

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(MID SEMESTER EXAMINATION)**

**CLASS: BE**  
**BRANCH: PROD.**

**SEMESTER: VI**  
**SESSION: SP/2020**

**SUBJECT: PE6005 PRODUCTION PLANNING AND CONTROL**

**TIME: 1.5 HOURS**

**FULL MARKS: 25**

**INSTRUCTIONS:**

1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.
6. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

- Q1 (a) Differentiate between manufacturing system and production system. [2]  
(b) In what type of production system general purpose machines are used. Explain its characteristics and problems. [3]

- Q2 (a) With the help of diagram classify the production systems on the basis of production volume and product variety. [2]  
(b) Explain the various modules of prior planning and action planning. [3]

- Q3 (a) List the specific strength and weaknesses of each of these approaches to developing a forecast: [2]  
a. Market research.  
b. Salesforce composite.  
c. Committee of managers or executives.  
d. Delphi method  
(b) Develop a linear trend equation for the following data. Then use the equation to predict the next two values of the series. [3]

Period	1	2	3	4	5	6	7	8	9
Demand	44	52	50	54	55	55	60	56	62

- Q4 Why is there a need for aggregate planning? Given the following information set up the aggregate planning problem in a transportation table and solve for the minimum cost plan. [5]

	Period			
	1	2	3	<b>Costs</b>
<b>Demand</b>	550	700	750	Regular time \$60 per unit
<b>Capacity</b>				Overtime 80 per unit
Regular	500	500	500	Subcontract 90 per unit
Overtime	50	50	50	Inventory carrying cost \$1 per unit per month
subcontract	120	120	100	
<b>Beginning inventory</b>	100			

- Q5 (a) Differentiate between loading and scheduling. [2]  
(b) Use the assignment method to obtain a plan that will minimize the processing costs in the following table and interpret your answer.: [3]

	Work Centre			
<b>Job</b>	1	2	3	4
A	8	6	2	4
B	6	7	11	10
C	3	5	7	6
D	5	10	12	9

- Q6 (a) Explain forward and backward scheduling and each one's advantage. [2]  
(b) A group of six jobs is to be processed through a two-machine flow shop. The first operation involves cleaning and the second involves painting. Determine a sequence that will minimize the total completion time for this group of jobs. Processing times are as follows: [3]

Job	PROCESSING TIME (hours)	
	Work Center1	Work Center2
A	5	5
B	4	3
C	8	9
D	2	7
E	6	8
F	12	15

With the help of Gant Chart calculate the total elapsed time and idle time of machine A and Machine B.

:::: 28/02/2020M ::::