Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2019

FT3CO13 Fire Prevention & Protection System

Programme: B.Tech. Branch/Specialisation: FT

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. Which of the following is a disadvantage of rate-of-rise heat detectors? **1**

(a) The alarm can be initiated at temperatures below that of fixed-temperature detectors.
(b) The alarm is initiated when the temperature rises suddenly.
(c) Most are reliable and not subject to false activations.
(d) Improper placement can cause activation.

ii. Two insulated wires within an outer covering that melts at a predetermined temperature and allows the two wires to touch, thus completing the circuit and sounding the alarm. The above describes the operation of a ..... heat detector. **1**

(a) Fixed-temperature fusible device
(b) Fixed-temperature continuous line
(c) Rate-of-rise thermoelectric
(d) Fixed-temperature bimetallic strip.

iii. All portable extinguishers are classified according to their: **1**

(a) Size (b) Weight
(c) Intended use (d) Conductivity

iv. The hazen Williams Diagram represent which of the following characteristics: **1**

(a) Friction loss (b) Discharge
(c) Pressure (d) None of these

P.T.O.

v. R = (V/T + Rs) x Cn x Cl indicate the minimum rate of discharge where Rs indicate **1**
(a) Rate of discharge (b) Time
(c) Rate of foam breakdown (d) Compensation of shrinkage

vi. In case of carbondioxide fixed fire fighting system x= Q/1.3√ p in which x represent: **1**
(a) Vent area in sq. inch (b) Vent area in sq.mm
(c) Vent area in sq.ft (d) Flow rate in lb/min

vii. Storage life of wet chemical exignusihing agent shall be: **1**
(a) 7 year (b) 12 years (c) 15 years (d) None of these

viii. Minimum discharge time of hydrocarbon liquids whose flash point between 37.8 degree C and 60 degree C in case of fixed roof storage shall be: **1**
(a) 20 min. (b) 50 min. (c) 30 min. (d) None of these

ix. Which of the following is not a component of ground Static water tank? **1**
(a) Screened vent (b) Stub overflow pipe
(c) Steam coil for heating (d) Pump suction tank

x. Siphons or jet siphons work by the principle of: **1**
(a) Evaporation (b) Enduction
(c) Eduction (d) Reduction

Q.2 i. Define floor area ratio (FAR)? **2**

ii. Explain FAR role in safe evacuation of occupant during an emergency? **3**

iii. Explain the fire resistance properties of timber, bricks and concrete used in Building construction with their contribution in fire spread? **5**

OR iv. Define Group D- Assembly Building with its subdivisions as per National Building code? **5**

Q.3 i. Differentiate between fire doors and fire windows? **2**

ii. Give the details colour coding used in layout of hazardous pipelines? What are the five most important factors shall be consider in building exit requirement? **8**

OR iii. What shall be the different content for model survey information format of fire safety inspection in a building? **8**

Q.4 i. Write a short note on manual call point used in automatic detection technology to detect fire? **3**

ii. Give the four basic classifications in foam fire protection system as per standard code of practice? **7**

OR iii. Summarized the function of automatic sprinkler system and explain the layout of a typical sprinkler installation? **7**

Q.5 i. Explain thermal response performance characteristics of Automatic Sprinklers? **4**

ii. What are the types of risers shall install in a high rise building? Explain with the help of suitable diagram? **6**

OR iii. Explain the importance of housekeeping in near miss and accident prevention? **6**

Q.6 Attempt any two:

i. What are the different fire fighting facilities shall be exist in a model fire brigade station? **5**

ii. Write a short note on removal of smoky gases from the upper part of a enclosed compartment? **5**

iii. Write a report on fire case study of nation in which large number of people involved? **5**

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Marking Scheme

FT3CO13 Fire Prevention & Protection System

Q.1	i.	Which of the following is a disadvantage of rate-of-rise heat detectors? (b) The alarm is initiated when the temperature rises suddenly.	**1**
	ii.	Two insulated wires within an outer covering that melts at a predetermined temperature and allows the two wires to touch, thus completing the circuit and sounding the alarm. The above describes the operation of a ..... heat detector. (b) Fixed-temperature continuous line	**1**
	iii.	All portable extinguishers are classified according to their: (c) Intended use	**1**
	iv.	The hazen Williams Diagram represent which of the following characteristics: (a) Friction loss	**1**
	v.	R = (V/T + Rs) x Cn x Cl indicate the minimum rate of discharge where Rs indicate (c) Rate of foam breakdown	**1**
	vi.	In case of carbondioxide fixed fire fighting system x= Q/1.3√ p in which x represent: (c) Vent area in sq.ft	**1**
	vii.	Storage life of wet chemical exignusihing agent shall be: (d) None of these	**1**
	viii.	Minimum discharge time of hydrocarbon liquids whose flash point between 37.8 degree C and 60 degree C in case of fixed roof storage shall be: (d) None of these	**1**
	ix.	Which of the following is not a component of ground Static water tank? (d) Pump suction tank	**1**
	x.	Siphons or jet siphons work by the principle of: (c) Eduction	**1**

Q.2	i.	Definition of floor area ratio (FAR)	1 mark	**2**
		Formula	1 mark	
	ii.	FAR role in safe evacuation of occupant during an emergency		**3**
		0.5 mark for each point	(0.5 mark *12)	
	iii.	Fire resistance properties of timber	1.5 marks	**5**
		Fire resistance properties of bricks	1.5 marks	
		Fire resistance properties of concrete	2 marks	
OR	iv.	Definition of Group D- Assembly Building	1 mark	**5**
		Four subdivisions as per National Building code		
		1 mark for each (1 mark * 4)	4 marks	
Q.3	i.	Difference b/w fire doors and fire windows		**2**
		0.5 mark for each difference	(0.5 mark * 4)	
	ii.	Five colour coding of hazardous pipelines	5.5 marks	**8**
		Five most important factors	2.5 marks	
OR	iii.	Eight points on model survey information format of fire safety inspection in a building		**8**
		1 mark for each	(1 mark * 8)	
Q.4	i.	Definition of manual call point	1 mark	**3**
		Explanation of two types	2 marks	
	ii.	Four basic classifications in foam fire protection system		**7**
			1 mark	
		1.5 mark for each explanation (1.5 marks * 4)	6 marks	
OR	iii.	Function of automatic sprinkler system	1 mark	**7**
		Explanation of 3 types of typical sprinkler installation		
		2 marks for each (2 marks * 3)	6 marks	
Q.5	i.	Sprinkler color coding table		**4**
	ii.	Three types of risers		**6**
		1.5 marks for each (1.5 marks * 3)	4.5 marks	
		Diagram of riser mains	1.5 marks	
OR	iii.	Definition of housekeeping	1 mark	**6**
		Japaneese 55 table	2.5 marks	
		Use in near miss and accident prevention	2.5 marks	

Q.6		Attempt any two:		
	i.	Five fire fighting facilities		**5**
		1 mark for each facility	(1 mark * 5)	
	ii.	Removal of smoky gases from the upper part of a enclosed compartment		**5**
		Plume model	1.5 marks	
		Pluff model	1.5 marks	
		Stack effect	2 marks	
	iii.	Fire case study of nation in which large number of people involved		**5**
		Introduction	1 mark	
		Date and time	1 mark	
		Cause	1 mark	
		Mitigation measures	1 mark	
		Investigation report	1 mark	

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