BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE PILANI
First Semester 2023-24
Manufacturing Planning and Control (MSE G512)
Mid Semester Test (Open Book)
Date: 11-10-2023

Maximum Time: 90 min. **Maximum Marks: 30**

Note: Be succinct, no credit will be given for ambiguous answers. All parts of a question must be answered together and in sequence. Answer of a question must be started from a fresh page.

Q1. Write down your answer **briefly**. [10]

i) How is moving average method similar to exponential smoothing?
ii) How does a Gantt chart differ from a CPM/PERT network?
iii) What is difference between block diagramming and relationship diagramming?
iv) Why must the utilization factor in a single server model be less than one?
v) How can PDCA cycle improve the quality?

Q2.

The Speedy Pizza Palace is revamping its order processing and pizza-making procedure. In order to deliver fresh pizza fast, six elements must be completed.

Work Element	Precedence	Time (min)
A (Receive order)	---	2
B (Shape dough)	A	1
C (Prepare toppings)	A	2
D (Assemble pizza)	B, C	3
E (Bake pizza)	D	3
F (Deliver pizza)	E	3

i) Construct a precedence diagram and compute the lead time for the process.
ii) If the demand for pizzas is 120 per night (5:00 PM to 1:00 AM), what is the cycle time?
iii) Balance the line and calculate its efficiency.
iv) How would the line change to produce 160 pizzas per night? [8]

Q3.

The Farmer's Bank of Ludhiana is planning to install a new computerized accounts system. Bank management has determined the activities required to complete the project, the precedence relationship of the activities, and activity time estimates as follows:

Activity	Description	Activity Predecessor	Time Estimates (Week)		
			a	m	b
A	Position recruiting	---	5	8	17
B	System development	---	3	12	15
C	System training	A	4	7	10
D	Equipment training	A	5	8	23
E	Manual system test	B, C	1	1	1
F	Preliminary system changeover	B, C	1	4	13
G	Computer personal interface	D, E	3	6	9
H	Equipment modification	D, E	1	2.5	7
I	Equipment testing	H	1	1	1
J	System debugging and installation	F, G	2	2	2
K	Equipment changeover	G, I	5	8	11

Determine i) The earliest and latest activity times ii) The expected completion time iii) Standard deviation and the probability that the project will be completed in 40 weeks or less. [12]

**********Best of luck**********