Exam. Code: 0943
Sub. Code: 33891

2076
B.E. (Mechanical Engineering)
Seventh Semester
MEC-704 (g): Industrial Engineering

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt <u>five</u> questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

x-x-x

1 (a)	Define Industrial Engineering and how it is linked with productivity?	2
(b)	Draw a Gantt Chart?	2
(c)	List any four objectives of method study.	2
(d)	Define What is Ergonomics and Micro-Motion Study.	2
(e)	What is Normal Time?	2
	SECTION-A	
2(a)	Explain the philosophy and principles of Kaizen and differentiate between Kaizen and Innovation?	5
(b)	Discuss in detail the role of workers and management in TPM implementation.	5
3(a)	Describe the Six Big Losses in TPM and explain how they affect productivity.	5
(b)	Explain with a diagram the PDCA cycle and its applications in continuous improvement.	5
4 (a)	Explain the relationship between Kaizen, Lean Manufacturing, and TPM.	5
(b)	Explain DFM and DFA and their importance in Concurrent Engineering.	5
	SECTION-B	
5(a)	What is Time Study? Explain the equipment used.	5
(b)	A job was studied for 10 cycles. The average cycle time was 2.5 min. Rating factor = 120%, Allowances = 15% of normal time. **Calculate the Standard Time.**	5
6	Explain Plant Layout. Draw neat sketches of: (a) Product Layout (b) Process Layout (c) Fixed Layout (d) Cellular Layout	10
7(a)	Describe Work Sampling. A machine was observed 300 times and found idle 45 times. (a) Calculate the machine utilization percentage. (b) For ±5% accuracy at 95% confidence, estimate the number of observations required.	5
(b)	Write short notes on: (a) Therbligs (b) SIMO Chart	5

x-x-x