

Nirma University

Institute of Technology

Supplementary Examination (SPE), March - 2023

B. Tech. in Electrical Engineering, Semester-VII

2CHOE26 Introduction to Fire and Safety Engineering

Roll No.

Supervisor's initial with
date

Time: 3 Hours

Max. Marks: 100

Instructions:

1. Attempt all questions.
2. Figures to right indicate full marks.
3. Assume necessary data where needed.
4. Draw neat sketches wherever necessary.
5. Use of datasheet is allowed.
6. Assume suitable data, if necessary.

Section I

- Q.1** "Every fire loss is devastating, but there are often significant hidden damages that insurance companies overlook." Elaborate the statement with an example of an iceberg. (10)
CO1
BL3
- Q.2** For any fuel, flash points, fire points, & auto-ignition points are same or not? Justify your answer. Also, mention the significance and factors affecting it. (15)
CO1
BL3

OR

- Q.2** Elaborate on lower and upper flammability limits and flammable range meanings with a suitable diagram. (15)
CO1
BL3
- Q.3 Answer the followings:** (25)
CO2
- A.** Compare common features of fire extinguishers. Enlist types of it. (15)
BL3
- B.** Would you categorize detectors as active or as passive means of fire protection? Justify your answer. (10)
BL3

Section II

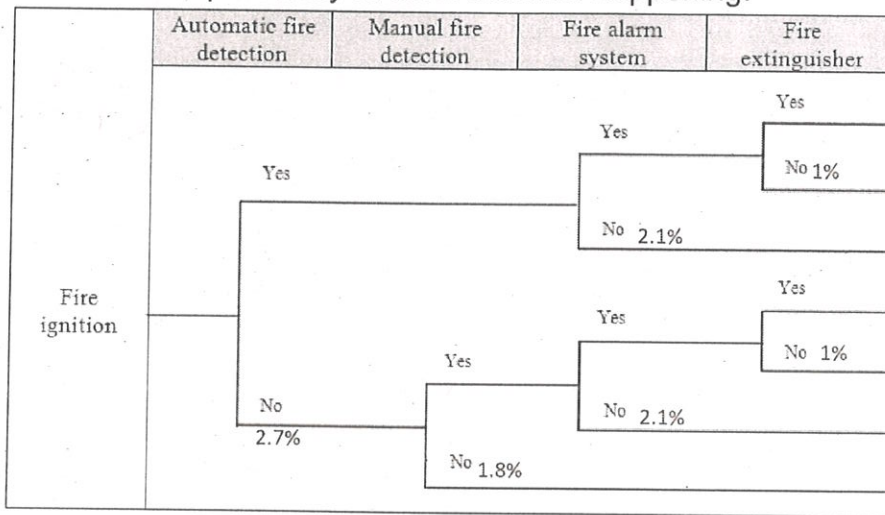
- Q.4 Answer the followings:** (15)
CO2
- A.** What would be the effect of using a foam-making branch meant for 3% foam compound? What would be the effect of if the reverse is done? (07)
BL5
- B.** What type of foam would be appropriate for use in petrol with ethanol blend? What would be the effect of using foam meant for non-polar fuels on such a blend? (08)
BL5

Q.5 Answer the followings:**(15)**
CO4
(10)
BL6

- A. The sprinkler system is fixed in all departments in a two-story pentathlon mall. During fire protection system testing, it was found that sprinklers were not able to extinguish the fire. As an engineer, to find the root cause with the help of a fault tree and analyze it.

OR

- A. In a plastic manufacturing plant, a fire protection system is installed with automatic fire detection, manual fire detection, a fire alarm system, and fire extinguishers. In the shown event tree, possibilities of failure are shown. Calculate the possibility of each scenario happening.

(10)
BL6

- B. What do you understand by the terms 'extension' and 'exclusion' in a fire insurance policy? illustrate your answer with examples from the standard fire insurance policy available in India

(05)
BL4**Q.6 Answer the followings:****(20)**

- A. As a fire investigator, explain the meaning of an accelerant. Describe ways in which the use of accelerants at a fire scene can be evidenced.
- B. Assess the process of matchstick igniting and burning with the fire engineering aspect.

(15)
CO3
BL5
(05)
CO1
BL5

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