

<b>Name:</b>	
<b>Enrolment No:</b>	

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

**Course: Human Factors Engineering**  
**Programme: B Tech FSE**  
**Course Code: HSFS 4006**  
**Instructions:**

**Semester: VIII**  
**Time: 03 hrs.**  
**Max. Marks: 100**

**SECTION A**

S. No.		Marks	CO
Q 1	Define following terms a) VO <sub>2</sub> max b) Critical flicker frequency	2.5*2	CO1
Q 2	Which of the following is not a type of Man-Machine System a) Manual System b) Automated system c) Mechanical system d) Computer integrated System	5	CO2
Q 3	Study of human body movements is called a) Anthropometry b) Kinesiology c) Ergonomics d) Human Factors Engineering	5	CO3
	1000 workers are working in an assembly line in a plant. The management decides to install an overhead emergency stop switch. It will be designed for the 90th percentile in terms of height. How many workers will not be able to reach the emergency switch  a) 1000 b) 900 c) 500 d)90	5	CO4
Q 4	Risk assessment was performed using NIOSH Lifting equation for two manual handling operations A & B, which of the following statement(s) cab be true. a) A is more risker as its Lifting Index is more than B b) B is more risker as its Lifting Index is lesser than A c) Both A & B can be true d) Data is insufficient for any conclusion	5	CO4
Q 5	The most effective method to prevent CTDs is a) Use of design b) Job rotation c) Team activity d) Training	5	CO2
Q 6	An errors in which the action taken is not as intended is known as a) Slip b)Lapse c) Mistake d) Active Error	5	CO2

<b>SECTION B</b>			
Q 7	What do you mean by Human Factor Engineering? How its effective implementation will improve the health, safety and the productivity of working population?	<b>10</b>	<b>CO2</b>
Q 8	Discuss various methods used in workload evaluation Or Discuss the steps involved in Human Reliability Assessment. Name any four techniques used for this purpose	<b>10</b>	<b>CO3</b>
Q 9	What is carpal tunnel syndrome? What causes it? How it can be controlled?	<b>2+3+5</b>	<b>CO2</b>
Q 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	<b>5+5</b>	<b>CO5</b>
Q 11	What is man-machine system? Explain its classification. Discuss the basic functions of components in a man machine system	<b>10</b>	<b>CO2</b>
<b>SECTION-C</b>			
Q 12	<p>( <i>Question a is mandatory you may attempt either b1 or b2</i> )</p> <p>a. <i>Most scientific studies have found that the lifting technique has little or no effect on reducing lower back injuries' defend.</i></p> <p>B1. 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.</p> <p style="text-align: center;">Or</p> <p>B2. On account of increasing number of low back injury cases, top management considers to implement back belt for the affected person. You are counseled to give an expert opinion on this matter.</p> <p>Prepare a report on the same to be submitted to the top management and the report shall detail your action plan as well.</p>	<b>10</b>	<b>CO4</b>