# UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

### End Semester Examination, April 2018

**Programme: B. Tech - FSE**
**Course Name:  Human Factors Engineering**
**Course Code: FSEG 441**
**No. of page/s: 2**

**Semester –      VIII**
**Max. Marks    : 100**
**Duration       : 3 Hrs.**

## Section A

**Answer all the questions:**                                    **4 * 5 = 20 Marks**

1. Explain following terms
   a) $VO_2$ max
   b) Critical flicker frequency
   c) Sinus Arrhythmia
   d) Population stereotypes
   e) Supination
2. Differentiate slips and lapses with suitable examples.
3. Outline the organizational and individual factors that may cause human error.
4. Why the 'percentile' concept in used in ergonomic designs.

## Section B

**Answer all the questions:**                                    **5 * 8 = 40 Marks**

5. What do you mean by Human Factor Engineering? How its effective implementation will improve the health, safety and the productivity of the working population?
6. Differentiate dynamic/static work and aerobic/anaerobic work. What do you understand by Occupational Work Capacity?
7. Discuss various methods used in workload evaluation
8. Explain the basic requirements of PPE. What are the factors to be consider during their selection?
9. What is carpal tunnel syndrome? Explain the ergonomic measures to avoid it.

PTO

## Section C

10. Describe briefly how the extreme temperatures affects human body and worker's performance. Summarize the various indices or scores used to assess the risk.     (10+10)

11. a. *'Most scientific studies have found that the lifting technique has little or no effect on reducing lower back injuries'* - Defend. You are employed in a warehouse of an multinational company where manual handling activities are going on and the company is heavily emphasizing on the lifting rules; discuss the changes that you will incorporate in company's manual material handling training module.     (8+12)

# CONFIDENTIAL

| Name of Examination <br> (Please tick, symbol is given) | : | MID | | END | ⊢ | SUPPLE | |
|---|---|---|---|---|---|---|---|
| Name of the College <br> (Please tick, symbol is given) | : | SOE | ⊢ | SOB | | SOL | |
| Program | : | B. Tech - FSE | | | | | |
| Semester | : | 8 | | | | | |
| Name of the Subject (Course) | : | Human Factors Engineering | | | | | |
| Course Code | : | FSEG441 | | | | | |
| Name of Question Paper Setter | : | Arun P A | | | | | |
| Employee Code | : | 40001673 | | | | | |
| Mobile & Extension | : | 9072346002 | | | | | |

**Note: Please mention additional Stationery to be provided, during examination such as Table/Graph Sheet etc. else mention "NOT APPLICABLE":**

## FOR SRE DEPARTMENT

| Date of Examination | : | |
|---|---|---|
| Time of Examination | : | |
| No. of Copies (for Print) | : | |

**Note: - Pl. start your question paper from next page**

**UPES**

# UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
### End Semester Examination, April 2018

Programme: B. Tech - FSE                                     Semester –      VIII
**Course Name:  Human Factors Engineering**                  **Max. Marks    : 100**
**Course Code: FSEG 441**                                    **Duration      : 3 Hrs.**
No. of page/s: 2

## Section A
**Answer all the questions:**                              **4 * 5 = 20 Marks**

1. Explain following terms
   a) HSI
   b) Effective Temperature
   c) Active failures
   d) Color stereotypes
   e) Pronation
2. Differentiate slips and lapses with suitable examples.
3. Describe three functions at which Machines are better than Men, and three functions at which Men are better than Machines.'.
4. Why the 'percentile' concept in used in ergonomic designs

## Section B
**Answer all the questions:**                              **5 * 8 = 40 Marks**

5. Explain the organizational and individual factors that may cause human error.
6. Differentiate dynamic/static work and aerobic/anaerobic work. What do you understand by Occupational Work Capacity?
7. Discuss in details how the extreme temperatures affects human body and performance. Describe the various indices or scores used to assess the risk.
8. Explain the basic requirements of PPE. What are the factors to be consider during their selection?
9. What is CTD? Explain ergonomic measures to avoid it.

**Section C**

**2 \*20 = 40 Marks**

10. What is man-machine system? Explain its classification. Discuss the basic functions of components in a man machine system (3+7+10)

11. a. *'Most scientific studies have found that the lifting technique has little or no effect on reducing lower back injuries'* defend. You are employed in a warehouse of an multinational company where large no of manual handling activities are going on and the company is heavily emphasizing on the lifting rules; discuss the changes that you will incorporate in company's manual material handling training module. (8+12)