



**HDB-003-1013012** Seat No. \_\_\_\_\_

**B. Sc. (Sem. III) (CBCS) Examination**

**November/December – 2017**

**BS-IC-301 : Industrial Chemistry**

**Faculty Code : 003**

**Subject Code : 1013012**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

**Instructions :**

- (1) Question paper carries total 5 questions.
- (2) All the questions are compulsory and carry 14 marks each.
- (3) Draw labelled diagram wherever necessary.
- (4) Assume suitable data.

- 1 (a) Answer the following questions : 4
- (1) The atmosphere is extended upto \_\_\_\_ km from earth surface.
  - (2) Enlist types of environment.
  - (3) Green house effect is also known as \_\_\_\_\_.
  - (4) Photo chemical smog was observed first in \_\_\_\_ city.
- (b) Answer in brief (any one out of two) 2
- (1) Define the term ecosystem with example.
  - (2) Write natural and manmade sources of  $\text{CO}_x$  pollutant in brief.
- (c) Answer in detail : (any one out of two) 3
- (1) Discuss ecology with example.
  - (2) Write minimum three adverse effect of  $\text{NO}_x$  on plants.
- (d) Write a note on : (any one out of two) 5
- (1) Explain phosphate cycle with neat diagram.
  - (2) Discuss source, reaction and effects of  $\text{SO}_x$  pollutant.

- 2 (a) Answer the following questions. 4
- (1) Which scrubber is suitable when particulates matter is sticky, flammable or corrosive ?
  - (2) Gravitational settling chamber can handle particles usually \_\_\_\_\_ from gas streams.
  - (3) Which group increases rate of sulfonation reaction ?
  - (4) Which is the favourable reaction temperature for continuous sulfonation reaction ?
- (b) Answer in brief : (any one out of two) 2
- (1) Draw only diagram of flame ionization detector.
  - (2) Enlist sulfonating agents.,
- (c) Answer in detail : (any one out of two) 3
- (1) Draw only diagram of cyclone separator.
  - (2) Define hydrolysis and enlist various hydrolysis agents.
- (d) Write a note on : (any one out of two) 5
- (1) Explain plate and packed column with neat diagram.
  - (2) Explain continuous sulfonation of benzene with neat diagram.
- 3 (a) Answer the following questions : 4
- (1) Fluidized bed catalyst for hydrogenation comes under \_\_\_\_\_.
  - (2) In hydrogenation reaction noble metals are generally utilized as \_\_\_\_\_ form.
  - (3) Ortho and Para Isomer of dichlorobenzene is separated by which method ?
  - (4) In preparation of chloral from ethanol which catalyst is more suitable ?
- (b) Answer in brief : (any one out of two) 2
- (1) Enlist any six oxidizing agents.
  - (2) Enlist various halogenating agents.
- (c) Answer in detail : (any one out of two) 3
- (1) Give any four examples of hydrogenation reaction.
  - (2) Define : Halogenation and enlist halogenation reactions.
- (d) Write a note on : (any one out of two) 5
- (1) Explain liquid phase oxidation of acetaldehyde to acetic acid.
  - (2) Describe in detail : Chlorination of methane with diagram.

- 4 (a) Answer the following questions. 4
- (1) Highly ductile material possesses \_\_\_\_\_percentage elongation.
  - (2) What is unit of tensile strength ?
  - (3) Austentic, \_\_\_\_\_ and Ferritic are types of steel.
  - (4) When Cu and Zn combines it becomes \_\_\_\_\_ alloy.
- (b) Answer in brief : (any one out of two) 2
- (1) Enlist different alloying materials which can be used for making steel.
  - (2) Enlist different coatings for prevention of corrosion.
- (c) Answer in detail : (any one out of two) 3
- (1) Enlist different mechanical properties of material.
  - (2) What is bronze ? Give its uses and types.
- (d) Write a note on : (any one out of two) 5
- (1) Explain factors affecting mechanical properties.
  - (2) Explain factors affecting corrosion.
- 5 (a) Answer the following questions : 4
- (1) “Clay is calcareous material”, is this statement true or false ?
  - (2) \_\_\_\_\_ increases initial setting time of cement.
  - (3) Enlist raw material for manufacturing of ceramics.
  - (4) What is full form of PCE test ?
- (b) Answer in brief : (any one out of two) 2
- (1) Enlist raw materials for manufacturing of cement.
  - (2) Explain types of ceramics.
- (c) Answer in detail : (any one out of two) 3
- (1) Enlist various types of cement, explain white cement in detail.
  - (2) Explain in brief; liquid glazing.
- (d) Write a note on : (any one of two) 5
- (1) Explain wet process for manufacturing of cement with flow diagram.
  - (2) Explain nine steps of manufacturing of ceramics
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