SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur– 603203

DEPARTMENT OF MECHANICAL ENGINEERING

QUESTION BANK

VII SEMESTER

PME606 – PRODUCT LIFE CYCLE MANAGEMENT

Academic Year 2026-2027

Prepared by

Mr. G. ANANTH, M.E.

Assistant Professor (Sl.G)

Department of Mechanical Engineering

SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203.

DEPARTMENT OF MECHANICAL ENGINEERING

QUESTION BANK

UNIT I HISTORY,CONCEPTS AND TERMINOLOGY OF PLM **9**

Introduction to PLM, Need for PLM, opportunities of PLM, Different views of PLM - Engineering Data Management (EDM), Product Data Management (PDM), Collaborative Product Definition Management (cPDm), Collaborative Product Commerce (CPC), Product Lifecycle Management (PLM). PLM/PDM Infrastructure – Network and Communications, Data Management, Heterogeneous data sources and applications

PART-A (2 MARKS)

1	Define Product Lifecycle Management (PLM).	CO1	BTL-2	Understand
2	State two key needs for PLM in modern industries.	CO1	BTL-1	Remember
3	List any two opportunities offered by PLM.	CO1	BTL-1	Remember
4	What is Engineering Data Management (EDM)?	CO1	BTL-2	Understand
5	Differentiate between EDM and PDM in one point each.	CO1	BTL-1	Remember
6	What is Product Data Management (PDM)?	CO1	BTL-1	Remember
7	Mention two functions of PDM systems.	CO1	BTL-2	Understand
8	Define Collaborative Product Definition Management (cPDm).	CO1	BTL-2	Remember
9	State two advantages of cPDm in product development.	CO1	BTL-1	Remember
10	What is Collaborative Product Commerce (CPC)?	CO1	BTL-2	Understand
11	Give two examples of CPC applications.	CO1	BTL-1	Remember
12	List two differences between CPC and PLM.	CO1	BTL-1	Remember
13	Explain the role of PLM in reducing product development time.	CO1	BTL-1	Remember
14	Mention two challenges in implementing PLM.	CO1	BTL-2	Understand
15	What is meant by PLM/PDM infrastructure?	CO1	BTL-1	Remember
16	State two roles of network and communications in PLM.	CO1	BTL-1	Remember
17	What is the importance of data management in PLM?	CO1	BTL-2	Understand
18	List two types of heterogeneous data sources in PLM.	CO1	BTL-2	Understand
19	Give two examples of applications integrated with PLM.	CO1	BTL-1	Remember
20	What is the relationship between PLM and CAD tools?	CO1	BTL-2	Understand
21	State two benefits of integrating ERP with PLM.	CO1	BTL-2	Understand
22	Mention two ways PLM supports collaborative engineering.	CO1	BTL-1	Remember
23	Define the term “product lifecycle” in one sentence.	CO1	BTL-1	Remember
24	State two differences between traditional product management and PLM.	CO1	BTL-2	Understand
25	What is the role of PLM in knowledge management?	CO1	BTL-1	Remember

PART- B (16 MARKS)					
1	Explain the concept of Product Lifecycle Management (PLM) with suitable examples.	(16)	CO1	BTL-3	Apply
2	Discuss the need for PLM in modern manufacturing industries.	(16)	CO1	BTL-3	Apply
3	Elaborate on the opportunities created by PLM for global competitiveness.	(16)	CO1	BTL-3	Apply
4	Compare and contrast Engineering Data Management (EDM) and Product Data Management (PDM).	(16)	CO1	BTL-3	Apply
5	Explain the functions and benefits of Product Data Management (PDM) systems.	(16)	CO1	BTL-2	Understand
6	Discuss Collaborative Product Definition Management (cPDm) and its role in product development.	(16)	CO1	BTL-4	Understand
7	Explain Collaborative Product Commerce (CPC) with examples of its applications.	(16)	CO1	BTL-3	Understand
8	Differentiate between CPC and PLM with respect to scope and functionality.	(16)	CO1	BTL-3	Apply
9	Describe the different views of PLM and their significance in product development.	(16)	CO1	BTL-3	Apply
10	Explain the role of PLM in reducing product development cycle time and improving quality.	(16)	CO1	BTL-4	Understand
11	Discuss the challenges and limitations in implementing PLM systems.	(16)	CO1	BTL-3	Understand
12	Explain the PLM/PDM infrastructure with respect to network and communications.	(16)	CO1	BTL-3	Apply
13	Discuss the importance of data management in PLM and PDM systems.	(16)	CO1	BTL-3	Apply
14	Explain the integration of heterogeneous data sources and applications in PLM.	(16)	CO1	BTL-3	Apply
15	Describe the relationship between PLM and CAD/ERP tools with suitable examples.	(16)	CO1	BTL-3	Apply
16	Discuss how PLM supports collaborative engineering and global product development.	(16)	CO1	BTL-3	Apply
17	Explain the role of PLM in knowledge management and organizational learning.	(16)	CO1	BTL-3	Apply
18	Evaluate the impact of PLM on innovation, cost reduction, and customer satisfaction.	(16)	CO1	BTL-3	Apply

