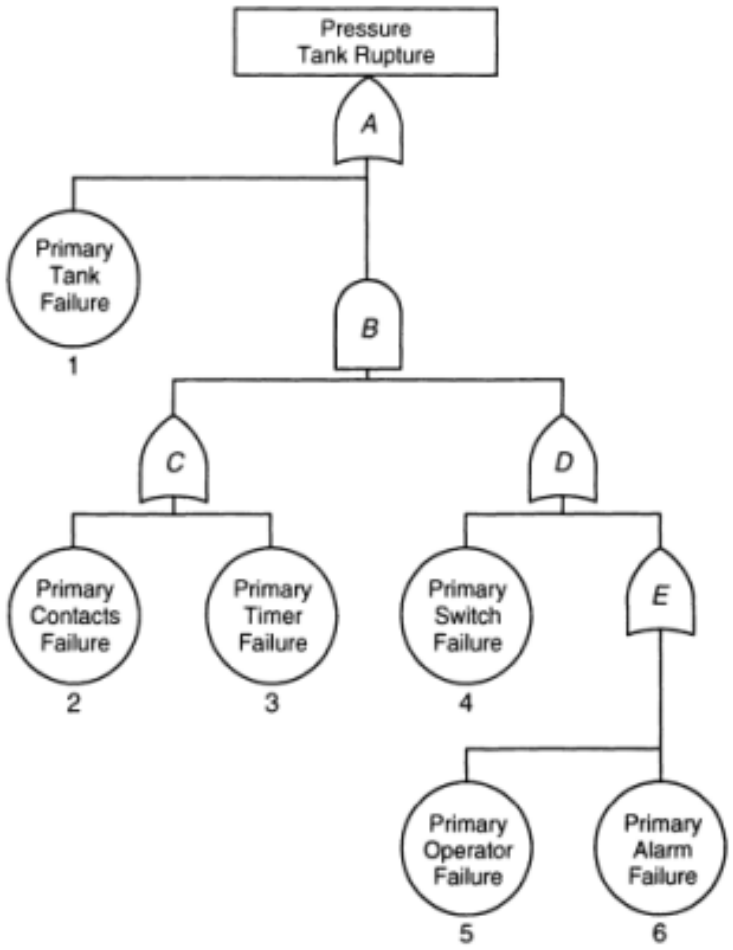
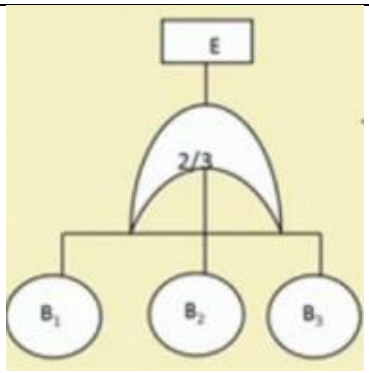
MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

VII SEMESTER B. TECH (CHEMICAL ENGINEERING)
END SEMESTER EXAMINATION
SUBJECT: RISK AND SAFETY MANAGEMENT IN PROCESS INDUSTRIES (CHE 4071)
REVISED CREDIT SYSTEM

Date: 22/12/2021 **Time: 75 min (9.20AM to 10.35AM)** **MAX. MARKS: 20**

Note: Answer ALL the questions.

1A.	What is Initial Mishap Risk Index (IMRI) and Final Mishap Risk Index (FMRI) of preliminary hazard analysis (PHA) technique? Explain with a table. Give one example of ace missile system to explain IMR and FMR Index. What is hazard filter? Discuss with a diagram.	3
1B.	 Express this fault tree into reliability diagram.	2

1C..	 Express this Voting gate in vane diagram. Express equivalent gate symbol using AND or OR gate. Finally calculate P (E). Give an example of Exclusive OR gate. Express equivalent gate symbol using AND or OR gate.	5
2A.	What are the difference among pinch point, squeeze point and run-in plant point? Discuss when static dissipative and dielectric electric overshoes are used. Discuss with example.	3
2B.	List 4 characteristics, which a guard or safety device should have.	2
2C.	Discuss about Flixborough UK Cyclohexane Disaster. Mention the following points: a. Describe the plant with the basic reactions and flow diagram. b. Identify the root cause of disaster. Discuss the points, which lead to the accident. c. Discuss the consequence.	5