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8E1822

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Total No. of Pages: 3**8E1822****B. Tech. VIII - Sem. (Main/Back) Exam., June - 2023****Mechanical Engineering****8ME5-12 Supply and Operations Management****Time: 3 Hours****Maximum Marks: 120****Min. Passing Marks: 42***Instructions to Candidates:*

Attempt all ten questions from Part A, five questions out of seven questions from Part B and four questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL _____2. NIL _____**PART – A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 What is Operation Management?
- Q.2 Why is Operation Strategy important?
- Q.3 What are the approaches to forecasting?
- Q.4 Enlist the components of demand forecasting.

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- Q.5 What is product design and why is it important?
 - Q.6 What is capacity planning?
 - Q.7 What is aggregate planning?
 - Q.8 What is Lean Operations, and how does it differ from JIT?
 - Q.9 Define Supply Chain Management.
 - Q.10 What is bullwhip effect in SCM?

PART – B

[5×8=40]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 What is Operation Management? Discuss the role of Operation Management in the growth of an organization.
- Q.2 What is demand forecasting and its benefit? Discuss the factors affecting the demand forecasting.
- Q.3 Discuss the relationship between product design and process selection.
- Q.4 Discuss the various demand patterns in forecasting.
- Q.5 Write a short note on cost-volume analysis.
- Q.6 Describe the key features and benefits of an ERP system.
- Q.7 What is SCM? Discuss its need and elements of SCM.

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PART – C

[4×15=60]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any four questions

- Q.1 Discuss the role of Operation Management in the growth of an organization.
- Q.2 Explain the stages involved in the product design process.
- Q.3 A company having annual requirement of 40000 units in 8 installments. Each unit cost is ₹ 2 and ordering cost is ₹ 30. The inventory carrying cost is estimated as 30% of unit value. Find the total annual cost of the existing inventory policy. How much money can be saved by the economic order quantity?
- Q.4 What is facility planning and what are its objectives? Discuss the factors that affect facility planning, and how can they be addressed?
- Q.5 What is MRP and what are its key inputs and outputs? How does MRP-II differ from MRP, and what are the advantages of MRP-II?
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B. Tech. VIII - Sem. (Main/Back) Exam., June - 2023

Mechanical Engineering

8ME5-13 Additive Manufacturing

Time: 3 Hours

Maximum Marks: 120

Min. Passing Marks: 42

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and four questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL

2. NIL

PART – A

[10×2=20]

(Answer should be given up to 25 words only)

All questions are compulsory

- Q.1 What is rapid product development?
- Q.2 Define the digital manufacturing.
- Q.3 State the machine details of stereo lithography system.
- Q.4 Identify the name of materials that are used in additive manufacturing.
- Q.5 Recognize the processes involved in liquid and solid materials type additive manufacturing processes.

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- Q.6 Discuss silicon rubber molding.
- Q.7 Describe the quick cast process of rapid tooling.
- Q.8 What is part building error?
- Q.9 State the boundary representation (B-rep) modeling.
- Q.10 Define the reverse engineering.

PART – B

[5×8=40]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 Why is the need of compression in product development?
- Q.2 State the evolving history of rapid prototyping technologies.
- Q.3 Differentiate between cast kirksite and 3Q keltool process of rapid tooling.
- Q.4 How does rapid tooling work? Compare the hard and soft methods of rapid tooling?
- Q.5 Discuss the laminated tooling and spray metal tooling with diagrams.
- Q.6 Describe the working principle and process details of stereo lithography with diagrams.
- Q.7 Enlist the name of software's that are used for rapid prototyping. Write the benefits of magic's and solid view software.

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PART – C

[4×15=60]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any four questions

- Q.1 Classify the subtractive, formative and generative type manufacturing processes based on the state of input raw materials like liquid, solid and discrete particles.
- Q.2 What are the important steps followed in rapid prototyping process? Also explain each steps in brief with neat sketch.
- Q.3 Explain the working principle and process parameters of fusion deposition modelling system along with its advantages and applications. Also enlist the parts name of fusion deposition modelling machine with neat sketch.
- Q.4 Define the rapid prototyping. Discuss the current issues in rapid prototyping. What are the emerging trends in additive manufacturing with respect to engineering and medical applications?
- Q.5 Write short notes on –
- (a) Selective laser sintering
 - (b) Laminated object manufacturing
 - (c) Epoxy tooling
 - (d) Full mould casting
 - (e) Investment casting
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B. Tech. VIII - Sem. (Main) Exam., June - 2023

Open Elective -II

8MI6-60.2 Open Elective-II Maintenance Management

Time: 3 Hours

Maximum Marks: 120

Min. Passing Marks: 42

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and four questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL

2. NIL

PART – A

[10×2=20]

(Answer should be given up to 25 words only)

All questions are compulsory

- Q.1 Write down two main objectives of maintenance management.
- Q.2 What do you understand by SFL (Safe Working Load)?
- Q.3 Provide the types of maintenances.
- Q.4 What is the economic effect of preventive maintenance on breakdown maintenance?
- Q.5 What type of maintenance is most effective?
- Q.6 How replacement is different from reconditioning?

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- Q.7 What do you understand by salvage value?
- Q.8 List the maintenance control indices used in Indian Industry.
- Q.9 Write down one pros and one cons of periodic maintenance.
- Q.10 List the components used in a lubrication systems.

PART – B

[5×8=40]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 Explain failure analysis giving list of methods to carry out failure analysis.
- Q.2 Compare preventive maintenance with predictive maintenance.
- Q.3 How do you track maintenance costs?
- Q.4 What are the basic expectations of the organization from the employees as far as maintenance management is concerned?
- Q.5 Throw light on the hidden cost of maintenance.
- Q.6 What precautions should be taken while preparing a service contract?
- Q.7 Name the techniques used for analysis of vibration signature and explain any one.

PART – C

[4×15=60]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any four questions

- Q.1 What are the characteristics of planned maintenance? Explain the working of a planned maintenance management system? Also, highlight the benefits achieved by implementing planned maintenance.
- Q.2 What is the importance of maintenance budgeting? Give the advantages of Zero Based Budget.
- Q.3 "Plant shutdowns for equipment overhaul needs to be adequately planned." Why? What will happen if this is not done? What are the various steps of planning of maintenance shutdowns?

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Q.4 What is the aim of Spare Parts Inventory Management? In what way does it influence the different stages of the life cycle of spare parts? Also describe the different types of spare parts and the time of their usage.

Q.5 Write short notes on any three of the following -

(a) Total Quality Management (TQM)

(b) Types of Audit

(c) Objectives of maintenance costing

(d) Role of human resource development in maintenance management.

(e) Advantages of computerized network planning

(f) Autonomous maintenance
