KUMARAGURU college of technology
character is life

Register Number:……..…

M.E DEGREE EXAMINATIONS: JAN 2015

(Regulation 2014)

First Semester

INDUSTRIAL ENGINEERING

P14IET105**:** Ergonomics in Manufacturing

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. _____ takes place when sweat evaporates from the skin [K_1]

   a) Radiation b) Evaporative cooling

   c) Convection d) Hypothermia

2. Assertion (A): Luminance is the amount of light reflected from an object. [K_2]

   Reason (R) : Luminance is measured in foot-lamberts (fL).

   a) Both A and R are false b) Both A and R are true

   c) A is true but R is false d) A is false but R is true

3. Match the type of work with the profession. [K_3]

List I	List II
A. Light manual work	1. Hand harvesting
B. Heavy manual work	2. Accountant
C. Heavy arm work	3. Mechanic
D. Extreme body work	4. Butcher

Codes:

	A	B	C	D
i.	1	3	4	2
ii.	3	1	4	2
iii.	2	3	4	1

iv. 4 1 3 2

a) i b) ii

c) iii d) iv

4. _____ takes place when sweat evaporates from the skin [K_2]

a) Radiation b) Evaporative cooling

c) Convection d) Hypothermia

5. Which of the following steps are not adapted in the heat stress management? [K_2]

1. Increase work rate.

2. Increase air movement by using fans and air conditioners.

3. Introduce job rotation.

4. Include frequent rest pauses.

a) 2,3,4 b) 2,1,4

c) 1,2,3,4 d) 1,2,3

6. Select the statements which are not used to minimize reach and lift distances. [K_2]

1. Stack objects no higher than shoulder height.

2. Store heavy components on shelves between shoulder and knuckle height.

3. Provide access space around components to cut down on the need for manual repositioning

4. Storage bins or containers should be fitted with spring-loaded bottoms.

a) 1,2,4 b) 2,3,4

c) 3,4 d) 1,2,3,4

7. Which of the following is not a standing anthropometric data? [K_1]

a) Stature b) Eye height

c) Shoulder height d) Knee height

8. Which of the following principle is not used in the arrangement of components in space? [K_1]

a) Frequency of use b) Importance

c) Sequence of use d) Use of tools

9. NIOSH stands for [K_1]

a) National Institute for occupational safety and health
b) National Institute of society and health
c) National Industry for safety and health
d) National Institutional safety and health

10. As per the OSHA (1970) limits the Noise exposure limit for 8 hours shift is [K_1]
a) 90 dBA
b) 120 dBA
c) 145 dBA
d) 180 dBA

PART B (10 x 2 = 20 Marks)

11. List the advantages of auditory displays. [K_2]
12. List the objectives of human factors engineering. [K_2]
13. Narrate the design considerations for lighting to provide visual comfort and to meet visual demands. [K_2]
14. Enlist the four principles of motion economy. [K_2]
15. Define Basal Metabolic Rate. [K_1]
16. Relate oxygen uptake and physical activity with an example. [K_3]
17. Illustrate the importance and state the safe exposure level of noise. [K_2]
18. Classify the sources of noise. [K_1]
19. State the effects of cold on performance. [K_2]
20. List the objectives of ergonomics in work station design. [K_1]

PART C (10 x 5 = 50 Marks)

21. State and explain the types of anthropometric data. [K_2]
22. Demonstrate the task requirements on workspace design. [K_3]
23. Characterize the design consideration for standing workers. [K_4]
24. Generalize the environmental factors affecting work capacity. [K_3]
25. Explain the effects of heat acclimatization. [K_2]
26. Discuss in detail the methods of protection against noise. [K_2]
27. Explain the principles of arrangement of components in workplace design. [K_2]

28. State the interpersonal effects of workplace design. [K_4]

29. Explain the factors considered for the design of controls. [K_2]

30. Discuss in detail the design considerations for the displays. [K_3]

PART D (2 x 10 = 20 Marks)

31. Discuss in detail the interdisciplinary nature of Ergonomics. [K_2]

32. Prepare and formulate the lighting design considerations for an assembly line. [K_6]

****