

Roll No. _____

University of Pune
Department of Management Sciences (PUMBA)
Executive MBA
2nd Year External Exam May - 2013
405-D-World Class Manufacturing

Time: 2.30 hrs

Marks: 50

Instructions to Candidates:-

1. Answer any 5 questions.
2. Neat diagrams must be drawn wherever necessary.
3. Figures to the right indicate full marks.
4. Answer the questions in the given sequence only.
5. Strictly follow the instructions given in the question paper

- Q.1** A company has received repetitive orders for twelve parts (1, 2, 3,). The company has a manufacturing facility of nine general purpose machines (a, b, c, ...) The process engineer studied the process requirements for each part and has identified the machines on which each of these individuals parts can be manufactured. **10**

The details are given in the table below:

Machines									
Parts	a	b	c	d	e	f	g	h	i
1						1	1		1
2	1	1	1						
3						1	1		1
4	1	1							
5						1	1		1
6									1
7					1				
8	1	1	1						
9						1			1
10			1	1					
11							1		1
12					1			1	

Form machine-component groups & work cells using either Direct Clustering Algorithm or Rank Order Clustering Algorithm

- Q.2** The following table shows the various activities involved in setup activity on a 10 ton press. **10**

Activity	Time (min)	Performed by
1. Check in at operation, go to die storage	5	Setup person
2. Transfer new die	8	Setup person
3. Remove old die	10	Setup person
4. Return old die to storage	10	Setup person
5. Get new material	15	Operator
6. Attach new die	12	Setup person
7. Adjust machine	20	Setup person

- a) Classify the activities as internal and external [2]
- b) If all activities are performed externally
 1. Determine the elapsed setup time [2]
 2. Suppose step 5 takes 2 minutes and step 6 takes 15 minutes, how long should the setup procedure take? [2]
- c) If SMED principle is followed
 1. Determine the elapsed setup time [2]
 2. Suppose step 5 takes 2 minutes and step 6 takes 15 minutes, how long should the setup procedure take? [2]

- Q.3** A) Differentiate between 1S and 2S. **2**
B) Identify the eight pillars of TPM and explain their significance in one sentence. **8**

- Q.4** Read the following statements and write down which of the seven wastes (Transport, Inventory, Motion, Waiting, Overproduction, Over processing, **10**

Defect) is being described in the table given below

Sr. No.	Statement
1	A 30 page report when a short 2 page executive summary would have done
2	Having to write out for further information because an application form is incomplete
3	Having both electronic records and paper records
4	Getting the wrong address on an envelope
5	Getting the wrong limb amputated
6	Excessive packaging on a music CD
7	Having 3 spreadsheets to record the same information
8	Receiving the wrong mail
9	Receiving 3 bits of identical junk mail
10	Moving files across several floors
11	Putting sticky tape over a seal on an envelope
12	Extra keyboard strokes (not using shortcuts)
13	Having to reach down to pick up a file (MOTION)
14	Holding 10 years worth of bar code labels
15	Receiving 200 pieces of work from the previous process when your capacity is 30 per day
16	Hunting around the office for a case file
17	Stocking every colour of paper imaginable
18	Coffee but no milk in your hotel room
19	Having to deliver files to a different city
20	Making a few extra photo copies

Q.5 A] Classify the following set-up activities into internal and external setup activities

5

- a. Cleaning a spark plug
- b. Preheating a extrusion die
- c. Fixing sling to a die
- d. Bringing crane near a machine
- e. Removing last production piece from machine
- f. Inspecting first production piece after changeover
- g. Sharpening the cutter
- h. Bringing new raw material to machine after changeover
- i. Searching for new die for changeover after removal of old die
- j. Removing cartridge from printer

B] Explain the steps in SMED

5

Q.6 Select the correct option from the ones given below: (Your answer should be written as 1. – A (In case you think A is the right option for question 1) Do not rewrite the sentences, else they will not be evaluated.

10

1. Goldratt's rule of production scheduling include all but:
 - a. Do not balance the capacity - balance the flow
 - b. Utilization and activation of resource are not the same thing
 - c. An hour saved on a bottleneck is a mirage
 - d. A process batch should be fixed both along its route and in time
 - e. Priorities can be set only by examining the system's constraints
2. The steps in Goldratt's Theory of Constraints problem solving approach include:
 - a. Identify the system constraints
 - b. Decide how to exploit the system constraints
 - c. Elevate the system constraints
 - d. A and B
 - e. A and C
 - f. A, B, and C
3. The measures of the firm's ability to make money include:
 - a. Net profit
 - b. Return on assets
 - c. Cash flow
 - d. A and B
 - e. A and C
 - f. A, B, and C

4. Operational measures include:
 - a. Throughput
 - b. Inventory
 - c. Operating expenses
 - d. A and B
 - e. B and C
 - f. A, B, and C
5. From an operations standpoint, the goal of the firm is to simultaneously increase throughput and inventory and reduce operating expenses.
 - a. True
 - b. False
6. If there is no bottleneck, then excess capacity exists and the system should be changed to create a bottleneck.
 - a. True
 - b. False
7. Which of the following is not a component of production cycle time?
 - a. Setup time
 - b. Process time
 - c. Wait time
 - d. Queue time
 - e. Maintenance time
8. If the system contains a bottleneck, the _____ is the best place for control. If there is no bottleneck, the _____ is the best place for control.
 - a. Capacity-constrained resource, bottleneck
 - b. Capacity-constrained resource, drum
 - c. Bottleneck, capacity-constrained resource
 - d. None of the above
9. According to Goldratt and Fox, a useful performance measure to treat Inventory is _____.
 - a. Inventory turnover
 - b. Current ratio
 - c. Quick ratio
 - d. Dollar days
 - e. None of the above
10. The drawbacks of JIT in relation to synchronous manufacturing include all but:
 - a. JIT is limited to repetitive manufacturing
 - b. JIT requires a stable production level
 - c. JIT uses a schedule to assign work to each workstation
 - d. JIT does not allow very much flexibility in the products produced
 - e. All of the above are drawbacks of JIT

Q.7 Write short notes on:

- A] Steps in Theory of Constraints.
- B] Types of Constraints

10