
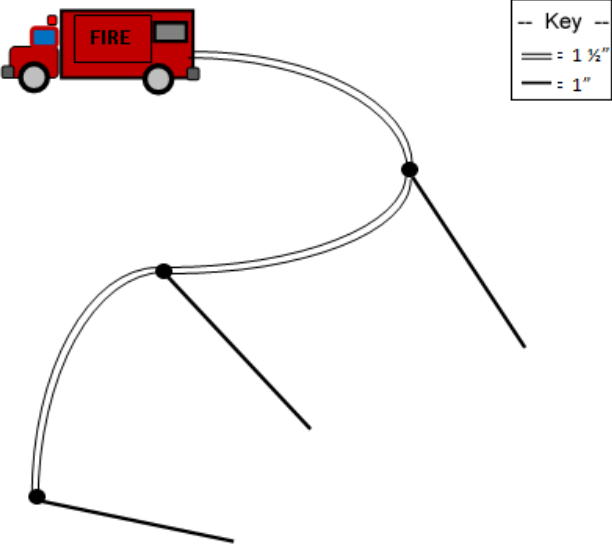


| Name: | |  | |
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| Enrolment No: | | | |
| UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2022 | | | |
| Course: Fire Fighting Appliances and Operations Program: MTech (HSE) Course Code: HSFS 8030 | | Semester: III Time : 03 hrs. Max. Marks: 100 | |
| Instructions: All questions are compulsory. | | | |
| SECTION A (5Qx4M=20Marks) | | | |
| S. No. | | Marks | CO |
| Q 1 | What kind of ropes do firefighters use? | 4 | CO3 |
| Q 2 | What type of rope construction is used for life safety applications? | 4 | CO3 |
| Q 3 | “Try before Pry” What do you understand by this statement? | 4 | CO5 |
| Q 4 | What is the significance of frictional loss during flow in pipes? | 4 | CO2 |
| Q 5 | Briefly explain the following: a. Fire Hose b. Bangor Ladder c. Rotating Tools d. Flash Over | 4 | CO3 |
| SECTION B (4Qx10M= 40 Marks) | | | |
| Q 6 | Explain various types of respiratory protection equipment carried by firefighters? | 10 | CO4 |
| Q 7 | Discuss various kinds of hoses used in fire service with specifications, applications and limitations. Also, brief the maintenance procedure. | 2+2+2+4=10 | CO3 |
| Q 8 | Pl refer the following picture of hose-lay. Your crew has just deployed 3 hose packs on a small brush fire. Each hose pack has one 100 ft 1 ½” supply line, one 100 ft 1” attack line, one 1 ½” Gated Wye, one 1 ½” to 1” reducer, and one 10-20 GPM combination nozzle. Assume that all nozzles are flowing at 18 GPM and the fire is burning top a small hill (50 feet above the fire engine). Determine the pump discharge pressure for nozzle with the highest friction loss. | 10 | CO2 |

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| |  <p style="text-align: center;">-- Key -- == = 1 1/2" — = 1"</p> | | |
| Q 9 | <p>Assume you're a fire service professional.</p> <p>If a room is filled with dense black smoke up to almost half volume of the room from roof and you're required to enter such atmosphere for firefighting, then brief the breathing aids that you use to avoid fatality/illness and how will you determine duration of usage?</p> | 5+5=10 | CO4 |
| SECTION-C (2Qx20M=40 Marks) | | | |
| Q 10 | <p>Discuss the evolution of Industry from 1.0 to 4.0.</p> <p>Also explain various types of fire extinguishing media used in these industries?</p> <p>Discuss various technologies used in Industry 4.0 to improve the safety of workers.</p> | 6+8+6=20 | CO3 |
| Q 11 | <p>Assume that library of a central university is under fire and you're the fire chief/marshal of campus, explain the rough plan /steps to be taken by you to assess the situation and strategy to bring the situation into control.</p> | 10+10=20 | CO5 |