

Seat No. _____

University of Pune
Department of Management Sciences (PUMBA)
Executive MBA
2nd Year (Semester – III) External Exam Nov. 2013
303(D)- Operation Planning & Control

Time: 2hrs.

Marks: 50

Attempt any 5 questions: Each question carries 10 marks:

1. Attempt following questions:

a. During a pilot study, it was observed that 2 machines out of 100 were not working. If the confidence level desired is 2 sigma and accuracy level desired is + / - 3.5 %, find the number of rounds to be taken. If the study was done for 20 days of 10 hours each, find the time for each round and time between the rounds. Prepare the schedule for 1st 5 rounds if the shift starts at 9 A.M.

b. During a work sampling study done for 10 days of 8 hours each following observations were collected

- Machine working – 150 times
- Machine being cleaned by worker – 5 times
- Material being loaded on the machine – 5 times
- Machine under breakdown – 15 times
- No power – 10 times
- No worker – 5 times
- Machine being repaired by worker – 5 times
- Machine being set up – 5 times

If during this time, 1000 pcs.were manufactured by workers having rating of 80 % and company decides to give 15 % contingency allowance and 5 % special allowance, calculates the standard time.

2. Find the Number of employees required and space required for a BPO if they have to perform activities as per following data:

Activity	Standard time reqd. (Mins. / unit)	Number of clients to be served per month	Efficiency Expected %	Utilization Expected %
A	3	20,000	90	85
B	4	40,000	75	90
C	6	30,000	90	85

D	2	50,000	85	80
E	5	40,000	95	80
F	8	25,000	90	85
G	4	35,000	100	85
H	5	20,000	85	90

Each employee requires 1 Table which occupies a space of 15 Sq. Ft. Additional space required for movement and other utilities is 200 % of the table space. The company is planning to work for only 1 shift per day of 8 Hrs per shift. Expected numbers of working days are 22 per month.

3. XYZ Ltd. requires 100 units every day for which the company is working 24 Hrs. per day. The product requires following activities to be completed. Find the number of work stations to be created by doing line balancing and find line balancing efficiency.

ACTIVITY	PRECEDING ACTIVITY	DURATION (MINS.)
A	-	4
B	A	4
C	B	3
D	C	6
E	D	2
F	E	3
G	E	6
H	E	8
I	E	10
J	E	5
K	E	4
L	E	7
M	F,G,H,I,J,K,L	4
N	M	6
P	N	4

4. ABC Ltd. Manufactures 8 products for which the sales and stock details are given as per following table:

PRODUCT	SALES QTY. PER DAY (UNITS)	STOCK ON HAND (UNITS)	SAFETY STOCK REQUIRED TO BE KEPT (UNITS)	TIME REQUIRED FOR PRODN. (PER BATCH) DAYS
A	100	1200	200	3
B	50	600	50	2
S	200	1800	200	2

D	25	400	100	4
E	125	2200	200	5
F	150	1700	200	4
G	75	1950	150	2
H	60	780	180	4

Find the sequence for production using critical ratio method.

5. What is PPC? Explain the compulsory functions of PPC with suitable examples.
6. What is method study? Explain different tools used for method study with suitable examples.
7. ABC Ltd. Has a requirement of a product as per following details

Year	Requirement (No. of Units)
1	1, 00,000
2	3, 00,000
3	5, 00,000
4	6, 00,000
5	8, 00,000

They have been offered a price of Rs. 40 by the supplier for first year with an increase of 10 % every subsequent year. The transportation cost per unit is Rs. 2 for the first year with an increase of 10 % every year. The storage and inventory cost is 5 % of the landed cost (unit cost + transport cost)

They have also collected data on in house manufacturing as follows:

Raw material cost is Rs. 24 per unit for the first year with an increase of 20 % per year. Labor cost will be Rs. 8 per unit for the first year with reduction of Rs. 1 for the second year and increase by Rs. 2 every subsequent year. Overheads will be Rs. 3 per unit for the first year with an increase of 20 % per year. Power and fuel cost is likely to be Rs. 2 per unit for the first year with an increase of Rs. 0.5 per year. The company will have to invest in machinery and other assets to the tune of Rs. 100 lac to be recovered in 5 years.
