Registration No : | | | | | | | | | | |

Total Number of Pages : 03 **B.Tech**
PME6I101

6th Semester Back Examination: 2022-23
SUBJECT: Production & Operation Management
BRANCH(S): MECH
Time : 3 Hour
Max Marks : 100
Q.Code : M193

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right hand margin indicate marks.

Part-I

Q1 **Answer the following questions:** **(2 x 10)**

a) Write a brief note on various components integrated for a FMS system to work.
b) How does productivity differ from efficiency?
c) How does a batch production differ from mass production?
d) State basic time, normal time, and standard time and for a job or element.
e) Write the difference among product layout, process layout and fixed position layout in accordance with production strategy.
f) How can the location for a hospital be selected in a city?
g) State the influence of smoothing constant on forecasting error while forecasting single exponential smoothing method.
h) How can the spread sheets be used for aggregate planning?
i) State the difference between sequencing and scheduling.
j) How can the KAIZEN be used for waste elimination?

Part-II

Q2 **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 × 8)**

a) Sales of motor cycles in a city for past eight months are given as follows:

Week No.	Number of motor cycles (in'00)	Week No.	Number of motor cycles (in'00)
1	85	5	115
2	95	6	130
3	110	7	150
4	100	8	145

Use exponential smoothing method with $\alpha = 0.4$, calculate the sales of motor cycles on 9th and 10th week using the forecast for week 1 at 8000 motor cycles.

b) Explain the operational aspects of CIM system.
c) Explain the advantage of second generation PMTS system. What are the limitations?

d) Calculate optimal makespan for a two machines and five jobs flow shop scheduling problem using Johnson's rule for the following processing data.

Jobs/Machines	1	2	3	4	5
Machine 1	7	1	15	8	11
Machine 2	8	4	12	5	6

e) Explain formation of part family to enable group technology (GT) layout.

f) Explain the procedure for ABC analysis.

g) Distinguish between aggregate planning and master production scheduling.

h) Explain the steps of ranked Positional Weight method of line balancing.

i) Illustrate influence of lot sizing rules on planned order releases in MRP with a suitable example.

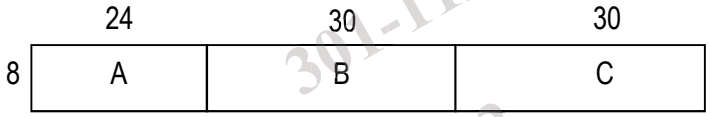
j) Explain the use of break-even analysis for plant location decision with a suitable example.

k) Justify application of Delphi method for long range forecasting.

l) Explain the steps in new product development.

Part-III
Only Long Answer Type Questions (Answer Any Two out of Four)

Q3 Examine the use of the CRAFT pair-wise interchange technique to obtain desirable layout considering the following initial layout with unit cost matrix.. **(16)**



Initial layout

From \ To	A	B	C
A	-	6	5
B	2	-	3
C	8	7	-

Flow matrix

Q4 Evaluate forecast for all the quarters of 2022 using time series forecasting method with $\alpha = 0.2$, $\beta = 0.15$ and $\gamma = 0.1$. The sales of cotton dresses over five years for an apparel store is shown in thousands of rupees in the following table. Initialize the process with suitable assumptions. **(16)**

Year	Quarter 1	Quarter 2	Quarter 3	Quarter 4
2017	190	370	300	220
2018	280	420	310	180
2019	270	360	280	190
2020	300	430	290	200
2021	320	440	320	220

Q5	Evaluate how frequently the production run should be made for the following case: A contractor has to supply 14,000 bearings per year to an automobile manufacturer. He finds that when he starts production run, he can produce 35,000 bearings per year. The cost of holding a bearing in stock for a year is Rs 15 and the set-up cost of a production run is Rs. 500.	**(16)**
Q6	Contrast between single machine scheduling and flow shop scheduling with suitable examples.	**(16)**