7431

BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

DCHST – FOURTH SEMESTER EXAMINATION

MECHANICAL UNIT OPERATIONS

Time : 3 Hours]   [*Total Marks* : 80

PART—A   3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Distinguish between screen effectiveness and screen capacity.

2. Define bulk storage.

3. Define conveyor. List different types of conveyors.

4. Define vortex formation and list the methods to avoid vortex formation.

5. Define open circuit and close circuit grinding.

6. State Bond's law.

7. Differentiate between free settling and hindered settling.

8. List out various industrial screens and their applications.

9. Distinguish between constant rate and constant pressure filtration.

10. Draw and label the parts of rotary drum filter.

www.manaresults.co.in

PART—B

8×5=40

Instructions : (1) Answer **all** questions.

(2) Each question carries **eight** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. Explain differential screen analysis with a neat graphical representation.

(OR)

Explain the different types of storage of solids.

12. Explain the construction and working of double arm kneader with a neat sketch.

(OR)

Explain the working principle of tumbling mixers used for solid-solid mixing.

13. With a neat sketch, explain the construction and working of a roll crusher.

(OR)

Feed for a crusher having a surface volume mean diameter of 19 mm and gives a product of surface volume mean diameter of 5 mm. What will be the power required crush 15 tons per hour of feed material? Work index of the feed material : 12.74.

14. Explain the working principle of an industrial thickener with a neat sketch.

(OR)

Explain the construction and working of a cyclone separator with a neat sketch.

15. Explain the construction and working of plate and frame filter press with a neat diagram.

(OR)

Explain the working principle of centrifugal filters with a neat diagram.

/7431

2

[*Contd...*

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) The question carries **ten** marks.

(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. *(a)* Explain what happen when mill operated at critical speed. 4

(b) Explain the factors affecting screening operation. 3

(c) State the requirements of a filter medium. 3

★★★