Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 08

M.Tech.(PE) (E-IV) (Sem.–3)

METHODS ENGINEERING AND ERGONOMICS

Subject Code : PE-523

M.Code : 39021

Time : 3 Hrs. Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

1. a) Describe the ways to increase the industrial productivity.

   b) Define Wages and explain in brief various types of incentives.

2. a) Explain in brief the normal work area and work place design.

   b) State the relationship between cumulative timing and fly back timing. How standard time is calculated?

3. a) Differentiate between Micro & Macro motion study. Explain in brief various techniques for micro motion study.

   b) Calculate standard time of a job for which the following data is available: Average time of machine elements=4 min, Average time for manual elements=2.5 min, Performance ratings = 80 %, Allowances = 15%

4. a) Define Ergonomics. Ergonomics is about 'fit': the fit between people, the things they do, the objects they use and the environments they work. Justify.

   b) Describe the Ergonomics considerations for standing at work postures.

5. a) What is Anthropometric testing? What are the most common anthropometric measurements? How human dimensions are useful in effective workplace design?

   b) Explain the ergonomic considerations for design of hand wheels and crank levers.

6. a) How do organizations carry out measurement of mental work load of employees at workplace? How excessive work load problems can be effectively addressed?

   b) Explain RULA (Rapid Upper Limb Assessment) and REBA (Rapid Entire Body Assessment) techniques for physical load assessment at workplace.

7. a) Explain the criteria adopted by manufacturing organizations to plan optimum work duration and rest pauses for employees.

   b) Explain the heat hazards and disorders faced by employees due to poorly designed workplace.

8. a) What is the effect of high frequency vibrations on health of the operators? Explain the methods of reducing vibrations on equipment.

   b) Explain physiological effects of noise on workers. How noise reduction or isolation can be achieved at workplace?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.