

Week 0 : Assignment 0

Assignment not submitted

Instructions: This is a diagnostic pre-assignment meant to give you an idea of the nature of this course and the prerequisite knowledge required.
There is NO grading. Attempt all questions based on your current understanding.

1)

1 point

Which of the following best defines a hazard?

- A. The probability of an accident
- B. A source or situation with potential to cause harm
- C. The severity of injury after an accident
- D. A safety rule violation

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

2)

1 point

Risk is most appropriately defined as:

- A. Number of accidents in a year
- B. Unsafe act by a worker
- C. Combination of likelihood and consequence of an event
- D. Cost incurred due to accidents

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

3)

1 point

If the probability of a minor accident on a machine in a day is 0.02, what is the probability that no accident occurs on that day?

- A. 0.02
- B. 0.98
- C. 1.02
- D. Cannot be determined

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.



4)

1 point

Which of the following is an example of a leading safety indicator?

- A. Lost Time Injury Frequency Rate (LTIFR)
- B. Number of fatalities
- C. Near-miss reports
- D. Unsafe acts

☐ a.☐ b.☐ c.☐ d.

5)

1 point

Which of the following is NOT a descriptive analytics technique?

- A. Mean accident rate
- B. Bar chart of injury types
- C. Prediction of future accidents using regression
- D. Frequency distribution of hazards

☐ a.☐ b.☐ c.☐ d.

6)

1 point

A plant recorded 10 accidents in 1,000,000 work hours. What is the accident rate per 100,000 work hours?

- A. 0.1
- B. 1
- C. 10
- D. 100

☐ a.☐ b.☐ c.☐ d.

7)

1 point

Which of the following issues most directly affects safety data quality?

- A. High safety budget
- B. Under-reporting of near misses
- C. Use of PPE
- D. Safety training duration



- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

8)

1 point

Which measure best represents the central tendency of accident severity scores?

- A. Variance
- B. Standard deviation
- C. Mean
- D. Range

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

9)

1 point

Which of the following best reflects predictive safety analytics?

- A. Counting last year's accidents
- B. Ranking hazards by expert opinion
- C. Estimating future accident probability using historical data
- D. Writing safety rules

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

10)

1 point

Which of the following skills will be most helpful for successful completion of this course?

- A. Advanced thermodynamics
- B. Basic statistics and probability
- C. Structural design codes
- D. Chemical reaction kinetics

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

[Check Answers and Submit](#)

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☐ c.

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10)

1 point

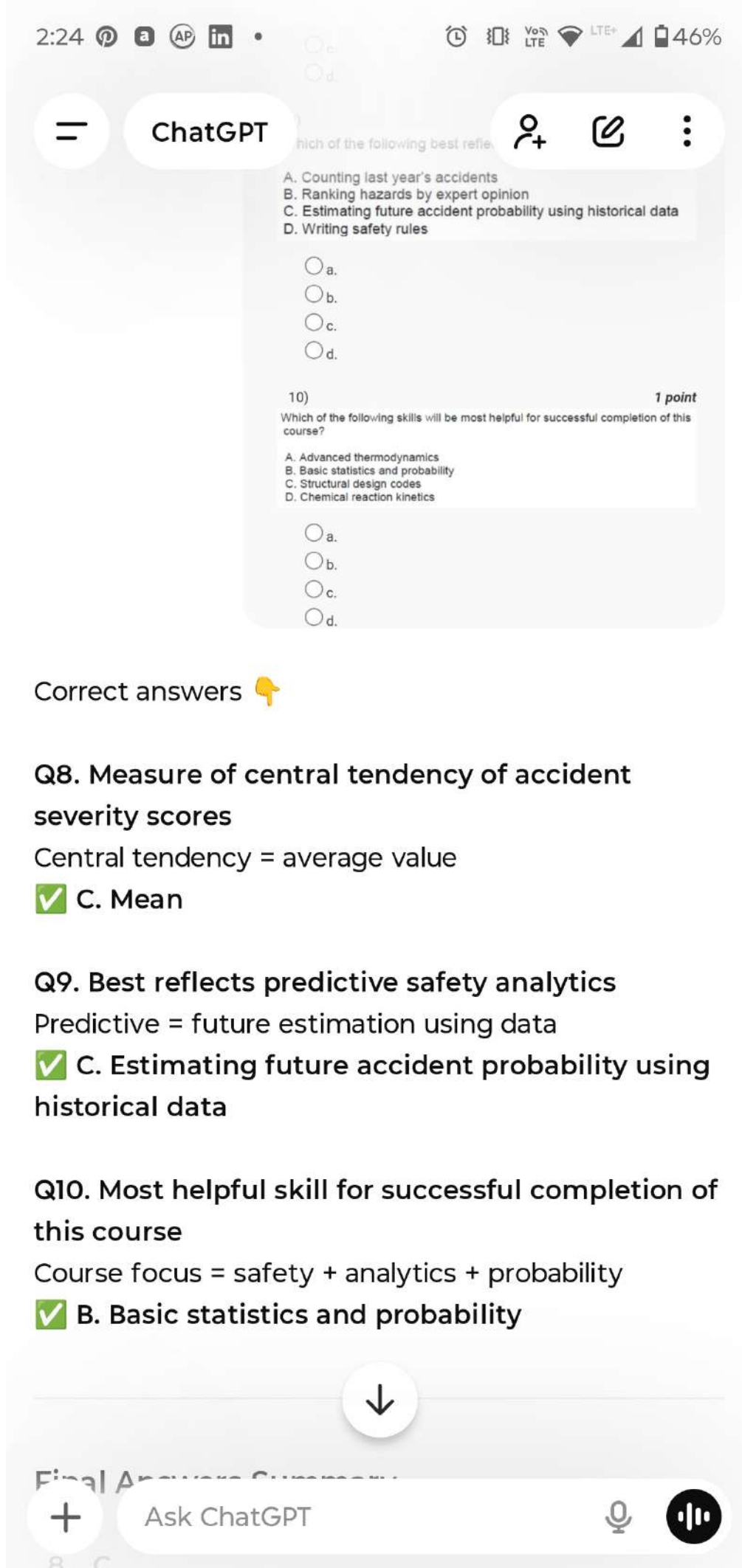
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- ☐ b.
- ☐ c.
- ☐ d.

