

2020

CHEMISTRY — HONOURS

Paper : DSE-B-1

(Inorganic Materials of Industrial Importance)

Full Marks : 50

The figures in the margin indicate full marks.

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

Answer **question no. 1** (compulsory) and
any eight questions from the rest (**question no. 2 to 13**).

1. Answer the following questions (**any ten**) : 1×10
- (a) To have a green coloured glass which specific metal oxide will you use?
 - (b) What is an enamel?
 - (c) Out of urea and ammonium sulphate which one is better nitrogenous fertilizer?
 - (d) Name one catalyst poison for a catalytic reaction of your choice.
 - (e) What is superphosphate of lime?
 - (f) Write the full form of PETN.
 - (g) Name the raw materials used in the preparation of RDX.
 - (h) Write the name and formula of a feldspar which is commercially exploited.
 - (i) State one chemical factor which influences adhesive action.
 - (j) State basic difference of brass and bronze.
 - (k) State any one application of Zeolite as catalyst.
 - (l) Give an example of a fuel cell.
2. (a) What is safety glass? State one important property and use of photosensitive glass. 3+2
- (b) Distinguish between borosilicate and fluorosilicate glass. 3+2
3. (a) Give a short account on Carbon nanotubes.
- (b) What is CAN? How is it prepared? 3+2
4. (a) Outline manufacture of portland cement by mentioning clearly the raw materials used.
- (b) State the composition and properties of sodalime glass. 3+2

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5. (a) How is urea manufactured? State with chemical equations.
(b) What do you mean by mixed fertilizers? Cite an example. 3+2
6. (a) What are pigments? State the functions of pigments in a paint.
(b) Write a short note on 'fillers'. 3+2
7. (a) From thermodynamic point of view, which type of chemical reactions are used in making explosives and propellants? Explain with one example.
(b) Mention major precautions needed for the storage of explosives. 3+2
8. (a) State essential ingredients of paints. How does a paint differ from varnish?
(b) Distinguish between ferrous and non-ferrous alloys. 3+2
9. (a) What is meant by electroless plating? Mention its advantages.
(b) Explain the term 'anodizing'. 3+2
10. (a) Write down with equations the working principles of Pb-acid battery.
(b) Differentiate between primary and secondary batteries. 3+2
11. (a) Explain the term 'alloy'. State purpose of alloying with a suitable example.
(b) Write composition and use of 'Nichrome'. 3+2
12. (a) What is homogeneous catalysis? Explain with an example.
(b) Describe 'autocatalysis'. 3+2
13. (a) What are ceramics? How do they differ from glass? Give an example of a superconducting ceramics.
(b) What is phase transfer catalyst? Give an example. 3+2
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