

Roll No: -----



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: B-Tech Semester – V
Subject (Course): Work Study & Ergonomics Max Marks - 100
Course Code : IPEG311 Duration : 3 Hrs.
No. of page/s:

SECTION A [20 Marks]

Note: Attempt all questions. All question carry equal marks. Be brief and specific.

1. Define various objectives of conducting method study on a job. **5**
2. Explain difference between wage and wage incentives **5**
3. Explain difference between outline process chart and flow process chart **5**
4. List out all the process chart symbols and explain them. **5**

SECTION B [40 Marks]

- 5 Given the following data, calculate the production standard (pieces per hour), the standard labor cost /100 pieces & standard hours per 100 pieces. Allowances are 6 % for fatigue, 5 % for unavoidable delays, and 8 % of normal time for personal needs .The operator is paid 5Rs/hr. and take performance rating =95%

Reading (Minute)

Element	1	2	3	4	10
1	0.011	0.010	0.009	0.012	
2	0.002	0.003	0.004	0.004	
3	0.100	0.110	0.100	0.100	
4	0.205	0.195	0.200	0.210	

- 6 A work sampling study was conducted to estimate the time for which the laborer at a utility company remain idle. A total of seven hundred and twenty observations were made of these laborer .Forty –five of these observations were made when a laborer was idle .what is the accuracy of current estimate of the proportion of time consumed by idleness if the confidence level is 68 %.
7. Explain essential characteristics of a good wage plan? **10**
8. Compare various time study techniques w.r.t to overall cost and associated error. **10**

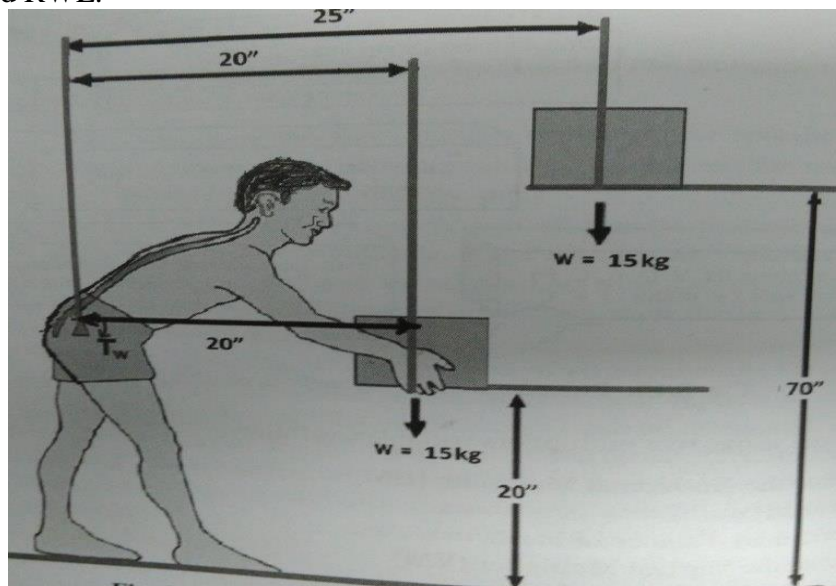
SECTION C [40 Marks]

Note: Question no 11 is compulsory, and you can attempt only 1 question out of 9 & 10

- 9(i) Explain general characteristics, advantages and limitations of two most common methods of wage payment. **10**
- (ii) Standard time for producing per unit is fixed as 8 minutes. A worker produces units 40 per day. The waiting time is 30 minutes and other unmeasured work includes 1.5 hour, the minimum guaranteed rate is 30rs/hr. Determine earning per day of the worker according to 75-100 proportional scheme. **10**

OR

10. In the construction of a large building a worker is required to lift the construction material of 15 kg and need to hand over it to another worker standing above him at a distance shown in figure. Considering 30° axis symmetric angle, conclude that given task is safe or not, with the help of lifting equations. Also find out lifting index and RWL. **20**



11. (i) Define anthropometry and show its importance, also differentiate between static and dynamic body dimensions. **10**
- 11.(ii) Explain the principles important for the application of anthropometric data to the design problems. **10**