

FIRST SEMESTER REGULAR/BACK EXAMINATION-2015-16

WORK SYSTEM DESIGN
Q.CODE-T1149

Full Marks: 70

Time: 3 Hours

Answer question no.1 which is compulsory and any five questions from the rest.
Figures in the right hand margin indicate marks.

Q.1 Answer the following questions. 2x10

- a) Discuss the benefits of productivity measurement.
- b) Discuss what is meant by Work Study?
- c) Explain briefly what are “therbligs”.
- d) What is meant by operations analysis?
- e) Discuss what is meant by methods analysis.
- f) How systematic approach to methods study is carried out?
- g) What are the most commonly used recording techniques?
- h) What are the contributions of F W Taylor for the development of method study?
- i) What is Six Sigma?
- j) “Job evaluation is same as Job ranking” Comment upon this.

Q.2 5+5

- a) Explain the two handed process chart with an example.
- b) Explain the man-machine chart with an example.

Q.3 3+2+5

- a) Discuss the advantages and disadvantages of work sampling in comparison to time study.
- b) Explain how computerized work sampling is carried out.
- c) Determine the sample size for a manufacturing company which wants to have 90% probability with sampling error of 0.01 minute or less. The estimated deviation from a historical experience is 0.03.

Q.4 3+7

- a) Describe the techniques used for work measurement.
- b) A time study was made of an existing job to develop new time standards. A worker was observed for 45 minutes. During that period, 30 units were produced. The analyst rated the worker as performing at a 90 percent performance rate. Allowances in the firm for rest and personal time are 12 percent.
 - i. What is the normal time for the task?
 - ii. What is the standard time for the task?

- iii. If the worker produced 300 units in an eight-hour day, what would be the day's pay if the basic rate was Rs 20/- per hour and the premium payment system paid on a 100 percent basis?

Q.5 4+6

- a) What is job evaluation and discuss the techniques used for job evaluation?
b) A management sets the target of completing 80 jobs for each worker. The workers are promised to pay incentive according to Halsey 50-50 plan. The hourly wage rate is Rs 90/-. A worker, however could complete the whole task in 6 hours only.
Calculate the earnings in a day of 8 hours. Also calculate the earnings by using Rowan Plan.

Q.6 3+4+3

- a) Explain how ergonomic principles can be applied to reduce the incidence of absenteeism.
b) Explain the importance of good design of instruments, meters, displays etc in work systems design..
c) Describe how unwanted noise may adversely affect the productivity of workers.

Q.7 4+6

- a) Explain what is meant by "work content" and "standard time"
b) In a time study for a job done by a worker whose rating is 80, the data are as follows:
Observed time = 15 minutes
Personal needs allowances = 4% of Basic time
Fatigue allowance = 2% of Basic time
Contingency work allowance = 2% of Basic time
Contingency delay allowance = 1% of Basic time
Find: (i) Basic time, (ii) Work content, and (iii) Standard time

Q.8 Write short notes on any two of the following. 2X5

- a) Methods for Setting Financial Incentives
b) MTM Classification
c) Performance Rating Methods