(3 Hours) **Total Marks: 80**

N.B.: (1) Question No.1 is compulsory.
(2) Attempt any three questions from the remaining five questions.
(3) Assume suitable data if required and mention it clearly
(4) Figures to right indicate full marks

1. **Solve any four**
   (a) What are the different phases of web application reconnaissance? **05**
   (b) What are some key differences between black-box and white-box vulnerability testing? **05**
   (c) Why should HTTPS be used everywhere in modern web applications? **05**
   (d) Explain the importance of encryption in maintaining the confidentiality and integrity of data in web applications. **05**
   (e) What are the benefits of integrating security in the SDLC? **05**
   (f) What are the key components of web application profiling? **05**

2. (a) What is Cross-Site Scripting (XSS), and what are its types? **10**
   (b) What are the benefits of using open-source security tools over commercial ones? **10**

3. (a) Discuss the security best practices for API development to prevent unauthorized access. **10**
   (b) Compare the impact of design flaws and security bugs in large-scale enterprise applications **10**

4. (a) Discuss the Secure Coding Practices. **10**
   (b) Explain how automation can improve application security in a DevSecOps environment. **10**

5. (a) Describe the importance of penetration testing in cybersecurity. **10**
   (b) Describe the role of CVSS in identifying and prioritizing vulnerabilities. **10**

6. Write a short note on **(Any Two)** **20**
   a) SAST and DAST.
   b) Threat modelling in different types of SDLC
   c)Secure hardware architecture.

Time: 3 Hours **Total Marks: 80**

Note:
1. Question No.1 is compulsory
2. Attempt any **three** out of the remaining **Five** questions.
3. Assume suitable data if necessary.

Q. 1. Answer **any FOUR** of the following: (20)

(a) Describe the key elements that distinguish partnership from other forms of business ownership.

(b) Discuss the key regulatory and policy-related issues faced by small and micro businesses.

(c) Explain the factors involved in the growth of an Enterprise.

(d) State any four unique characteristics of Entrepreneur.

(e) Differentiate between Sales Budget and Marketing Budget?

(f) What impact do capital markets have on innovation and entrepreneurship in emerging industries?

Q. 2. (a) What are the risks and challenges associated with each of the four growth strategies? (10)

(b) Discuss the schemes and incentives introduced under the MSME Act that aim to encourage innovation and technology adoption in small businesses. (10)

Q. 3. (a) Write short note on Women Entrepreneurship Development with example. (10)

(b) Entrepreneurs are "Dreamers with vision". State how. (10)

Q. 4. (a) Discuss role of Capital markets in Entrepreneural Development. (10)

(b) Explain in short about Industrial Investment Bank of India Ltd. (IIBI) (10)

Q. 5. (a) State any four primary activities that are essential for a firm to have a competitive advantage as given by Porter (10)

(b) Can you state any four features of angel investors that distinguish them from other types of investors? Why are angel investors crucial for the growth of early-stage companies? (10)

Q. 6. Answer the following. (20)

(a) Explain the key components of a project report that are necessary for business planning and implementation?

(b) How do the activities of an EDP Cell enhance the entrepreneurial capabilities of small and medium-sized businesses?

Time: 3 hrs **Marks: 80**

N. B.: 1. Question 1 is Compulsory
2. Attempt any three questions out of the remaining five.
3. All questions carry equal marks.
4. Assume suitable data, if required and state it clearly.

Q1 Attempt any FOUR 20

1. Write a short note on Synchronous Manufacturing.
2. Short Note on ERP Packages
3. Role of buffer stock in inventory control
4. Write short notes on Shop Floor Control.
5. Explain Pure strategy and Mixed Strategy in aggregate planning
6. Explain Quasi Manufacturing

Q2 (a) Manufacturer needs to balance an assembly line for producing a product. The tasks, their durations (in minutes), and their immediate predecessors are given below: 10

Task	Task Time (Minutes)	Intermediate Predecessors
A	4	-
B	5	A
C	3	A
D	6	B
E	4	C
F	5	D,E
G	2	D

The total available working time per day is 480 minutes, and the production requirement is 60 units per day. The company needs to find: (i) The cycle time. (ii) The minimum number of workstations required.
A task assignment that balances the line.

Q2 (b) Explain construction of Critical Path Method (CPM) and how to determine critical path in the network diagram with 10 events case study? 10

Q3(a) How can lean manufacturing principles help to reduce waste and improve operational efficiency? 10

Q3 (b) There are 6 jobs (A, B, C, D, E, F) that need to be processed on four machines (**M1**, **M2**, **M3**, **M4**), in a specific sequence. The processing times (in hours) for each job on all machines are given as follows: 10

Job	**M1 (hours)**	**M2 (hours)**	**M3 (hours)**	**M4 (hours)**
A	5	8	6	7
B	4	6	7	5
C	6	5	8	6
D	7	4	5	8
E	5	7	6	5
F	3	6	4	7

(i) The optimal sequence for processing the jobs.
(ii). The total elapsed time (make span).
(iii). The idle time for each machine.

