

Name:

Enrolment No:



**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, May 2020**

**Course: Advanced Safety Engineering & Management**

**Programme: B Tech FSE**

**Course Code: FSEG 431**

**Instructions:**

**Semester: VIII**

**Time: 03 hrs.**

**Max. Marks: 100**

**SECTION A**

S. No.		Marks	CO
Q 1	You are interested in identifying the possible consequences followed by a chemical release. Which technique you will be using in this case? a). HAZOP b). Fault Tree Analysis c). Event Tree Analysis d). Root Cause Analysis	5	CO1
Q 2	Two components having failure frequency 0.1 each is connect using an OR gate. The probability of top event to occur will be--- a. 0.19 b. 0.81 c. 0.2 d. 0.01	5	CO3
Q 3	Set of basic events whose (simultaneous) occurrence ensures that the TOP event occurs is called a. Cut Set b. Minimal Cut Set c. Set logic d. Logical sequence To preserve evidence that may be lost over time	5	CO2
Q 4	GEMBA refers to a. Actual place b. Field study c. Proper tools and equipment d. Theory	5	CO2
Q 5	Two companies have reportable accident frequency rates are 10 and 15 respectively, Safety performance of company A is better than B a. True b. False	5	CO5

Q 6	<p>The drawbacks of Heinrich Theory is/are</p> <ol style="list-style-type: none"> <li>It was not verified</li> <li>His statements lacks consistency</li> <li>Resource base for the Heinrich study is questionable</li> <li>All of the above</li> </ol>	<b>5</b>	<b>CO4</b>
<b>SECTION B</b>			
Q 7	What is safety culture? List different theories of leadership.	<b>4+6</b>	<b>CO2</b>
Q 8	Differentiate Fault Tree Analysis and Event Tree Analysis.	<b>10</b>	<b>CO2</b>
Q 9	What is Bradley -DuPont curve? Discuss the various stages in it	<b>10</b>	<b>CO2</b>
Q 10	What is the philosophy of behavior based safety? Enlist the possible antecedents and consequences of safe behavior related to the usage of safety helmet in an organization.	<b>3+7</b>	<b>CO4</b>
Q 11	<p>List out the major changes made in ISO 45001:2018 compared to OHSAS 18001</p> <p style="text-align: center;">Or</p> <p>Enlist and briefly explain clauses of ISO 45001:2018 Occupational health and safety management system.</p>	<b>10</b>	<b>CO4</b>
<b>SECTION-C</b>			
Q 12	<p>What are the objectives of accident investigation? 'Every accident is a symptom of system failure'- Examine the statement.</p> <p style="text-align: center;">Or</p> <p>Ms. Lisa Evans, QC supervisor sustained leg injury on account of hit by forklift, FL-01 while she engaged in warehouse material inspection. This incident happened when new operator Mr. Bob Daniel was operating the equipment and it happened during early hours of the shift.</p> <ol style="list-style-type: none"> <li>List out the documents you will scrutinize to identify the root cause of this accident, Discuss the purpose/ reasons for referring these documents.</li> </ol>	<b>20</b>  <b>20</b>	<b>CO 3</b>