UNIT II PLM/PDM FUNCTIONS AND FEATURES **9**

User Functions – Data Vault and Document Management, Workflow and Process Management, Product Structure Management, Product Classification and Programme Management. Utility Functions – Communication and Notification, data transport, data translation, image services, system administration and application integration.

PART A (2 MARKS)

1	Define Data Vault in PLM systems.	CO4	BTL-1	Remember
2	State two functions of Document Management in PLM.	CO4	BTL-1	Remember
3	What is Workflow Management in PLM?	CO4	BTL-1	Remember
4	Mention two benefits of Process Management in PLM.	CO4	BTL-1	Remember
5	Define Product Structure Management.	CO4	BTL-2	Understand
6	State two uses of Product Classification in PLM.	CO4	BTL-2	Understand
7	What is Programme Management in PLM?	CO4	BTL-1	Remember
8	List two advantages of Programme Management in product development.	CO4	BTL-2	Understand
9	Explain the role of Document Management in collaborative engineering.	CO4	BTL-2	Understand
10	Differentiate between Workflow Management and Process Management.	CO4	BTL-2	Understand
11	What is the importance of Product Structure Management?	CO4	BTL-2	Understand
12	State two challenges in Product Classification.	CO4	BTL-1	Remember
13	Define Communication and Notification functions in PLM.	CO4	BTL-1	Remember
14	Mention two examples of Communication functions in PLM.	CO4	BTL-1	Remember
15	What is meant by Data Transport in PLM?	CO4	BTL-2	Understand
16	State two uses of Data Translation in PLM.	CO4	BTL-1	Remember
17	Define Image Services in PLM.	CO4	BTL-2	Understand
18	Mention two applications of Image Services.	CO4	BTL-2	Understand
19	What is System Administration in PLM?	CO4	BTL-2	Understand
20	List two responsibilities of System Administration.	CO4	BTL-1	Remember
21	Define Application Integration in PLM.	CO4	BTL-1	Remember
22	State two benefits of Application Integration.	CO4	BTL-2	Understand
23	What is the role of Utility Functions in PLM?	CO4	BTL-1	Remember
24	Differentiate between User Functions and Utility Functions in PLM.	CO4	BTL-2	Understand
25	State two examples of heterogeneous applications integrated through PLM utility functions.	CO4	BTL-1	Remember

PART B (16 MARKS)

1	Explain the role of Data Vault in PLM systems and discuss its importance in secure data storage.	(16)	CO4	BTL-4	Remember
2	Discuss Document Management in PLM/PDM and explain how it supports collaborative product development.	(16)	CO4	BTL-3	Apply
3	Describe Workflow Management in PLM with examples of its application in	(16)	CO4	BTL-3	Apply

	engineering processes.				
4	Explain Process Management in PLM and discuss its role in streamlining product development.	(16)	CO4	BTL-3	Apply
5	Discuss Product Structure Management and its importance in handling complex product hierarchies.	(16)	CO4	BTL-3	Apply
6	Explain Product Classification in PLM and evaluate its advantages and limitations.	(16)	CO4	BTL-3	Apply
7	Describe Programme Management in PLM and explain how it supports large-scale product development projects.	(16)	CO4	BTL-3	Apply
8	Compare and contrast Workflow Management and Process Management in PLM with suitable examples.	(16)	CO4	BTL-3	Apply
9	Discuss the integration of Document Management and Product Structure Management in PLM/PDM systems.	(16)	CO4	BTL-3	Apply
10	Explain Communication and Notification functions in PLM and their role in collaborative engineering.	(16)	CO4	BTL-3	Apply
11	Discuss the importance of Data Transport in PLM and its role in global product development.	(16)	CO4	BTL-3	Apply
12	Explain Data Translation in PLM and discuss its role in integrating heterogeneous applications.	(16)	CO4	BTL-3	Apply
13	Describe Image Services in PLM and explain their importance in product visualization and design validation.	(16)	CO4	BTL-2	Understand
14	Discuss System Administration functions in PLM and their role in maintaining system integrity and security.	(16)	CO4	BTL-3	Apply
15	Explain Application Integration in PLM with examples of CAD, ERP, and CRM integration.	(16)	CO4	BTL-3	Apply
16	Evaluate the combined role of Utility Functions in ensuring smooth PLM operations.	(16)	CO4	BTL-3	Apply
17	Discuss the differences between User Functions and Utility Functions in PLM with suitable examples.	(16)	CO4	BTL-3	Apply
18	Explain how PLM/PDM infrastructure supports User and Utility Functions for effective product lifecycle management.	(16)	CO4	BTL-3	Apply

