Reg. No.												

Question Paper Code	12221

M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

Third Semester

M.E. - Industrial Safety Engineering

20PISPC301 - SAFETY IN ENGINEERING INDUSTRY 4.0

(Regulations 2020)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	Why is it important to follow general safety rules when operating turning machines?	*2,K2,CO1*
2.	List the advantages and disadvantages of CNC machines compared to traditional manual machines.	*2,K1,CO1*
3.	Infer the potential consequences of neglecting guarding during maintenance.	*2,K1,CO2*
4.	Classify the different types of machine guards based on their construction.	*2,K1,CO2*
5.	How does resistance welding work, and what are its key principles?	*2,K2,CO3*
6.	Mention four safety precautions in brazing.	*2,K1,CO3*
7.	Infer the different feeding and cutting mechanisms used in power presses.	*2,K1,CO4*
8.	Relate the hazards associated with hot rolling mill operations and the control measures.	*2,K1,CO4*
9.	Why is heat treatment an essential process in the manufacturing of certain engineering components?	*2,K2,CO5*
10.	How can engineers ensure the uniformity of plated coatings during electroplating?	*2,K2,CO6*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Explain the significance of planned maintenance for planning machines. Also discuss the areas to inspect on planning machines.	*13,K2,CO1*
		OR	
	b)	Explain the importance of maintaining a clean and organized work area when using woodworking machinery.	*13,K2,CO1*
12.	a)	Elaborate the comprehensive policy for implementing and maintaining ZMS (Zero Mechanical State).	*13,K3,CO2*

OR

b) Compare the effectiveness of fixed guards and interlock guards in protecting the point of operation. *13,K3,CO2*

13. a) Outline the steps for selecting appropriate personal protective equipment for welding tasks. *13,K3,CO3*

OR

b) Discuss the purpose and function of flashback arrestors in gas welding and cutting. *13,K3,CO3*

14. a) Demonstrate the steps involved in setting up a power press for a specific task. *13,K2,CO4*

OR

b) Explain the material handling practices in foundries and their importance. *13,K2,CO4*

15. a) Write a detailed note on quenching and tempering in heat treatment. *13,K3,CO5*

OR

b) List and elaborate the safety precautions that should be taken when working with electroplating chemicals. *13,K3,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) In a steel manufacturing plant, a safety incident occurred during hot rolling mill operations. A worker sustained burns while handling material near the hot rolling mill. Relate the incident to the importance of continuous monitoring and improvement of safety protocols in industrial settings. *15,K3,CO6*

OR

b) In an engineering facility, there are concerns about the disposal of industrial waste, especially chemicals used in various processes. An improper disposal incident resulted in environmental damage. Illustrate the correct procedures for handling and disposing of chemical waste in an engineering factory. *15,K3,CO6*