BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
First Semester 2023 – 2024

Course No: MSE G521   **Course Title:** World-class Manufacturing
Date: 07th December 2023   **Max Time:** 180 min
Max Marks: 30   **Comprehensive Examination (Closed Book)**

All questions are compulsory. Assume if any data is required. The new answer should start from a fresh page. Each carries five marks.

Q. 1.   Steps of TPM implementation
Q. 2.   How do best maintenance practices endorse the WCM? List the maintenance practices.
Q. 3.   What strategies help to become WCM?
Q. 4.   Discuss the potential challenges or drawbacks of JIT.
Q. 5.   How does effective supply chain management contribute to a company's success?
Q. 6.   Discuss the following terms:
　　　　Anticipation Inventory
　　　　Cycle Stock
　　　　Safety or buffer stock
　　　　Inventory for Quantity discount
　　　　BOM
　　　　Dependent inventory

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
First Semester 2023 – 2024

Course No: MSE G521   **Course Title:** World-class Manufacturing
Date: 07th December 2023   **Max Time:** 180 min
Max Marks: 50   **Comprehensive Examination (Open Book)**

All questions are compulsory. Assume if any data is required. The new answer should start from a fresh page.

Q. 1. Find the PWi, Rank, order, and variation from the data given below:
px,1-30,px,2-16, px,3-4, px,4-15,px,5-28, px,6-17, px,7-12, px,8-25, [5]

Q. 2. Find the make-span time, optimal sequence, and Gant chart for optimum sequence from the data given below: [10]

Jobs	Machine 1	Machine 2
J1	9	7
J2	5	4
J3	10	9
J4	1	5
J5	3	2

Q. 3. FCFS, for single machine scheduling of JIT, calculates: Average Completion Time, Average Number of Jobs in the System, Average Tardiness, Maximum Tardiness, Number of Tardy Jobs [5]

Job	Time (Days)	Due Date (Days)
A	26	54
B	21	44
C	31	36
D	27	63
E	35	56

Q. 4. Eighty compressors are observed at 5-month intervals with the following number of failures: 5, 8, 9, 10, 14, 18, and 12. Estimate R(t), f(t), and A(t) and determine the sample mean time to failure and sample standard deviation. [10]

Q. 5. The following failure and censor times (in operating hours) were recorded on 10 turbine vanes: 350, 540+,760, 1000, 1330+, 1920,2670+,4410+,5530,6990. Censoring was a result of failure modes other than fatigue or wearout. Determine an empirical reliability curve. [10]

Q. 6. Apply the TOPSIS for the following data [10]

Mobile	RAM	Battery	Display size	Price
A	4	3500	6.8	15000
B	8	3800	6.2	16000
C	6	4200	6.4	19000

Wt: 1,2,3,4