Check Answers and Submit





Correct answers 📌

Q8. Measure of central tendency of accident severity scores

Central tendency = average value

✅ C. Mean

Q9. Best reflects predictive safety analytics

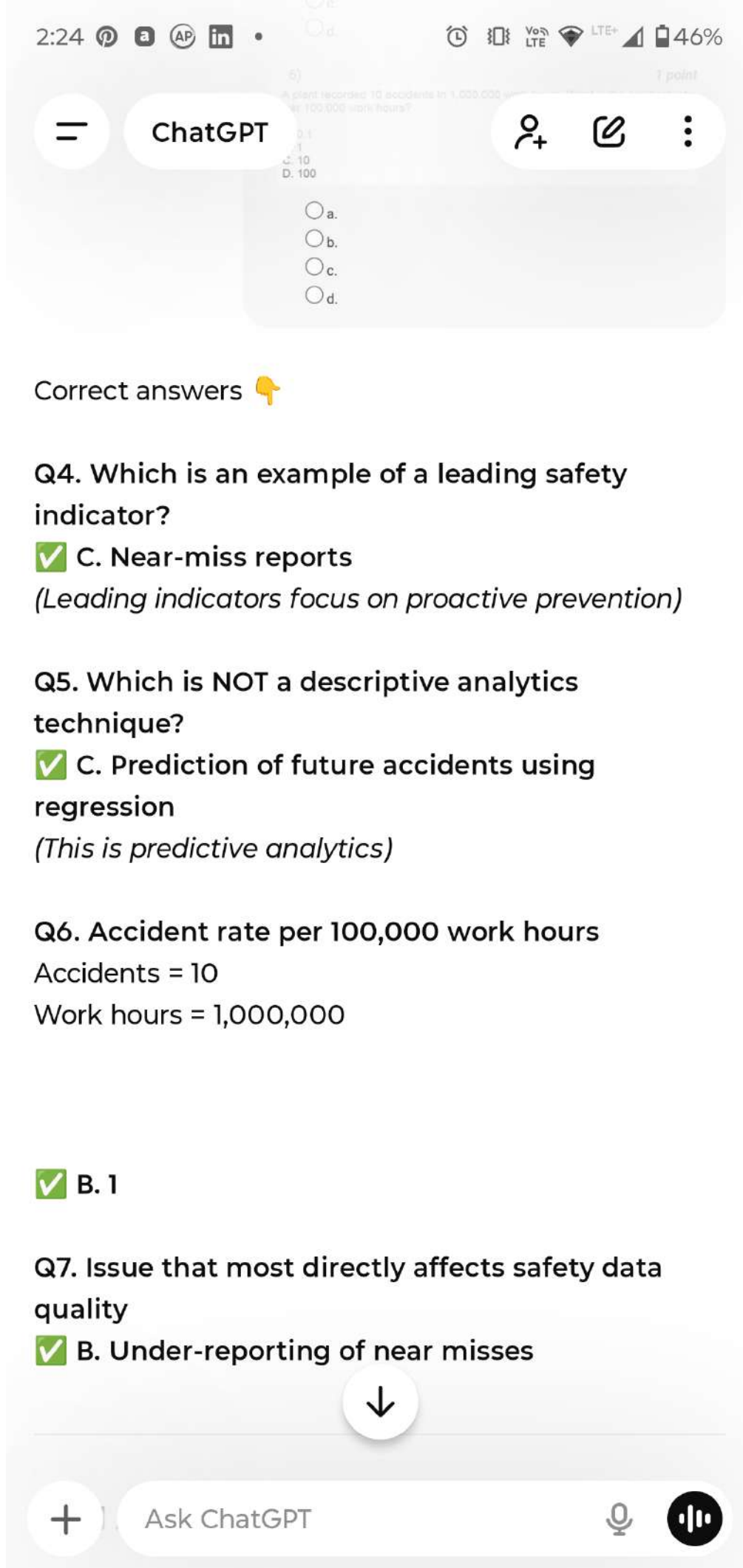
Predictive = future estimation using data

