II Semester M.B.A. (Day) Degree Examination, July 2011

(2007-08 Scheme)

Management

Paper 2.3 : PRODUCTION AND OPERATIONS MANAGEMENT

Time : 3 Hours   Max. Marks : 75

*Instruction : Calculators are **allowed**.*

SECTION – A

Answer **any 6** questions. **Each** question carries **2** marks.   (2×6=12)

1. a) What is FMEA ?

   b) What is work sampling ?

   c) What is process mapping ?

   d What is DMAIC ?

   e) What is DFM ?

   f) What is reliability ?

   g) What is CAE ?

   h) What is robust design ?

   i) What is scheduling ?

SECTION – B

Answer **any three** questions. **Each** question carries **8** marks.   (3×8=24)

2. What is product/service design ? Explain the various phases of product development.

3. What is quality ? Explain how quality and the tools of quality can lead to overall organisational excellence.

4. As a cargo loader for Air India, you are charged with the responsibility of setting a standard time (in minutes) for uploading certain electrical components. The following study was conducted over 300 hours with 900 uploadings performed.

Composite worker rating (in %)	Activity	No. of times observed
80	Manually check and lift electrical component onto trailer	100
100	Tow loaded trailer to aircraft with tractor	300
120	Check electrical contacts (this time will be reduced by 50% by an additional inspection during manufacturer)	400
90	Correct any malfunctioning observed	100
110	Load electrical component into plane using automatic lift	400
140	Return tractor and tailer to warehouse	300
	Personal or idle time	400

Air India personal time allowance fraction is 0.10 for an 8 hour workday.

5. Discuss how production and operations management helps in decision making. Use suitable examples of modern practices from industry in support of your answer.

6. a) Briefly list the facility location criteria.

   b) A DTP firm intends to open a new shop. The table below gives information on two potential locations :

Factor	Weight	Location 1	Location 2
Proximity to existing shop	0.10	100	60
Traffic volume	0.05	80	80
Rental costs	0.40	70	90
Size	0.10	86	92
Layout	0.20	40	70
Operating costs	0.15	80	90
	1.00		

SECTION – C

Note : Answer **any two** of the following questions. **Each** question carries **12** marks.

(2×12=24)

7. Write short notes on :

   a) House of quality

   b) Production planning and control

   c) JIT and Kanban.

8. What are the functions of inventory ? What are the objectives of inventory control ? Discuss the classification systems of inventory.

9. a) Why are facility layout decisions important ?

   b) A quality inspector took five samples each with four observations of the length of time taken to disburse cash at a Bank. The analyst computed the mean of each sample and then computed the grand mean. All values are in minutes. Use this information to obtain 3 sigma ($Z = 3$) control limits for future times. From previous experience the standard deviation is said to be 0.2 minutes.

	Sample				
	1	**2**	**3**	**4**	**5**
1	8.11	8.15	8.09	8.12	8.09
2	8.10	8.12	8.09	8.10	8.14
3	8.11	8.10	8.11	8.08	8.13
4	8.08	8.11	8.15	8.10	8.12
Mean	8.10	8.12	8.11	8.10	8.12

SECTION – D

10. Case study. This Section is **compulsory**. (1×15=15)

New York City picks Nissan minivan as next taxi cab New York's yellow taxis have been featured in many movies and TV shows.

Japan's Nissan Motor has won a contract to provide the next generation of New York's famous yellow taxis. The deal, which is estimated to be worth $1bn (£607m) was announced by Mayor Michael Bloomberg. The design will be based on Nissan's NV200 minivan model. The van, which beat US carmaker Ford Motor and Turkish manufacturer Karsan Otomotiv for the 10-year contract, will be phased in starting in 2013.

Mayor Michael Bloomberg acknowledged the Nissan NV200's boxy form evokes suburbia, but he said the yellow paint would give it the iconic New York touch. The vehicle features an overhead window to offer views of city skyscrapers, and charging stations for mobile phones. "For the first time, we'll have a taxicab that wasn't 'off the rack', but rather custom-tailored to create the best fit for the drivers, owners and passengers of our city," Taxi and Limousine Commissioner

David Yassky said. "People are going to fall in love with this taxi once they ride in it. It is going to represent New York City well." The car will also feature satellite navigation, so passengers leaving the main Manhattan corridors will not have to contend with drivers who do not know their way around.

The Nissan was the most fuel-efficient and the cheapest of the three finalists, at about $29,000 (£17,608) per vehicle. By 2017, Nissan will be able to manufacture the cars to run solely on electricity, New York City Hall said in a statement. The bulk of the current fleet are Ford Crown Victorias, a car which only does about 12 miles per gallon, compared with 25 miles per gallon for the Nissan NV200. New York's 13,000 yellow cabs carry about 600,000 passengers a day, and are the only vehicles permitted to pick up passengers off the street. The NV200, which will be built in Nissan plants in Mexico, is the first to be designed specifically for use as a New York City taxi.

1) Highlight how improved product design of the car helped it in getting selected from among other popular brands.

2) Do you think that the value added features of the car are in tune with modern requirements ? Elaborate on how manufacturers need to take cognizance of consumers' requirements.

3) If you were a New Yorker, given the facts in the case, what would your reactions about the new taxi be ?

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