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| Name:         | <br><b>UPES</b><br>UNIVERSITY WITH A PURPOSE |
| Enrolment No: |  |

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, May 2021**

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|--------------------------------------|------------------------|
| <b>Course:</b> HSE in Power Industry | <b>Semester:</b> VIII  |
| <b>Program:</b> B. Tech- PSE & EL    | <b>Time</b> 03 hrs.    |
| <b>Course Code:</b> HSFS- 4009P      | <b>Max. Marks:</b> 100 |
| <b>Instructions:</b>                 |                        |

**SECTION A**

| S. No. |   | Marks | CO  |
|--------|---|-------|-----|
| Q 1    | Safety management during construction phase aims at _____ number of accidents.  | 5     | CO1 |
| Q 2    | With reference to the 'Hazard Control Methods' at a building construction site having 5000 workers _____ is the minimum number of 'Safety Officers' required. | 5     | CO1 |
| Q 3    | As per Heinrich, _____ is the ratio between Direct Cost to Indirect Cost of an Accident.  | 5     | CO1 |
| Q 4    | The protection of an Electric Sub-station of capacity 5 MVA or more from Electric Fire minimum _____ number of 'Gas Masks' are required to be made available. | 5     | CO2 |
| Q 5    | For ' <b>Electric Shocks</b> ' prevention _____ and _____ are the most common methods.  | 5     | CO2 |
| Q 6    | Two of the most common methods for the control of 'Risk' are _____ and _____.   | 5     | CO2 |

**SECTION B**

|      |   |    |     |
|------|---|----|-----|
| Q 7  | Explain the 5 major steps involved during 'Hazard Identification & Risk Assessment (HIRA)' method adopted under Risk Management in a Thermal Power Plant (TPP).   | 10 | CO3 |
| Q 8  | Explain the operation of the following 'Air Pollution Control' system(s) along with their specific application in a Thermal Power Plant:<br>1) Venturi Scrubber<br>2) Electro-static Precipitator (ESP) | 10 | CO4 |
| Q 9  | Explain 5 different types of 'Hazardous Confined Spaces' and their remedial measures which are required to be taken during the Operation & Maintenance of a Power Plant.                                | 10 | CO3 |
| Q 10 | Explain the following terms:<br>1) PPE<br>2) PFAS<br>3) Scaffold<br>4) Flash Point<br>5) DCP Fire Extinguishers   | 10 | CO2 |
| Q 11 | A) Explain two most often observed ' <b>Health Hazards</b> ' during TPP Construction.<br><br>OR   | 10 | CO3 |

|                  |   |           |            |
|------------------|---|-----------|------------|
|                  | B) Discuss two most effective ' <b>Hazard Control Methods</b> ' adopted during TPP Construction.  |           |            |
| <b>SECTION-C</b> |   |           |            |
| Q 12             | A) Explain Foam based fire protection system used in a Thermal Power Plant.<br>OR<br>B) Explain Spray Water based fire protection system used in a Thermal Power Plant. | <b>20</b> | <b>CO4</b> |