✅ C. Estimating future accident probability using historical data

Q10. Most helpful skill for successful completion of this course

Course focus = safety + analytics + probability

✅ B. Basic statistics and probability





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The probability of an accident is 0.02. What is the probability that no accident occurs on that day?

3. A source or situation with potential to cause harm

C. The severity of injury after an accident

D. A safety rule violation

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

2)

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3)

1 point

If the probability of a minor accident on a machine in a day is 0.02, what is the probability that no accident occurs on that day?

What is ans

Correct answers 📌

Q1. Which best defines a hazard?

✓ B. A source or situation with potential to cause harm

Q2. Risk is most appropriately defined as:

✓ C. Combination of likelihood and consequence of an event

Q3. Probability that no accident occurs:

Given probability of accident = 0.02

No accident = $1 - 0.02 = 0.98$

✓ B. 0.98



Final Answers Summary



Ask ChatGPT



1. B

Week 01 : Assignment 01

Assignment not submitted

Due date: 2026-02-04, 23:59 IST.

1)

1 point

A potential condition that can cause damage to the environment is called

- a. Hazard
- b. Accident
- c. Risk
- d. Safety

☐ a)

☐ b)

☐ c)

☐ d)

2)

1 point

The next step after performing predictive analytics is

- a. Descriptive Analytics
- b. Diagnostic Analytics
- c. Prescriptive Analytics
- d. Cognitive Analytics

☐ a)

☐ b)

☐ c)

☐ d)

(Qs 3 to 5) Answer the following questions based on the following system description

"Faulty regulating valve of the cooking gas cylinder in the kitchen has resulted in leakage of gas. There is risk of fire/explosion if someone tries to light the gas stove"

3)

1 point

What are the Hazardous Elements (HE) in the system?

- a. LPG Gas
- b. Stove
- c. Regulating valve
- d. All the above

☐ a)



4)

1 point

What is the Initiating Event (IE)?

- a. Fault in regulating valve
- b. Leakage of gas
- c. Turning on the knob of the stove
- d. Creating spark by clicking the lighter

☐ a)☐ b)☐ c)☐ d)

5)

What is the Target in this case?

1 point

- a. Human beings
- b. Property
- c. Environment
- d. All of the above

☐ a)☐ b)☐ c)☐ d)

6)

1 point

Risk control measures undertaken to prevent risks occurring due to human errors come under _____

- a. Plant Design
- b. Operating Procedures
- c. Staff Competence
- d. Emergency Arrangements

☐ a)☐ b)☐ c)☐ d)

7)

Reliability Handbook can be best explained as _____

- a. Historical Data



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☐ a)

☐ b)

☐ c)

☐ d)

7)

1 point

Reliability Handbook can be best explained as _____

- a. Historical Data
- b. Data Bank
- c. Experts Opinion
- d. All of the above

☐ a)

☐ b)

☐ c)

☐ d)

(Qs 8-10) Answer the following questions based on the following description:

The probability, severity, and detectability of 4 Incident Paths (IPs) were measured on a 5-point Likert scale as follows:

IP	Probability	Severity	Detectability
IP1	1	5	3
IP2	4	2	2
IP3	5	4	1
IP4	2	5	3

8)

1 point

IP1 has probability of occurrence of 1 on the Likert Scale. What does it imply?

