UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Human Factors Engineering   **Semester:** VIII
Programme: B Tech FSE   **Time:** 03 hrs.
Course Code: FSEG 441   **Max. Marks:** 100
Instructions:

SECTION A

S. No.		Marks	CO

Q 1	Define following terms
	   a) VO$_2$ max
	   b) Critical flicker frequency
	   c) Population Stereotype
	   d) HSI
		4*2	CO1

Q 2	What is kinesiology?. What is the importance of kinesiology in ergonomics?	4	CO3
Q 3	Discuss the allocation of functions for man and machine.	4	CO2
Q 4	Perform the physiological analysis of running versus walking.	4	CO3
	SECTION B		
Q 5	What do you mean by Human Factor Engineering? How its effective implementation will improve the health, safety and the productivity of working population?	10	CO1
Q 6	Discuss various methods used in workload evaluation Or Discuss the steps involved in Human Reliability Assessment. Name any four techniques used for this purpose	10	CO3
Q 7	What is carpal tunnel syndrome? What causes it? How it can be controlled?	2+3+5	CO4
Q 8	Explain the basic requirements of PPE. What are the factors to be consider during their selection?	10	CO5
	SECTION-C		
Q 9	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	CO5

Q 10	Define human error. Discuss the taxonomy of error types. What are the causes of human error and how it can be reduced? Or What is man-machine system? Explain its classification. Discuss the basic functions of components in a man machine system	3+7+10	CO2

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Supplementary Semester Examination, December 2019

Course: Human Factors Engineering   **Semester:** VIII
Programme: B Tech FSE   **Time:** 03 hrs.
Course Code: FSEG 441   **Max. Marks:** 100
Instructions: In question number 10, (a) is mandatory and you either attempt b or c

SECTION A

S. No.		Marks	CO

Q 1	Define following terms
	   a) 'Ergonomics
	   b) Pronation
	   c) Risk Perception Ratio
	   d) Wind chill index
		8	CO1

Q 2	Define anthropometry.	4	CO1
Q 3	What are the three ways to fit a design to the user?	4	CO3
Q 4	Why the 'percentile' concept in used in ergonomic designs?	4	CO1
SECTION B			
Q 5	List out the factors need to be considered while selecting personal protective equipment.	10	CO5
Q 6	Define man-machine systems. Explain its classification.	10	CO2
Q 7	Explain the organizational and individual factors that may cause human error	10	CO2
Q 8	a. Define fatigue. How will you evaluate fatigue? Or b. Differentiate dynamic/static work and aerobic/anaerobic work. What do you understand by Occupational Work Capacity?	10	CO3
SECTION-C			
Q 9	a. What is CTD? What are the different factors that contribute to CTD? b. Discuss any four specific CTD. Explain the ergonomic measures to avoid CTD	4+6 8+7	CO4
Q 10	a. *Most scientific studies have found that the lifting technique has little or no effect on reducing lower back injuries'* defend.	10	CO3

b. 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. Or c. 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. Prepare a report on the same to be submitted to the top management and the report shall detail your action plan as well.	**10**	