

01561

**BACHELOR OF TECHNOLOGY IN
MECHANICAL ENGINEERING
(COMPUTER INTEGRATED
MANUFACTURING)
Term-End Examination
December, 2012**

BME-030 : SAFETY ENGINEERING

Time : 3 hours

Maximum Marks : 70

Note : Attempt any five questions.

1. (a) Records of safety in a factory show 8
following incidents of injuries :
Number injuries = 6
Number of workers who received treatment
in hospital = 3, 2 for 2 days each and
1 for 1 day
Number of employees who received first aid
treatment and did not work for 4 hrs=2,
and did not work for 2 hrs = 1.
The factory worked for 50 weeks during the
year with 40 working hours per week and
50 employees on all working days.
Calculate :
(i) Total number of hours available for
work and hours lost.

- (ii) Injury rate
 - (iii) Rate of cases in which work days were lost
 - (iv) Rate of cases in which work hours were lost.
- (b) Besides passing legislations what role government plays in respect of safety conditions in industry ? 6
2. (a) Make a list of diseases which are likely to be caused by working in industry. What are the conditions that are found in work place that can control the occupational health? 8
- (b) Accidents are regularly caused in work places. Describe Heinrich theory of accident causation and the suggestions he made for improving occupational health. 6
3. (a) What are environmental pollutants ? What are the effects and what are sources of their emission? Which pollutants increased since the beginning of nineteenth century ? What are the lives of these pollutants in atmosphere? 7
- (b) Describe how water is distributed on earth surface and how the human use it for drinking and for irrigation? What are water pollutants ? 7

4. (a) What are the methods of detecting gaseous pollutants in industrial environment? Describe methods which detect CO₂, methane and oxygen. 8
- (b) What role is played by the government in maintaining a healthy atmosphere in industry? What provisions for safety are kept in Factory Act of 1948. 6
5. (a) Identify the sources of solid waste. How are the solid wastes classified? Describe domestic and agricultural wastes. 6
- (b) What are the sources of Industrial solid waste? How is air pollution controlled from solid waste in form of particulates from industries ? Describe the electrostatic precipitator. 8
6. What do you understand by land filling? What are different types of landfills? How is a landfill designed and its site selected? What chemical reactions occur in landfill and what is the output? 14
7. (a) What steps are taken in designing and operation of machine to avoid failure ? 7
- (b) Make a list of common hazards and briefly describe heat and temperature and fire hazards. 7

8. (a) What is disaster ? Classify disaster in three groups and describe them. 7
- (b) What are natural disasters ? Write briefly on any three natural disasters. 7
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