- a. IP1 has high probability of occurrence
- b. IP1 has low probability of occurrence
- c. IP1 has very low probability of occurrence
- d. IP1 has very high probability of occurrence

☐ a)

☐ b)

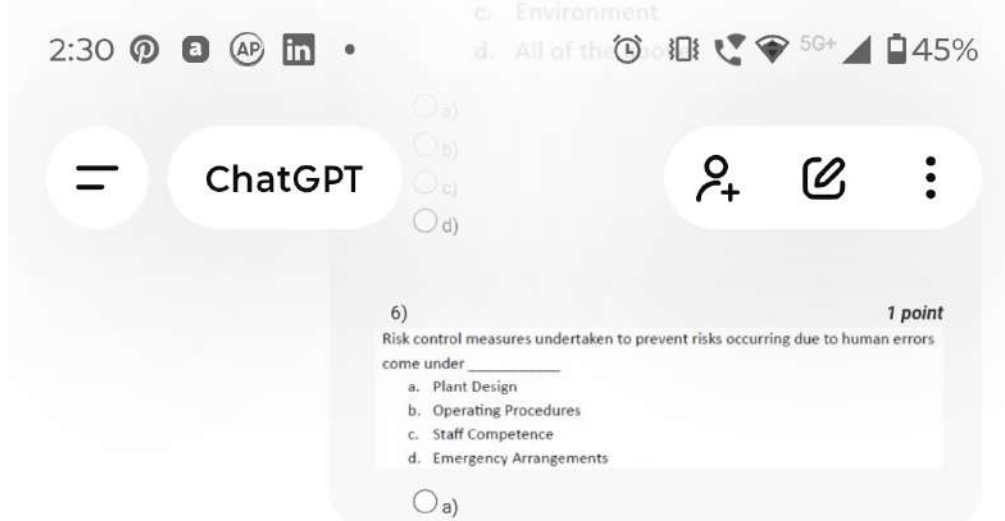
☐ c)

☐ d)

9)

1 point





Correct answers 📌

Q4. What is the Initiating Event (IE)?

Initiating event = first event that starts the accident sequence

✅ a) Fault in regulating valve

Q5. What is the Target in this case?

Targets = who/what can be harmed

Humans, property, and environment — all are at risk

✅ d) All of the above

Q6. Risk control measures to prevent risks due to human errors come under

Human error prevention = training, skills, competence

✅ c) Staff Competence

Answer Summary

4. a

5. d

6. c



Reliability Handbook can be best explained as _____

- a. Historical Data
- b. Data Bank
- c. Experts Opinion
- d. All of the above

☐ a)

☐ b)

☐ c)

☐ d)

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☐ a)

☐ b)

☐ c)

☐ d)

9)

1 point

Using a 2-parameter scheme, where the parameters considered are Probability and Severity of occurrence, which IP carries the maximum risk?

- a. IP1
- b. IP2
- c. IP3
- d. IP4

☐ a)

☐ b)

☐ c)

☐ d)

10)

1 point





ChatGPT



Hazard और Risk में difference क्या है?

2 Predictive analytics के बाद कौन-सा step आता है?

3 Probability = 1 का मतलब क्या है? मुझे इन क्वेश्चंस के ans समझाओ

बहुत बढ़िया 👍

अब मैं बहुत आसान भाषा + example के साथ तीनों answers समझा रहा हूँ, ताकि confusion बिल्कुल खत्म हो जाए।

1 Hazard और Risk में Difference

● Hazard क्या है?

👉 Hazard = खतरे का source / condition

- जिससे नुकसान हो सकता है
- अपने आप में probability नहीं होती

📌 Example:

- LPG Gas
- Open electric wire
- Wet floor



👉 LPG gas hazard है, क्योंकि उससे आग लग सकती है



Ask ChatGPT





ChatGPT



🔵 Risk क्या है?

👉 Risk = Hazard से accident होने की संभावना + उसका नुकसान

📌 Formula:

$\text{Risk} = \text{Probability} \times \text{Severity}$

📌 Example:

- LPG gas leak +
- Kitchen में spark होने की संभावना +
- Explosion से injury

👉 यही Risk है

🔄 Short Trick (Exam याद रखने के लिए)

Hazard = “क्या खतरनाक है”

Risk = “कितना खतरनाक है”

2 Predictive Analytics के बाद कौन-सा Step आता है?

Analytics का सही sequence:

1 Descriptive – क्या हुआ?



Ask ChatGPT



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- ☐ a)
- ☐ b)
- ☐ c)
- ☐ d)

9)

1 point

Using a 2-parameter scheme, where the parameters considered are Probability and Severity of occurrence, which IP carries the maximum risk?

- a. IP1
- b. IP2
- c. IP3
- d. IP4

- ☐ a)
- ☐ b)
- ☐ c)
- ☐ d)

10)

1 point

Using a 3-parameter scheme, which IP carries the maximum risk?

- a. IP1
- b. IP2
- c. IP3
- d. IP4

- ☐ a)
- ☐ b)
- ☐ c)
- ☐ d)

