Assignment-1

1. A potential condition that can cause damage to the environment is called
    a. Hazard
    b. Accident
    c. Risk
    d. Safety

    Answer: Option A

    Solution: See Lecture 1

2. The next step after performing predictive analytics is
    a. Descriptive Analytics
    b. Diagnostic Analytics
    c. Prescriptive Analytics
    d. Cognitive Analytics

    Answer: Option C

    Solution: See Lecture 1

(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. What are the Hazardous Elements (HE) in the system?
    a. LPG Gas
    b. Stove
    c. Regulating valve
    d. All the above

    Answer: Option d

    Solution: Hazardous element is a source of hazard

4. 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

    Answer: Option A

    Solution: Initiating Event is the first event of the sequence of events that leads a hazard to propagate into an incident. Here, the first event that initiates the propagation of hazard is defect in regulating valve.

5. What is the Target in this case?
    a. Human beings
    b. Property
    c. Environment
    d. All of the above

    Answer: Option d

    Solution: Fire/Explosion can cause human injury/fatality, property damage and environmental damage. Hence d.

6. 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

    Answer: Option c

    Solution: See lecture 3

7. Reliability Handbook can be best explained as _____
    a. Historical Data
    b. Data Bank
    c. Experts Opinion
    d. All of the above

    Answer: Option b

    Solution: See lecture 4

(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. 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

Answer: Option C

Solution: See lecture 4

9. 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

    Answer: Option c

    Solution:

IP	Probability (P)	Severity (S)	Detectability (D)	Risk (P x S)	Risk (P x S x D)
IP1	1	5	3	5	15
IP2	4	2	2	8	16
IP3	5	4	1	20	20
IP4	2	5	3	10	30

10. Using a 3-parameter scheme, which IP carries the maximum risk?
    a. IP1
    b. IP2
    c. IP3
    d. IP4

    Answer: Option d

    Solution:

IP	Probability (P)	Severity (S)	Detectability (D)	Risk (P x S)	Risk (P x S x D)
IP1	1	5	3	5	15
IP2	4	2	2	8	16
IP3	5	4	1	20	20
IP4	2	5	3	10	30