable diagram.

3. Attempt **any four** of the following :

16

- a) What are the disadvantages of scale and sludge formation in boilers ?
- b) Write down any two physical characteristics and any two chemical characteristics of water.
- c) Calculate the carbonate and non-carbonate hardness of water sample which has the following impurities per litre.



- d) Describe in brief, Ion-exchange process for hard water with neat labelled diagram.
 - e) Define sterilization of water. Explain the process of sterilization using bleaching powder.
 - f) Give the chemical reactions, which takes place in the setting and hardening of Portland cement.
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