

**University of Mumbai**

**Mechanical Engineering Examination**

**Sub: MEC 703/ Production Planning and Control      Year/Sem:- BE/ VII Sem**

**Max. Marks: 80**

**Duration: - 2Hrs**

**Sample Question Paper**

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**Q1. Attempt all the MCQS**

**(20 X 2 mark= 40 marks)**

1. Choose the correct sequence for responsibilities of the operations manager are:
  - a) Planning, Organizing, Staffing, Forecasting, and Reviewing.
  - b) Planning, Organizing, Staffing, Directing, and Controlling.
  - c) Forecasting, Designing, Planning, Organizing, and Controlling.
  - d) Forecasting, Designing, Operating, Procuring, and Reviewing.
2. Choose the basic and important assumption in sequencing.
  - a) Maximum time require to transfer job from one machine to another machine.
  - b) Multiple machines of one type are available.
  - c) A machine can process only one operation at a time.
  - d) Operation once started can be interrupt during operation.
3. Predict most significant application of Gantt chart.
  - a) Calculate raw material cost variation.
  - b) Show timeline of project and compute expected project completion date.
  - c) Calculate demand of product in market
  - d) Enlist technical specification of standard components.
4. Select most important assumption of Time-series analysis.
  - a) Random error terms are normally distributed.
  - b) There are dependable correlations between the variable to be forecast and other independent variables.
  - c) Past patterns in the variable to be forecast will continue unchanged into the future.
  - d) The data do not exhibit a trend.
5. A qualitative forecast predicts \_\_\_\_\_
  - a) quality of a new product.
  - b) direction, but not the magnitude, of change in a variable.
  - c) dimensional accuracy of a product.
  - d) value addition in new design

6. Operations generated forecasts not related with\_\_\_\_\_.
- a) Inventory requirements
  - b) Resource needs
  - c) Time requirements
  - d) Sales
7. Identify forecasting technique in which subjective inputs obtained from various sources are analyzed?
- a) Judgmental forecast
  - b) Time series forecast
  - c) Associative model
  - d) Operations generated forecasts
8. In Brake system the brake bleeding process removes
- a) air.
  - b) Water.
  - c) Excess Pressure.
  - d) Excess fluid.
9. The purpose of tyre plies to
- a) Decrease noise level.
  - b) Increase traction.
  - c) Increased tread life.
  - d) Provide softer ride.
10. Time between two completed products emerging from the process is called as\_\_\_\_\_.
- a) Throughput
  - b) Lead time
  - c) Cycle time
  - d) Work station
11. The diagram representing the ordering of elements which comprise the total work content of product is known as
- a) Precedence diagram
  - b) String diagram
  - c) Line diagram
  - d) Block diagram

12. Calculate number of stages for a operation having total work content 24 hours and required cycle time is 6 hours.

- a) 2 stages.
- b) 144 stages.
- c) 4 stages.
- d) 3 stages.

13. Routing is related with

- a) Flow of work in the plant.
- b) Measurement of dimension.
- c) Dispatch of product to market.
- d) Advertisement of product.

14. Automobile industry is an example of\_\_\_\_\_.

- a) Job Production System.
- b) Batch Production System.
- c) Mass Production System.
- d) Small Scale Production System.

15. The cost of insurance of material available is included in\_\_\_\_\_.

- a) Cost of ordering.
- b) Set up cost.
- c) Inventory carrying cost
- d) Cost of shortages

16. Macro process planning includes

- a) Market value of product.
- b) Process and machine selection.
- c) Process optimization.
- d) Optimum tool path algorithm.

17. ERP implementation of entire plant is done in

- a) Location approach.
- b) Big bang approach.
- c) Module approach.
- d) Complete approach.

18. Predict forecasting method based on data obtained from past experience.

- a) Judgemental forecast.
- b) Time series forecast.
- c) Associative forecast.
- d) Predictive forecast.

19. Identify aggregate planning technique which use trial and error approach with multiple solution.

- a) the transportation method of linear programming.
- b) graphical and charting methods.
- c) the linear decision rule.
- d) Bowman's management coefficients model.

20. Identify the term to denote the maximum time that would be needed to complete an activity in PERT

- a) Optimistic time.
- b) Most likely time.
- c) Pessimistic time.
- d) expected time.

**Q2. Attempt any FOUR**

**(04 X 05 marks= 20 marks)**

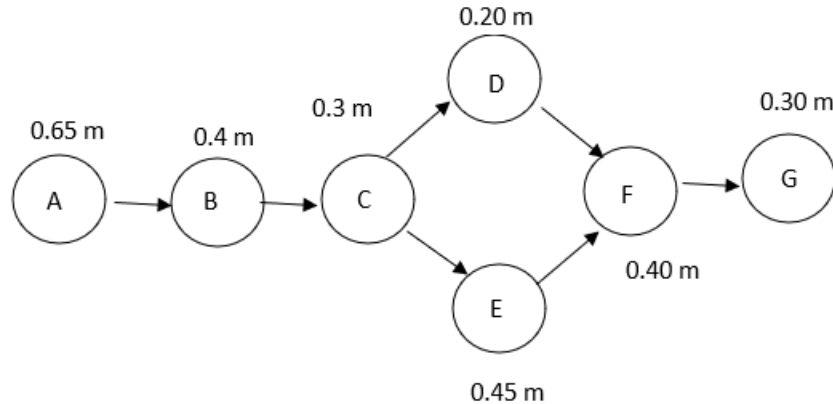
- A. Discuss the prerequisites of PPC.
- B. State the objectives and inputs to the MRP system.
- C. Explain two bin system of inventory.
- D. Classify and explain various ERP implementation approach.
- E. Explain various production system.
- F. Predict the sales forecast for the year 2018 using exponential smoothing forecasting method. Take  $\alpha = 0.5$  and forecast for the year 2013 as 180 units.

Year	2013	2014	2015	2016	2017
Demand	200	188	179	190	208

**Q3. Attempt any TWO**

**(02 X 10 marks= 20 marks)**

A) The precedence diagram for assembly activities A to G is shown below. The element times required for the activities are shown in the diagram in minutes. The line operates for seven hours per day and an output of 550 units per day is desired.



- i) Calculate the cycle time and the theoretical minimum number of workers.
- ii) Group the tasks into an appropriate number of work stations by Kilbridge and Westers Method.
- iii) Also calculate the balanced efficiency.

B) Prepare sequence of job loading on machines to complete machining operations in minimum time.

Also compute Idle time for all machines.

Job	Machine A	Machine B	Machine C
1	3	8	13
2	12	6	14
3	5	4	9
4	2	6	12
5	9	3	8
6	11	1	13

C) The Following table shows activity of project along  $N_T$ ,  $C_T$ ,  $N_C$ ,  $C_C$ , Indirect cost 10/-Rupees.

Activity	Normal Time ( $N_T$ )	Crash Time ( $C_T$ )	Normal Cost ( $N_C$ )	Crash Cost ( $C_C$ )
1-2	6	4	60	100
1-3	4	2	60	200
2-4	5	3	50	150
2-5	3	1	45	65
3-4	6	4	90	200
4-6	8	4	80	300
5-6	4	2	40	100
6-7	10	2	45	80

Create network diagram and show C.P. Calculate NT and corresponding cost. Crash the activities and determine optimal duration of project and corresponding cost.

D) Predict the sales forecast for the year 2016 using exponential smoothing forecast. Take  $\alpha = 0.5$  and  $0.8$ . The forecast for the year 2011 is 160 units. Compare the two forecasts.

Year	2011	2012	2013	2014	2015
Sales (Units)	180	168	159	170	188