

Suggestion 2023-24
INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE
DSE-2 (DSECEMH2)

Time Allotted: 1 Hour 30 Minutes

Full Marks: 25

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
All symbols are of usual significance.

GROUP-A

1. Answer any *ten* questions from the following: 1×10 = 10

- (a) What is pozzolan cement ?
- (b) What is photochromic glass?
- (c) What is NPK fertilizer?
- (d) Define paint failure.
- (e) What is meant by annealing of glass?
- (f) Explain the term glazing?
- (g) Give an example of water soluble phosphate fertilizer.
- (h) Give an example of a phase transfer catalyst.
- (i) What is annealing temperature or critical temperature in the glass industry?
- (j) Write down any one criteria for materials to be used in solar cells.
- (k) What are ferrous alloys?
- (l) What is sandblasting?
- (m) What is the cathode reaction of a Li-ion battery?
- (n) What is the role of feldspar in the ceramic industry?
- (o) Give an example of water resistant material for manufacturing safety glass.
- (p) Write down the composition of borosilicate glass.
- (q) Explain the term glazing?
- (r) Write the name of the electrolyte used in a Li-ion battery.
- (s) Name one fluxing agent used in the ceramic industry.
- (t) What is a detonator?
- (u) Write the full form of PETN.
- (v) Give an example of non ferrous alloy.
- (w) Give an example of an oxidizing agent used in anodized coatings.

GROUP-B

Answer any *one* question from the following 5×1 = 5

- 2. (a) Write down the working principle of solar cells. 4
- (b) Mention one important property of Lead glass. 1

3. (a) Write down the names of a few raw materials used in the ceramic industry. 2
 (b) What is called nitrification 2
 (c) Write down the anode reaction in the Li-ion battery. 1
 4. (a) Discuss briefly about the setting of cements. 4
 (b) What is eco-friendly paint? 1
 5. (a) What are the major ingredients required for manufacturing porcelain? 2
 (b) Write down the chemical composition of superphosphate. 2
 (c) Draw the structure of RDX. 1

GROUP-C

Answer any *one* question from the following

10×1 = 10

- 6.(a) What do you mean by anodized coatings? Why does it have good resistance to corrosion? 3
 (b) Write down a few advantages of stainless steel. 3
 (c) Write down the fertilizing action of urea with proper chemical reaction. 3
 (d) What is the chemical composition of cyclonite? 1
 7. (a) Write down the chemical reactions for the formation of PETN. 3
 (b) What are enamels? Give one example.
 What is pigment volume concentration (PVC)? 1+1+2=4
 (c) Write down the working principle of solar cells? Name one commonly used material in solar cells.
 2+1=3
 8.(a) Write down a few advantages of metal spraying. 3
 (b) What is called alloying elements? Briefly elucidate the term with suitable examples. 3
 (c) Write down a few advantages of mixed fertilizer. 3
 (d) Give an example of a heterogeneous catalyst. 1
 9. (a) Write down a few important requirements of a good industrial catalyst. 3
 (b) Write down the chemical reactions for the formation of lead azide. 3
 (c) What is emulsion paint? What are the components of that paint? Write two advantages of emulsion paint.
 1+1+2=4

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