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Manipal Institute of Technology, Manipal

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II SEMESTER M.TECH (PRINTING AND MEDIA TECHNOLOGY)

END SEMESTER EXAMINATIONS, MAY 2016

SUBJECT: PROGRAMME ELECTIVE I
PRINT PRODUCTION AND BUSINESS MANAGEMENT [PME 524]

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ANY FIVE FULL** questions.
- Missing data may be suitable assumed.

1A. Explain the different types of operation management decisions **5**

1B. How the forecast details should be presented to management? **2**

1C. The monthly demand for offset blanket, manufactured by M/s Raj Blanket is as follows: **3**

Use exponential smoothing method to forecast the number of units for June to January. The initial forecast for May was 105 units; α = 0.2

Month	Units	Month	Units
May	100	September	105
June	80	October	110
July	110	November	125
August	115	December	120

2A. What is meant by nested process? Explain with an example of printing industry **2**

2B. The manager of the M/s Royal Book binders, need a quarterly forecast of the number of customers expected next year. The book binding business is seasonal, with a peak in the third quarter and a trough in the first quarter. **5**

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Following are the quarterly demand data from the past four years

Quarter	Year1	Year2	Year3	Year4
1	45	70	100	100
2	335	370	585	725
3	520	590	830	1160
4	100	170	285	215
Total	1000	1200	1800	2200

Based on above data, forecast customer demand for each quarter of year 5.

2C. How the competitive properties can be grouped under four heads in printing industry? Explain with example **3**

3A. How preference matrix can be applied to printing industry for choosing alternatives? Explain with example **3**

3B. Following data pertains to a printing company. Apply Johnson's Rule for reducing the make span. Also prepare a Gantt chart for the same. **4**

	Time in Hrs	
Job	Printing	Finishing
1	12	22
2	4	5
3	5	3
4	15	16
5	10	8

3C. A retailer must decide whether to build a small or a large facility at a new location. Demand can either be small or large, with the probabilities estimated to be 0.4 and 0.6 respectively. If a small facility is built and demand is high, the manager may choose not to expand (payoff = $223,000) or expand (payoff = $270,000) However, if demand is low, there is no reason to expand. (payoff = $200,000). If a large facility is built and demand is low, the **3**

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retailer can do nothing ($40,000) or stimulate demand by advertising. Advertising is estimated to have a 0.3 chance of a modest response ($20,000) and a 0.7 chance of a large response ($220,000). If a large facility is built and demand is high, the payoff is $800,000.

Construct a decision tree for the above problem.

4A. How to apply different steps of Theory of Constraints in Printing industry? Explain with relevant example **5**

4B. What are the factors that influence market segmentation? Explain with example **3**

4C. Why breakeven analysis is used? Briefly explain with example **2**

5A. What is the advantage of linking capacity with other operational decisions in printing industry? Explain with example **3**

5B. A digital printing unit started textile printing two years ago. Low inventory turnover is squeezing profit margins and causing cash-flow problems. One of the top-selling item is the T-shirt **5**

Sales are 100 units per week, and supplier charges Rs. 150 per unit. The cost of placing an order with the supplier is Rs. 55 . Annual holding cost is 20 % of unit cost and the shop operates 52 weeks per year

Management chose a 400 unit lot size so that new orders could be placed less frequently.

a) What is the annual cost of the current policy of using a 400 - unit lot size?
b) Calculate EOQ
c) How frequently the order will be placed?

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5C. For the following data develop a linear programing analytical model, there are 40 hours of labor and 120 pounds of clay available each day. **2**

	Resource requirements		
Product	Labor (hrs/unit)	Clay (lb/unit)	Revenue ($/unit)
Bowl	1	4	40
Mug	2	3	50

6A. Which are the important considerations a manager has to make before planning a layout? Briefly explain **2**

6B. M/s Digitech, is a popular digital printer, for producing photo album. The average demand is 18 units per week with a standard deviation of 5 units. The lead time is constant at 2 week. Determine the safety stock and the reorder point if management wants a 90% cycle service level. What is the total cost of the Q system? **5**

Consider H= 15, D= 936 and S= 45

6C. Student tuition fee at XX university is Rs. 10,000 per semester course (credit hour). The state supplements school fee by matching tuition fee. Average class size for a typical three credit course is 50 students. Labor costs are Rs. 3000 per class, materials cost are Rs. 20 per student per class and overhead costs are Rs. 25,000 per class **3**

a). Find multifactor productivity ratio

b). If an instructor works an average of 14 hours per week for 16 weeks for each three-credit class of 50 students, what is labor productivity ratio?