

**Term End Examination : June – 2018**  
**Management Programme**  
**Operations Management**

**MP-06**  
**DIM-06**

**Time: 3 hours**

**Full Marks: 100**

**Read the instructions carefully before attempting questions from each group.**

**GROUP – A**

**Q.No. 1. Answer all questions selecting the right options. Each carries 1 Mark [1 X 10 = 10]**

- i. What is the unit of total productivity while expressed mathematically?  
a) % of GDP  
b) \$ per year  
c) Tons per year  
d) None of the above
- ii. The longest process element in a multi-stage process determines \_\_\_\_\_.  
a) Throughput time  
b) Cycle time  
c) Both of the above  
d) None of the above
- iii. \_\_\_\_\_ type of layout is preferred in project operations?  
a) Product layout  
b) Process layout  
c) Combined layout  
d) Fixed position layout
- iv. Which rules are used for scheduling and sequencing of jobs?  
a) Muther's Rule  
b) Murphy's Rule  
c) Johnsons Rule  
d) Coopers Rule
- v. A shipping agency handles 200 customers on Day 1 by engaging 10 numbers of staff, and 300 customers on Day 2 with 15 staff members. Does productivity change from Day 1 to Day 2?  
a) Yes  
b) No  
c) Increasing  
d) Decreasing
- vi. Which of the following is not an operation strategy?  
a) Price leadership  
b) Quality leadership  
c) Delivery time  
d) Process flexibility
- vii. Use the following single machine scheduling data and find out the optimal sequence, by *SPT rule*.

<b>Jobs</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
Processing time (Hrs.)	16	5	6	15	9

- a) ADECB
- b) BCEDA
- c) Either of the above
- d) None of the above

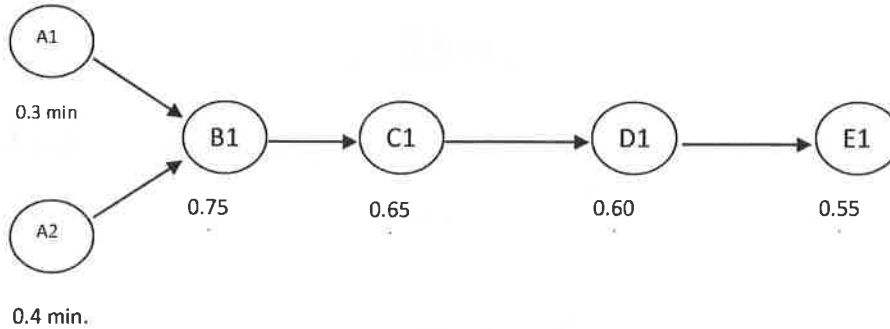
- viii. The type of production that looks for the use of general purpose machines is –
- |                     |                          |
|---------------------|--------------------------|
| a) Job Production   | c) Mass Production       |
| b) Batch Production | d) Continuous Production |
- ix. Who amongst the following has contributed the scientific management principles?
- |                  |                |
|------------------|----------------|
| a) F W Taylor    | c) Henry Gantt |
| b) Peter Drucker | d) Elton Mayo  |
- x. \_\_\_\_\_ is the addition of more planning, inspecting, and other management functions to the worker's job.
- |                    |                      |
|--------------------|----------------------|
| a. Job enrichment  | c. Job rotation      |
| b. Job enlargement | d. None of the above |

### GROUP – B

***Q.No. 2. Answer any 4 questions each within 50 words. Each carries 5 marks [5 X 4 = 20]***

- i. Write a mathematical expression (formula) for capacity utilization. During one week of production, a plant produced 80 units of a product. Its historic highest production record was 120 units per week. What is this plant's capacity utilization rate?
- ii. List and explain the seven wastes defined by TOYOTA.
- iii. Suppose you want to purchase a new computer that will cost \$5,000. It will be used to process written orders from customers who will pay \$25 each for the service. The cost of labor, electricity and the form used to place the order is \$5 per customer. How many customers will we need to serve to permit the total revenue to break-even with our costs?
- iv. Draw the figure of Porter's value chain and explain it as an operations framework.
- v. An aircraft maintenance company has the capacity to offers MRO services to 4 flights in a week by adding revenue of \$1,20,000. The accountant of the company estimated in a particular week the labor cost of \$1,000; materials and spare parts cost of \$10,000; and the annual overhead cost of \$52,000. What was the productivity of the company for that week?
- vi. The diagram in the question represents a process where two components are made at stations A1 and A2 (one component is made at A1 and the other at A2). These components are then assembled at station B and moved through the rest of the process, where some additional work is completed at stations C, D, and E. [Assume that one and only person is allowed at each station. Assume that the times given below for each station represent the amount of work that needs to be done at that

station by that person, with no processing time variation. Assume that inventory is not allowed to build in the system.]

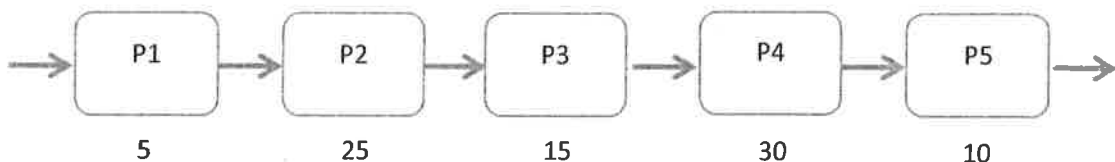


What is the average hourly output of the process when it is in normal operation?

### GROUP – C

**Q.No.3. Answer any 4 questions each within 200 words. Each carries 10 Marks [10 X 4 = 40]**

- (i) List and explain the principles of facility layout.
- (ii) Draw the framework of Input-Process-Output (IPO) model and explain the operations management practice with a system view with reference to some business example.
- (iii) MMM Inc. is a retail outlet exclusively dealing with weather equipment. Currently it is trying to decide the inventory and reorder policy for home barometers. Barometers cost MMM \$50 each and demand is about 500 per year distributed fairly evenly throughout the year. Ordering cost is \$80 per order and holding cost is 20% of the cost of the item.
  - a) What is the economic order quantity?
  - b) How many times per year would MMM order?
- (iv) In the following process map, the five boxes indicate the 5-stages of a production system. Respective processing times (in minutes) are mentioned below the boxes.



- a) What is the cycle time in this production system?
  - b) What is the flow time of this production system?
  - c) Identify the bottleneck(s) and mention the impact on adjacent processes.
- (v) Develop a flow chart and explain how production planning and capacity planning are executed in the process of disaggregation.

(vi) List and explain the seven wastes identified by TOYOTA Production System.

**GROUP – D**

*Q.No.4. Answer any 2 questions each within 250 words. Each carries 15 Marks.[15 X 2 = 30]*

- (i) Relate and explain the concepts of ABC Analysis, HML Analysis, VED Analysis, FSN Analysis, and SDE Analysis.
- (ii) List and explain the application of quality control tools.
- (iii) Explain various types of production systems with respect to the volume, variety and other characteristics.
- (iv) Narrate the operations of a hotel. Suggest a particular layout for that hotel with proper justifications.