Q4a) A construction project consists of several activities with their respective durations and dependencies. The project manager needs to determine the following: (i).The critical path and project completion time. (ii) The early start (ES), early finish (EF), late start (LS), and late finish (LF) for each activity. (iii) The total float (slack) for each activity. The activities, their durations, and their dependencies are shown in the table below: 10

Activity	Duration (days)	Predecessor(s)
A	4	-
B	7	A
C	6	A
D	5	B, C
E	10	B
F	3	C
G	2	D, E
H	7	F
I	4	G, H

Q4b) What is aggregate planning? Explain aggregate planning strategies in detail 10

Q5a) A company manufactures and sells a specialized electronic component. The annual demand for the component is 12,000 units. The company operates 250 days a year. The following data is available: Ordering cost per order: Rs.50. Holding cost per unit per year: Rs.2 Lead time: 5 days. Safety stock: 10% of the daily demand during the lead time Stock-out cost (per unit per stock-out): Rs.8. Unit price: Rs.25. Standard deviation of daily demand: 8 units. The company wants to determine the following: The optimal Economic Order Quantity (EOQ). The Total Inventory Cost (TIC) (including ordering cost, holding cost, and stock-out cost). The Reorder Point (ROP), accounting for safety stock and variability in demand during the lead time. The expected number of stock-outs per year. 10

Q5b) How does the Enterprise Resource Planning (ERP) **model integrate with** Operations Planning and Control (OPC)?

Q6a) Explain any Two Modules (i) Master Production Schedule (MPS) (ii) Material Requirement Planning (MRP) (iii) Capacity Requirement Planning (CRP)

b} Explain Synchronous manufacturing: systems in detail.

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3 hours **80 Marks**

Instructions:

1. **Question Number 1 is Compulsory**
2. Attempt **ANY THREE** Questions out of remaining **FIVE**
3. Use illustrative diagrams wherever required

Q1) Attempt any FOUR questions

	a)	What is the need of new product development in the world?	**05**
	b)	What Is Product Architecture?	**05**
	c)	Draw the flow chart of Concept Development Process in the product design.	**05**
	d)	Why it is necessary to integrate the basic forms and elements of a product like balance, rhythm and proportion?	**05**
	e)	What are the principles of Design for Manufacturing and Assembly (DFMA)?	**05**
	f)	List ANY FIVE Prototyping techniques used in manufacturing a product.	**05**
Q2)	**a)**	Explain SIX steps/phases of the Generic product development process with flow chart.	**10**
	b)	Define market research. List and explain the methods of market research required in the product design and development.	**10**
Q3)	**a)**	What do you mean by concept selection? Explain concept screening and concept scoring methodology giving example.	**10**
	b)	What Is Product Architecture? Explain the Steps in developing product architecture.	**10**
Q4)	**a)**	Explain the process of identifying customer needs in concept development process.	**10**
	b)	What is Quality Function Deployment (QFD)? Explain the phases of QFD.	**10**
Q5)	**a)**	Draw House of Quality (HoQ) and highlight the customer matrix part in (HoQ)? Explain Voice of the Customer as an input to QFD.	**10**
	b)	Define creative thinking. List any FIVE Creativity and problem-solving methods. Explain the Brainstorming Technique used in product development.	**10**
Q6)	**a)**	What is balance, rhythm and proportion? Explain the importance of these elements in product design and development giving examples.	**10**
	b)	Write short notes on Design for Environment and Design for Serviceability.	**10**

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Time: 3 hours **Max. Marks: 80**

Note: 1. Assume suitable data if necessary
2. Figures to the right indicate full marks
3. Question No. 1 is compulsory
4. Solve any **three** out of the remaining **five** questions

