Midterm exam – IE 6880

1. Why is studying human physical capabilities, cognition and physiology important to the goals of human factors? (5 points, 75 words maximum)

2. Read one of the two following stories: *Business in Bhopal* or *An Act of God* (see the attached files). Describe how the human factors (HF) cycle could have been used to prevent the accident. Discuss all elements of the HF cycle. (20 points – max of 250 words)

3. A researcher is studying whether health apps can lead to lasting lifestyle changes. She specifically wants to determine if the app, in combination with a smart watch, can effectively encourage individuals to exercise more and drink more water. (15 points – max of 250 words)

- **A.** Would this research be considered basic or applied? Why?
- **B.** What type of study design should she use? What are the advantages and disadvantages of this type of design? What variables should she look at?
- **C.** What type of descriptive and inferential statistics should she report?

4. Describe some characteristics of working memory and long-term memory. How can employers avoid overloading working memory? Provide an example. (10 points – max of 100 words)

5. How does top down processing and bottom up processing come into play when you are reading documents and visual displays (4 points – max of 75 words).

6. Provide a specific example of the type of information stored as the following (6 points – max of 75 words):

- Schemas and scripts
- Mental model
- Cognitive map

7. How does skill, rule, and knowledge-based behaviors differ? What factors cue the different decision-making processes? (5 points – max of 150 words)

8. Define five of the following biases/heuristics and provide an example of each (10 points)

A. Anchoring	F. Overconfidence
B. Cue salience	G. Cognitive tunneling
C. Overweighing of unreliable cues	H. Framing bias
D. Availability heuristic	I. Satisficing
E. Representativeness heuristic	

9. What is stress? What are some sources of stress? How can stress be remediated and why is important to manage stress? (10 points – max of 250 words)

10. Compute the percentage of workload (TR/TA) at each time period. Each mark (or tally) represents a 15-minute increment and each time period is 2 hours. Graph the workload percentage (can graph by hand and add the picture into the file). Reorganize the work to avoid or limit overloading the employee. (10 points – max of 75 words)

Task	1	2	3	4
Check inventory and restock	|||||	|||||		||
Complete loss prevention reports	|||		|||	||||
Order inventory and unload trucks	|||	||	||	||||

11. How can employers prevent and alleviate fatigue due to sleep and circadian disruption? (5 points – max of 100 words)