

B.Sc. (Fire & Safety) (Sem.-VI) Examination**Fire Safety Design****Time : 3 Hours]****April-2017****[Max. Marks : 70**

- Q.1 (A) What are the general requirement of sprinkler system? Explain in detail wet sprinkler system and where alternate sprinkler system is used. **07**
- Or**
- How many sprinklers in an installation shall be considered for light hazard, ordinary hazard and high hazard? Explain in details about dry sprinkler system.
- Q.1 (B) Draw simple sketch of sprinkle system layout and explain tree fed, end fed and grid fed system. **07**
- Or**
- What is temperature rating of sprinkler system? Besides bulb type which is other type of sprinkler head? At what temperature the QBD having black, blue and red will operate.
- Q.2 (A) Describe automatic fire detection system. List the names of detectors and explain principle of operation of detection system. **07**
- Or**
- Explain photo electric detector working on light obscuration and light scattering principle.
- Q.2 (B) Give types of radiation detectors and describe infrared flame detector. **07**
- Or**
- Write down types of heat detectors and explain working of rate of rise heat detector and rate compensated heat detector.
- Q.3 (A) What do you understand by smoke management system, what it includes and how will you keep escape routes clear of smoke. **07**
- Or**
- Draw figure of fire plume, and explain the meaning of a) smoke filling, b) unsteady clean height with upper layer exhaust and c) steady clear height with upper layer exhaust.
- Q.3 (B) Explain effect of wind and stack effect on tall building, how it contribute to movement of smoke in building. **07**
- Or**
- Describe forced ventilation, negative pressure ventilation and positive pressure ventilation.
- Q.4 Explain CO₂ flooding system, usage, extinguishing properties and general safety guidelines. **14**

Or**P. T. O.**

Explain DCP flooding system and its design giving impetus on physical properties of DCP and extinguishing properties.

Q.5

Give answer of following questions.

1. This sprinkler layout is used for pitched roof
 A) Center B) End C) Loop D) Grid
 2. Operation of sprinkler depends on
 A) IR rays B) UV rays C) Heat D) Pressure
 3. NFPA code for CO₂ system is
 A) 10 B) 11 C) 12 D) 14
 4. IR detectors are normally used for which area
 A) Large open B) Small open C) Closed D) Sealed
 5. When we used open sprinklers the system is known as
 A) Dry B) Wet C) Deluge D) Pre-action
 6. What is full form of ESFR?
 7. Staircase pressurization come under **Active/Passive**
 8. For design point of view how many sprinklers are considered
 A) 15 B) 20 C) 25 D) 30
 9. A smoke detector under flat ceiling has a radius of
 A) 6.5 meters B) 7.5 meters C) 8.5 meters D) 9.5 meters
 10. In DCP total flooding system total quantity supposed to discharge within
 A) 20 seconds B) 30 seconds C) 40 seconds D) 60 seconds
 11. For 1.11m³ volume CO₂ required is
 A) 1.11 kg B) 1 kg C) 1.10 kg D) 1.01 kg
 12. If chimney is painted with dark colour it does not help to improve pressure difference. **Yes/No**
 13. Ventilation must be started from
 A) Top B) Side C) Bottom D) Centre
 14. Design density for low hazard sprinkler is
 A) 200 lpm/m² B) 225 lpm/m² C) 250 lpm/m² D) 300 lpm/m²
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