UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF CHEMICAL AND BIO-ENGINEERING TECHNOLOGY

FINAL EXAMINATION

OCTOBER 2025 SEMESTER

COURSE CODE	:	CPB40303
COURSE TITLE	:	PROCESS SAFETY MANAGEMENT 2
PROGRAMME NAME	:	BACHELOR OF CHEMICAL ENGINEERING TECHNOLOGY (PROCESS) WITH HONOURS
DATE	:	31 JANUARY 2026
TIME	:	2:00PM - 5:00PM
DURATION	:	3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. This question paper consist of ONE sections.
4. Section A consist of five questions. Answer FOUR (4) questions only.
5. Please write your answer on the answer booklet provided.
6. Please answer all questions in English only.
7. Refer to the attached Formula/ Appendies. ☐ *Tick if applicable*

THERE ARE 6 PAGES OF QUESTIONS INCLUDING THIS PAGE

SECTION A (Total: 100 marks)

Answer FOUR (4) questions.

Please use the answer booklet provided.

Question 1

Process hazard analysis (PHA) is a rigorous and systematic approach to determine, assess, and manage the risks associated with the hazardous chemical processes. the relevant consequences might include worker safety, public safety, environmental impact and property damage. The analysis identifies the factors contributing to these incidents and ranks each scenario according to the frequency and severity.

(a) Identify four reasons to conduct hazard identification.

(4 marks)

(b) Determine four sections that PHA primarily focusing on.

(4 marks)

(c) Identify four criteria to be considered in choosing accurate PHA technique.

(4 marks)

(d) Categorize the times needed to review the hazard analysis.

(7 marks)

(e) Organize the process of managing the risk as stated in PHA

(6 marks)

Question 2

For most companies, the hardest part of PSM compliance is keeping up with the recordkeeping requirements. Many of the PSM standard's guidelines involve some type of formal documentation. The process safety information component is no exception, requiring extensive documentation of the various hazards within your site's PSM-regulated processes.

(a) Explain the definition of Process Safety information.

(4 marks)

(b) Identify three pillars to be covered in Process Safety Information.

(3 marks)

(c) In a simple table, differentiate five information required in those three pillars.

(15 marks)

(d) Identify six criteria of highly hazardous materials.

(3 marks)

Question 3

OSHA standards mandate a PHA for any industrial process that involves hazardous chemicals that hazardous chemical releases pose a significant risk to the environment and human communities close to manufacturing plants. In addition, such releases will have a major implications for the offending company. This means hefty fines and other legal liabilities.

(a) Determine three ways to identify hazards.

(6 marks)

(b) Determine four sources of information if the hazards are identified via document review.

(4 marks)

(c) Identify five PHA methods that are commonly used in petrochemical industries.

(5 marks)

(d) Explain five situation if the biological and medical surveillance and required.

(10 marks)

Question 4

The Management of Change (MOC) element helps to ensure that changes to a process do not inadvertently introduce new hazards or unknowingly increase the risk of existing hazards.

(a) Define Management of Change based on the principle of Process Safety Information.

(1 marks)

(b) Justify two purposes of conducting the Management of Change

(2 marks)

(c) Choose four activities that require a review and authorization process upon accepting the change in the MOC.

(4 marks)

(d) List ten type of changes in the MOC that should be assessed.

(10 marks)

(e) List eight steps of conducting the Management of Change.

(8 marks)

Question 5

Process safety is about the prevention of, preparedness for, mitigation of, response to, or restoration from catastrophic releases of chemicals or energy from a process associated with a facility.

(a) Classify three consequences of fire safety accident and two groups that are going to be affected.

(5 marks)

(b) Identify the advantages of conducting PHA

(2 marks)

(c) Determine four basics culture in Process Safety

(4 marks)

(d) Identify five pillars of commitment in process safety.

(5 marks)

(e) Identify four ways to help a company to achieve a good process safety culture.

(4 marks)

(f) Determine five methods to reach stakeholders.

(5 marks)

END OF EXAMINATION PAPER