UNIT III DETAILS OF MODULES IN A PDM/PLM SOFTWARE				9
Case studies based on top few commercial PLM/PDM tools – Teamcenter, Windchill, ENOVIA, Aras PLM, SAP PLM, Arena, Oracle Agile PLM and Autodesk Vault.-Architecture of PLM software- selection criterion of software for particular application - Brand name to be removed				
PART A (2 MARKS)				
1	Define PLM software architecture.	CO3	BTL-1	Remember
2	State two key layers of PLM architecture.	CO3	BTL-1	Remember
3	What is meant by data management in PLM architecture?	CO3	BTL-1	Remember
4	Mention two advantages of modular PLM architecture.	CO3	BTL-2	Understand
5	Define PDM software.	CO3	BTL-1	Remember
6	State two common features of commercial PLM tools.	CO3	BTL-2	Understand
7	What is the role of workflow management in PLM software?	CO3	BTL-2	Understand
8	Mention two benefits of collaborative PLM platforms.	CO3	BTL-1	Remember
9	Define application integration in PLM systems.	CO3	BTL-2	Understand
10	State two examples of utility functions in PLM software.	CO3	BTL-2	Understand
11	What is the importance of scalability in PLM architecture?	CO3	BTL-1	Remember
12	Mention two challenges in selecting PLM software.	CO3	BTL-1	Remember
13	Define interoperability in PLM systems.	CO3	BTL-2	Understand
14	State two criteria for evaluating PLM software.	CO3	BTL-2	Evaluate
15	What is the role of user functions in PLM tools?	CO3	BTL-2	Understand
16	Mention two advantages of document management in PLM.	CO3	BTL-2	Understand
17	Define programme management in PLM software.	CO3	BTL-1	Remember
18	State two benefits of product classification in PLM.	CO3	BTL-1	Remember
19	What is the importance of system administration in PLM?	CO3	BTL-2	Understand
20	Mention two examples of heterogeneous applications integrated with PLM.	CO3	BTL-2	Understand
21	Define communication and notification functions in PLM.	CO3	BTL-1	Remember
22	State two benefits of image services in PLM.	CO3	BTL-2	Understand
23	What is meant by case study analysis in PLM tool evaluation?	CO3	BTL-1	Remember
24	Mention two reasons why companies adopt PLM software.	CO3	BTL-1	Remember
25	State two differences between PLM architecture and ERP architecture.	CO3	BTL-2	Understand

PART B (16 MARKS)					
1	Explain the architecture of PLM software with suitable diagrams.	(16)	CO3	BTL-2	Understand
2	Discuss the importance of modular design in PLM architecture.	(16)	CO3	BTL-3	Apply
3	Evaluate the role of data management in PLM/PDM systems.	(16)	CO3	BTL-3	Apply
4	Explain workflow and process management in PLM software with examples.	(16)	CO3	BTL-3	Analyze

5	Discuss the functions of product structure management in PLM.	(16)	CO3	BTL-2	Understand
6	Explain product classification and programme management in PLM systems.	(16)	CO3	BTL-3	Apply
7	Discuss the utility functions of PLM software and their importance.	(16)	CO3	BTL-3	Apply
8	Explain communication and notification functions in PLM with case examples.	(16)	CO3	BTL-3	Apply
9	Discuss the role of data transport and data translation in PLM integration.	(16)	CO3	BTL-2	Understand
10	Explain image services in PLM and their importance in product visualization.	(16)	CO3	BTL-3	Apply
11	Discuss system administration functions in PLM and their role in maintaining integrity.	(16)	CO3	BTL-3	Apply
12	Explain application integration in PLM with examples of CAD/ERP/CRM integration.	(16)	CO3	BTL-3	Apply
13	Evaluate the selection criteria for choosing PLM software for a particular application.	(16)	CO3	BTL-3	Apply
14	Discuss the challenges faced by organizations in implementing PLM software.	(16)	CO3	BTL-3	Apply
15	Explain how PLM software supports collaborative product development across global teams.	(16)	CO3	BTL-3	Apply
16	Discuss the impact of PLM software on reducing product development cycle time.	(16)	CO3	BTL-3	Apply
17	Compare and contrast user functions and utility functions in PLM systems.	(16)	CO3	BTL-3	Apply
18	Evaluate the overall role of PLM/PDM infrastructure in supporting enterprise product lifecycle management.	(16)	CO3	BTL-3	Apply

