

Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES			
End Semester Examination, December 2019			
Programme Name: B.Tech Mechanical spl. with PI		Semester : VII	
Course Name	: Production and Operations Management	Time	: 03 hrs
Course Code	: MHEG 458	Max. Marks:	100
Nos. of page(s)	: 4	Instructions:	
SECTION A			
S. No.		Marks	CO
Q 1	Discuss the difficulties encountered in JIT implementation.	5	CO 4
Q2	Identify the key differences between qualitative and quantitative forecasting methods. Which is better in your opinion and why?	5	CO 1
Q3	Explain the benefits of ISO-9000 certification and steps in ISO-9000 certification.	5	CO 4
Q4	Discuss the concept of Over the Wall Design.	5	CO 2
SECTION B			
Q5	Discuss the following concepts: a) Lean Manufacturing b) Problems associated with implementation of TQM and Kaizen	10	CO 4
Q6	Define FMS. Discuss in detail approaches to flexibility and levels of FMS along with advantages and disadvantages of FMS implementation. Or Discuss the factors affecting Product design. With the help of block diagram discuss the common essential features of a good design.	10	CO 2
Q7	The following historical data have been collected representing sales of a product. Compare forecasts using a three period moving average, exponential smoothing with $\alpha=0.2$, and linear regression. Using <i>MAD</i> and <i>MSE</i> , which forecasting model is best? Are your results the same using the two error measures?	10	CO 1

Week	Demand (in patients serviced)
1	430
2	289
3	367
4	470
5	468
6	365

Q8 Custom Glass, Inc. produces custom storm windows. The company has the following jobs waiting to be processed at its glass-cutting work center.

Job	Job Time (days)	Due Date (days from now)
A	8	20
B	4	15
C	6	30
D	7	24
E	9	10

10 CO 3

- (a) Using shortest processing time as the priority rule, determine the sequence for these jobs.
- (b) Calculate the mean job flow time, average number of jobs in the system, mean job lateness and mean job tardiness for schedule using shortest processing time.

SECTION-C

Q9 Psychics of the World, Inc. wants an aggregate plan for its organization. Given the nature of the business, Psychics has decided that back orders are not acceptable. If a caller cannot be handled immediately, the call is a lost sale. Psychics has predicted the following number of calls: May— 8000 calls, June— 5000 calls, July—6000 calls, August—7000 calls, September—6000 calls, October—8000 calls, November— 10,000 calls, and December—12,000 calls. Psychics of the World pays each of its 48 employees \$4000 per month. Each psychic works 160 regular-time hours per month or 40 regular-time hours per week. The regular-time labor cost of a call is \$20, and the overtime labor cost per call is \$30. Each psychic is expected to serve 200 callers per month. The management has limited overtime to 50 calls per month per psychic. It costs \$3000 to hire a new psychic and \$2000 to fire a psychic.

20 CO 3

	A	B
4	Cost Data	
5	Regular-time labor cost per month	\$4,000.00
6	Regular-time labor cost per hour	\$25.00
7	Overtime labor cost per hour	\$37.50
8	Hiring cost per employee	\$3,000.00
9	Firing cost per employee	\$2,000.00
10		
11	Capacity Data	
12	Beginning workforce (employees)	48
13	Service standard per call (hours)	0.8
14	Regular-time available per period (hours)	160
15	Overtime available per period (hours)	40
16		
17	Demand Data (calls)	
18	May	8000
19	June	5000
20	July	6000
21	Aug	7000
22	Sept	6000
23	Oct	8000
24	Nov	10000
25	Dec	12000
26		
27	Total Number of Periods	8

Develop a level aggregate plan without inventory, without back orders, and without overtime.

Or

Develop an aggregate plan using a level workforce supplemented by overtime. Minimize the wasted capacity. No back orders are permitted.

Q10	<p>George Stein sat in his large office overlooking Chicago’s Michigan Avenue. As CEO of Gold Coast Advertising, he seemed to always be confronted with one problem or another. Today was no exception. George had just come out of a long meeting with Jim Gerard, head of the board for the small advertising agency. Jim was concerned about a growing problem with lowered sales expectations and a decreasing customer base. Jim warned George that something had to be done quickly or Jim would have to go to the board for action. George acknowledged that sales were down but attributed this to general economic conditions. He assured Jim that the problems would be addressed immediately. As George pondered his next course of action, he admitted to himself that the customer base of GCA was slowly decreasing. The agency did not quite understand the reason for this decrease. Many regular customers were not coming back, and the rate of new customers seemed to be slowly declining. GCA’s competitors seemed to be doing well. George did not understand the problem.</p> <p>What Do Customers Want?</p> <p>GCA was a Chicago-based advertising agency that developed campaigns and promotions for small and medium-sized firms. Its expertise was in the retail area, but it worked with a wide range of firms from the food service industry to the medical field. GCA competed on price and speed of product development. Advertising in the retail area was competitive, and price had always been important. Also, since retail fashions change rapidly, speed in advertising development was thought to be critical. George reminded himself that price and speed had always been what customers wanted. Now he felt confused that he really didn’t know his customers. This was just another crisis that would pass, he told himself. But he needed to deal with it immediately.</p> <p>Case Questions</p> <ol style="list-style-type: none"> 1. What is wrong with how Gold Coast Advertising measures its quality? Explain why Gold Coast should ask its customers about how they define quality. 2. Offer suggestions to George Stein on ways of identifying quality dimensions GCA’s customers consider important. 3. Develop a short questionnaire to be filled out by GCA’s customers that evaluates how customers define quality. 	20	CO 4
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