

B.E. Mechanical Engineering Sem-VII  
**ME702 - Industrial Engineering**

P. Pages : 2

Time : Three Hours



**GUG/S/19/1837**

Max. Marks : 80

- Notes :
1. All questions carry equal marks.
  2. Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.
  3. Due credit will be given to neatness and adequate dimensions.
  4. Assume suitable data wherever necessary.
  5. Retain the construction lines.
  6. Illustrate your answers wherever necessary with the help of neat sketches.
  7. Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.
  8. Use of non-programmable calculator is permitted.

1. a) Briefly explain the functions of Production Planning and Control (PPC) and differentiate between loading and scheduling. 8
- b) Explain the need of forecasting and discuss the least square method of forecasting. 8

**OR**

2. a) What is value and value analysis? Explain one of the methodology of doing value analysis in detail. 8
- b) The table below shows the demand for a particular brand of razor in a shop for each of the last nine months: 8

Months	1	2	3	4	5	6	7	8	9
Demand	10	12	13	17	15	19	20	21	20

- i) Calculate a three month moving average for months three to nine. What would be your forecast for the demand in month ten?
- ii) Apply exponential smoothing with smoothing constant of 0.3 to derive a forecast for the demand in month ten.
3. a) Explain the methodology of micro-motion study. How does the simo chart helps in the examination stage? 8
- b) What is work study and how it improves productivity? Explain in detail. 8

**OR**

4. a) State and explain method study symbols and recording of facts. 8
- b) What are the techniques to study path of movement during method study. 8
5. a) What are the methods of time measurement techniques? What are their applications and limitations? 8

- b) What is work measurement? What are its objectives? Explain different techniques of work measurement. **8**

**OR**

6. a) What do you mean by work sampling? What are its advantages & disadvantages? **8**
- b) In the time study of a Lab technician involved in the analysis of processed food industry, following time was noted for the operation. **8**

Cycle No.	1	2	3	4	5	6	7	8	9	10
Time (Sec)	21	21	16	19	20	16	20	19	19	20
Cycle No.	11	12	13	14	15	16	17	18	19	20
Time (Sec)	40	19	21	18	23	19	15	18	18	19

If the performance of the technician has been rated as 120 percent and personal plus fatigue allowance is 13 percent. Reading 50 Percent above and 20 percent below the average may be discarded, Determine.

- i) Normal time.  
ii) Standard time.

7. a) Explain process layout and product layout and give their advantages and limitations. **6**
- b) Explain with suitable sketch any one technique of recording the sequence used in design of plant layout. **6**
- c) Explain diagnosis of material handling problem. **4**

**OR**

8. a) What are the factors which should be kept in mind while deciding upon a plant layout. **8**
- b) Write a short note on material handling equipment's. Explain various guiding principles to reduce material handling cost in an organisation. **8**
9. a) What is breakdown maintenance? What are the causes of equipment breakdown? **6**
- b) Find the reliability of a 3 unit parallel system with the reliability of individual units as 0.6, 0.7, 0.8. **4**
- In the above parallel system if we add one more unit with reliability 0.6 then what will be the reliability of the system?
- c) Explain MTTR & Bathtub curve in detail. **6**

**OR**

10. a) Explain elements of preventive maintenance. **8**
- b) What are series & parallel configurations of elements for reliability of system. **8**

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