Reg. No. :

Question Paper Code: U7208

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Professional Elective

Mechanical Engineering

21MEV208 - PRODUCTION PLANNING AND CONTROL

(Regulations 2021)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Manufacture of products or assemblies using a continuous process is call   CO1-U

   (a) Job production   (b) Mass production

   (c) Batch production   (d) Process production

2. The process of producing the limited number of products of variety is   CO1-U

   (a) Standardization   (b) Simplification   (c) Diversification   (d) Specialization

3. The correct order of procedure in method study is   CO1-U

   (a) Select – Record – Examine – Develop – Define – Install – Maintain

   (b) Select – Define – Examine – Develop – Record – Install – Maintain

   (c) Select – Record – Develop – Examine – Define – Install – Maintain

   (d) Select – Record – Examine – Define – Develop – Install – Maintain

4. In outline process chart, the horizontal lines represents   CO1-U

   (a) general flow of process   (b) materials being introduced

   (c) both 'a' and 'b'   (d) None of the above

5. Centralized and decentralized are the types of   CO1-U

   (a) Routing   (b) Dispatching   (c) Scheduling   (d) Follow up

6. The price paid by the buyer is   CO1-U

   (a) Cost value   (b) Use value   (c) Esteem value   (d) Exchange value

7. Master schedule is prepared for   CO1-U

    (a) Single product continuous production   (b) Multi product batch production

    (c) Assembly product continuous production   (d) Single product batch production

8. The bill of material does not consists of   CO1-U

    (a) Part number   (b) Specifications of part

    (c) Name of the part   (d) Price of the part

9. The following classes of costs are usually involved in inventory decisions except   CO1-U

    (a) Cost of ordering   (b) Carrying cost

    (c) Cost of shortages   (d) Machining cost

10. The Economic Order Quantity (EOQ) is calculated as   CO1-U

    (a) $(2D*S/h)^{1/2}$ (b) $(DS*/h)^{1/2}$ (c) $(D*S/2h)^{1/2}$ (d) $(D*S/3h)^{1/2}$

PART – B (5 x 2= 10Marks)

11. What is break-even point?   CO1-U

12. Enumerate the recording techniques for Method study   CO1-U

13. What is value analysis?   CO1-U

14. List the objectives of production scheduling.   CO1-U

15. Distinguish between MRP II and ERP   CO1-U

PART – C (5 x 16= 80Marks)

16. (a) i) A product of selling price Rs 20 per unit ,output level of 1,00,000 units , fixed and variable cost of Rs 4,00,000 and Rs 10 per unit .what is the profit and BEP   (6)   CO2- App (16) CO1- U
       ii) Explain about the following aspect
       (a) Marketing aspect
       (b) Aesthetic aspect
       (c) Operational Aspect (10)

<div align="center">Or</div>

    (b) i) The following are given for a car manufacturing company estimated output = 80,000 units, Fixed cost = Rs. 4,00,000, Variable cost = Rs. 10 per unit, selling price = Rs 20/units. Find out the break-even point analytically (6)   CO2- App (16) CO1- U
       ii) Explain the various types of production systems Explain any two in brief   (10)

U7208

17. (a) A job consists of 5 elements, the element times for 4 cycles using   CO2- App   (16)
stop watch are tabulated here. Calculate standard time for
operation If (i) Element 2 and 4 are machine element. (ii) For
other elements, the performance rating of operator is at 85%. (iii)
Total allowances are 12% of the basic time.

Element No	Cycle Time (min)			
	1	2	3	4
1	2.5	2.6	2.4	2.7
2	1.2	1.6	1.3	1.5
3	0.5	0.6	0.4	0.6
4	3.5	3.1	3.2	3.4
5	1.3	1.2	1.3	1.1

Or

(b) The element times for 4 cycles of an operation using a stop watch   CO2- App   (16)
are presented below. In this element 1 and 3 are machine element;
total allowance is 14% of the normal time, for other elements the
operator is rated at 90%. Estimate the standard time of each
element and entire operation.

Element No	Cycle Time (min)			
1	2.6	2.4	2.7	2.6
2	1.3	1.5	1.4	1.5
3	0.52	0.49	0.51	0.51
4	3.4	3.2	3.3	3.4
5	1.2	1.2	1.2	1.1

18. (a) Illustrate the structure of the Variant CAPP approach and apply it   CO3- Ana   (16)
to a relevant scenario.

Or

(b) Analyze the characteristics of batch production and apply your   CO3- Ana   (16)
understanding to select appropriate batch sizes for a given
manufacturing scenario.

U7208

19. (a) Apply the procedure for developing a Master Production   CO2- App   (16)
Schedule (MPS) to a hypothetical manufacturing company, considering factors such as demand forecasts, inventory levels, and production capacity. Illustrate the steps involved in creating the MPS and the key decisions that need to be made.

Or

(b) (i) Illustrate the Aggregate Run-Out method of batch scheduling   CO2- App   (16)
and apply it to a real-world scheduling scenario. (8)
(ii) Explain the Line-of-Balance method and apply it to manage workflow in a specific project (8)

20. (a) Discuss the various basic elements of JIT that must be addressed   CO1- U   (16)
for successful JIT implementation.

(b) Choose the fixed-order quantity inventory model to perform in an   CO1- U   (16)
engineering Industry.

U7208