Q1.	**Solve any four**	
A	Explain selective laser sintering process with diagram.	**5**
B	What is MEMS (Micro-electromechanical systems)?	**5**
C	What is the difference between Magnetostrictive and Piezoelectric transducers?	**5**
D	What do you mean by Thermoelectric materials?	**5**
E	What is the difference between traditional and smart manufacturing?	**5**
F	What is Soft Matter? List the properties of it	**5**
Q2.		
A	What are various Energy harvesting Challenges?	**5**
B	Classify the different types of Electroactive polymers.	**5**
C	What is Magnetostriction? Describe working of Terfenol-D device with the help of neat sketch.	**10**
Q3.		
A	Explain with neat sketches the one-way and two-way shape memory effect.	**5**
B	List the application of Magneto-rheological Fluids.	**5**
C	Explain Stereo lithography (STL) process in detail with suitable diagrams.	**10**
Q4.		
A	Describe synthesis of Piezoelectric materials.	**5**
B	Describe Synthesis and Applications of Ferromagnetic Fluids.	**5**
C	Explain the self-assembly process in detail.	**10**
Q5.		
A	Explain Self-Healing materials in detail with suitable example.	**5**
B	Short note on a) Polyelectrolyte gels b) Generative Manufacturing process	**5**
C	Write any 6 types of Smart Materials and explain any one of them with application.	**10**
Q 6.		
A	Explain Abrasive Water Jet Cutting process and write advantages and disadvantages of it?	**5**
B	What are the different uses of Smart Textile?	**5**
C	Explain Laminated object manufacturing (LOM) process in detail with suitable diagrams.	**10**

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Duration: 3hrs **[Max Marks:80]**

N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1		Attempt any **FOUR**	[20]
	a	What is the role of stemming , lemmatization and stop word removal in text preprocessing? Briefly explain each technique.	5
	b	Explain the HMM model in detail and state its limitations.	5
	c	Discuss two common hiding techniques employed by spammers to conceal their activities from users and search engine crawlers.	5
	d	Define link spamming and describe common techniques used in it.	5
	e	How is behavior analytics used in the context of social media data?	5
2	a	Explain the concept of an inverted index and Latent Semantic Indexing (LSI) in web mining. How do these techniques facilitate efficient web search?	[10]
	b	Explain how spammers manipulate website content and links to unfairly boost search rankings, and discuss methods to detect and prevent such web spam.	[10]
3	a	Describe different approaches to model and integrate social context into recommendation algorithms. Explain evaluation metrics used to assess recommendation system performance.	[10]
	b	Discuss the various relation extraction and NER extraction techniques from unstructured text.	[10]
4	a	Explain distance based clustering algorithm in detail.	[10]
	b	Explain web usage mining possess in detail. How association and correlation analysis is performed in web usage mining?	[10]
5	a	Explain behavior analytics in the context of social media.	[10]
	b	Explain any two text classification algorithms	[10]
6	a	Discuss unsupervised methods of document sentiment classification.	[10]
	b	Explain text mining applications and challenges.	[10]

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Time: 3 hour **Max. Marks: 80**

Note-

1. **Question one is compulsory.**
2. **Solve any three out of remaining five.**

		Explain any four of the following.	**20**
	i.	Write short note on cost of Quality	
	ii.	Pareto diagram.	
Q.1	**iii.**	Supplier selection	
	iv.	List dimensions of quality	
	v.	Explain Win –Win policy with supplier.	
	vi.	Short Note On Operating Characteristic Curve(OC)	
Q.2	**a**	A quality inspector took 5 samples each with four observations (n=4) of the length of time for glue to dry. The analyst computed the mean of each sample and then computed grand mean. All values are in minutes. Use the following data to obtain 3 sigma control limits for mean of future times. Assume standard deviation of the process is 0.02. Draw X-Bar chart and R Chart	**10**

Sample	**Observations**			
	1	2	3	4
1	12.11	12.10	12.11	12.10
2	12.15	12.12	12.10	12.11
3	12.09	12.09	12.11	12.15
4	12.12	12.10	12.08	12.10
5	12.09	12.14	12.13	12.12

	b	Explain voice of customer and QFD. What are the elements and matrix relationship for QFD.	
Q.3	**a**	Describe BPR in connection with TQM.	**10**
	b	Explain the following elements of an ISO 9000 quality system. a) quality manual b) internal audit iii) Traceability	**10**
Q.4	**a**	Explain the Barriers of TQM' and Write note on cost of quality	**10**
	b	Describe the contribution of Deming to quality management.	**10**
Q.5	**a**	What is six sigma? Explain six sigma approach DMAIC .	**10**
	b	What is acceptance sampling plan? With OC curve mark and explain following i) Acceptance quality level(AQL) ii) Lot tolerance percent defective(LTPD) iii) Producer's risk iv) Consumer's risk	**10**
Q.6		**Answer any Two Questions**	
	a	What is the criteria for performance excellence of Malcolm Baldrige national Quality Award?	**10**
	b	What is acceptance sampling plan? With OC curve mark and explain following i) Acceptance quality level(AQL) ii) Lot tolerance percent defective(LTPD) iii) Producer's risk iv) Consumer's risk	
	c	Write short note on the following 1) TPM 2) Employee Involvement	**10**

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