

**Indian Institute of Technology, Kharagpur**  
**Department of Chemical Engineering**

Name & Roll no:

**CH 62028 Project Engineering & Management (2024-25)**

**Test-1**

**11/02/2025**

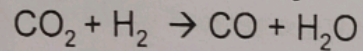
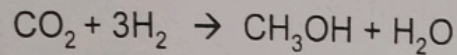
**(6 x 0.5 = 3M)**

1. HAZOP is an
  - a. Risk identifying technique
  - b. Risk solving technique
  - c. Risk assessment technique
  - d. A and B
  - ☒ e. A and C
  - f. B and C
2. When to conduct HAZOP study
  - a. During Preliminary project assessment
  - b. During final stages of construction
  - c. During normal operation
  - ☒ d. All the above
  - e. None of the above
3. Which of the following is NOT considered while calculating the break-even point?
  - a. Fixed costs
  - b. Variable costs
  - c. Selling price per unit
  - ☒ d. Income tax rate
4. CO<sub>2</sub> fire extinguisher is used on
  - a. Flammable liquid fires
  - b. Live electrical equipment fires
  - c. Wood, paper and textiles fires
  - d. Flammable metal fires

A. All the above  
☒ B. Only I and II  
C. Only I and III  
D. Only II and III  
E. Only II and Iv
5. The lowest temperature at which a liquid can gives off vapor to form an ignitable mixture in air near the surface of the liquid.
  - ☒ a. Flash point
  - b. Fire point
  - c. Auto ignition temperature
  - d. lower flammable limit (LFL)
6. A negative net cash flow indicates:
  - a. A company is generating more revenue than expenses
  - ☒ b. A company is spending more cash than it is receiving
  - c. The company has excess profit
  - d. The company is increasing shareholder equity



- ✓ 7. A gas mixture containing 3 mol  $\text{CO}_2$ , 5 mol  $\text{H}_2$  and 1 mol water is undergoing the following reactions: What is the mole fraction of methanol in the final mixture if the extent of reaction is 0.6 for first reaction and 0.4 for second reaction. [2]



- ✓ 8. An investigation of a proposed investment has been made. The following result has been presented to management: The payback period is 5 years. Annual depreciation is 10 percent per year of the fixed-capital investment; and fixed-capital investment is 85 percent of total capital investment. Using this information, determine the rate of return on the investment. [2]

- ✓ 9. In the design of a chemical plant, the following expenditures and revenues are estimated after the plant has achieved its desired production rate: [3]

Total capital investment	\$10,000,000
Working capital	\$ 1,000,000
Annual sales	\$8,000,000
Annual expenditures	\$2,000,000

tax rate = 30%

Assuming straight-line depreciation over a 10-year project analysis period, determine

- The return on the investment after taxes
- The payback periods