

- (iii) Roasting
- (iv) Pulverization
- (v) Zeolites
25. (i) Cite the primary differences between elastic, anelastic and plastic deformation behaviors.
- (ii) Compare between true stress-strain and engineering stress-strain profile.
- (iii) The half length of cracks in a steel is $2\text{ }\mu\text{m}$. Taking $Y = 200\text{ GN m}^{-2}$, estimate the brittle fracture strength at low temperatures, if the true surface energy is 1.5 J m^{-2} . The actual fracture strength is found to be 1200 MN m^{-2} . Explain the difference, if any, between this and your result. 3+3+4
-

2024**2nd Semester Examination (CCFUP : NEP)****INDUSTRIAL CHEMISTRY****Paper : MJ 2-T (Single Core Major)****[Inorganic Materials for Chemical Industries and Industrial Waste Management]**

Full Marks : 60

Time : Three Hours

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Group - AAnswer any **ten** questions. 2×10=20

1. What is silica modules of cement? Mention its importance.
2. What is steel?
3. Write the major ingredients form the manufacturing of traditional ceramics.
4. What do you mean by engineering plastics? Give two examples.
5. What is cross flow filtration?
6. What is the basic difference between plasticized PVC and unplasticized PVC?

P.T.O.

(2)

7. Which is more stable, the pearlitic or the spheroiditic microstructure? Why?
8. What is a furnace?
9. State the composition and properties of sodalime glass.
10. Give two examples of non-ferrous alloys and their use.
11. Write short note on RDX.
12. What is the role of feldspar in manufacture of ceramics?
13. Write composition and use of Nichrome.
14. Distinguish between borosilicate glass and fluorosilicate glass.
15. Mention the uses of Varnish.

Group - B

Answer any **four** questions. $5 \times 4 = 20$

16. Briefly describe the process of manufacturing of ceramic tiles with a flow sheet. 5
17. Explain the differences between PSC (Portland Slag Cement) and PPC (Portland Pozzolona Cement). 5
18. (i) Define :
 - (a) Mineral
 - (b) Ore
 - (c) Gangue

(3)

- (ii) What is the effect of Manganese and Chromium in steel? $(1+1+1)+2$
19. Describe the salient points for extraction of pig iron in Blast furnace. 5
20. (i) What is a leaf filter?
 - (ii) Show that for a leaf filter, the total volume of filtrate V is related to time of filtration t by a relation of the form : $t/V = a + b V$, where a and b are constants for a filter? 1+4
21. Write all possible invariant reaction from Fe-Fe₃C phase diagram.

Group - C

Answer any **two** questions. $10 \times 2 = 20$

22. (i) What is the glazing? What is purpose of glazing?
 - (ii) Explain the shaping and drying process followed for ceramic bodies. 5+5
23. (i) What is Cement clinker? Why little amount of gypsum is added to Portland cement clinker?
 - (ii) Discuss the reactions occurring during phases the hydration of cement. 5+5
24. Write short notes on : $2 \times 5 = 10$
 - (i) Refining
 - (ii) Calcination

P.T.O.