| | In Sem Examination-II Summer2024 | | |
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| | Exam Seat No.: | | |
| | Academic Year:2023-2024 | Semester: IV | |
| | Name of Programme : S. Y. B.Tech Chemical Engg. | Pattern: 2022 | |
| | Name of Course: Mechanical Operations | Course Code: CHE222013 | |
| | Max. Marks:30 | Duration: 1h | |

**Instructions:** Candidates should read carefully the instructions printed on the Question Paper
and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains 2 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

### Question No. 1 Attempt following Question

a) Explain Grizzly screen and Trommels. (5) CO1

**OR**

b) Define Sphericity. Explain why size reduction is necessary (5) CO1

c) What is screen Capacity and screen effectiveness ? (5) CO1

**OR**

d) Explain Fluid Energy Mill with neat diagram (5) CO1

e) A certain crusher employed in ore industry accepts feed having volume-surface mean diameter of 20mm and gives a product of volume surface mean diameter 5 mm. The power required to crush 15 tonnes per hour of this feed material 10 HP. Determine the power consumption if capacity is reduce to 10 tonnes per hour (use Rittinger's Law) (5) CO1

**OR**

f) Explain Differential and Cumulative Analysis for screen? (5) CO1

### Question No. 2 Attempt following Question

a) How does a cyclone separator work, and what are its advantages in separating solid particles from gas streams? (5) CO2

**OR**

b) Derive the Kynch theory with neat diagram? (5) CO2

c) Explain the principle behind the operation of centrifugal equipment and provide an example of its application in industry. (5) CO2

**OR**

d) Describe the working mechanism of a magnetic separator and its typical applications. (5) CO2

e) Write a short note on Mineral jig and precipitator? (5) CO2

**OR**

f) Explain the function of a precipitator in industrial processes and its significance in pollution control. (5) CO2

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