UNIT IV ROLE OF PLM IN INDUSTRIES 9

Case studies on PLM selection and implementation (like auto, aero, electronic) - other possible sectors, PLM visioning, PLM strategy, PLM feasibility study, change management for PLM, financial justification of PLM, barriers to PLM implementation, ten step approach to PLM, benefits of PLM for–business, organisation, users, product or service, process performance- process compliance and process automation

PART A (2 MARKS)

1	Define PLM visioning.	CO2	BTL-1	Remember
2	State two objectives of PLM strategy.	CO2	BTL-2	Understand
3	What is meant by a PLM feasibility study?	CO2	BTL-1	Remember
4	Mention two sectors where PLM is commonly implemented.	CO2	BTL-2	Understand
5	Define change management in the context of PLM.	CO2	BTL-1	Remember
6	State two financial benefits of PLM implementation.	CO2	BTL-2	Understand
7	What is meant by barriers to PLM implementation?	CO2	BTL-1	Remember
8	List two examples of barriers to PLM adoption.	CO2	BTL-2	Evaluate
9	Define the ten-step approach to PLM.	CO2	BTL-2	Evaluate
10	Mention two steps in the ten-step PLM approach.	CO2	BTL-1	Remember
11	State two benefits of PLM for business.	CO2	BTL-2	Understand
12	What is meant by process compliance in PLM?	CO2	BTL-2	Understand
13	Define process automation in PLM.	CO2	BTL-1	Remember
14	State two benefits of PLM for organisations.	CO2	BTL-1	Remember
15	Mention two benefits of PLM for users.	CO2	BTL-1	Remember
16	Define PLM strategy alignment.	CO2	BTL-2	Understand
17	State two benefits of PLM for product or service development.	CO2	BTL-2	Understand
18	What is meant by PLM case study analysis?	CO2	BTL-1	Remember
19	Mention two examples of PLM implementation in the automotive sector.	CO2	BTL-1	Remember
20	State two benefits of PLM in the aerospace sector.	CO2	BTL-1	Remember
21	Mention two benefits of PLM in the electronics sector.	CO2	BTL-2	Understand
22	Define financial justification of PLM.	CO2	BTL-1	Remember
23	State two methods used for financial justification of PLM.	CO2	BTL-1	Apply
24	What is meant by PLM vision statement?	CO2	BTL-2	Understand
25	Mention two benefits of PLM for process performance.	CO2	BTL-2	Understand

PART B (16 MARKS)

1	Explain PLM visioning and its importance in long-term product development.	CO2	(16)	BTL-3	Understand
2	Discuss the components of a PLM strategy and how they align with business goals.	CO2	(8)	BTL-4	Evaluate
3	Explain the role of feasibility studies in PLM implementation with examples.	CO2	(16)	BTL-3	Apply

4	Discuss change management in PLM and its impact on organisational culture.	CO2	(16)	BTL-3	Apply
5	Explain the financial justification of PLM with suitable case examples.	CO2	(16)	BTL-3	Apply
6	Discuss the barriers to PLM implementation and strategies to overcome them.	CO2	(16)	BTL-3	Apply
7	Explain the ten-step approach to PLM implementation in detail.	CO2	(16)	BTL-4	Evaluate
8	Discuss the benefits of PLM for business performance and competitiveness.	CO2	(16)	BTL-3	Apply
9	Explain the benefits of PLM for organisations with examples from different sectors.	CO2	(16)	BTL-3	Apply
10	Discuss the benefits of PLM for users and product development teams.	CO2	(16)	BTL-3	Apply
11	Explain the benefits of PLM for product or service innovation.	CO2	(16)	BTL-3	Apply
12	Discuss the role of PLM in improving process performance.	CO2	(16)	BTL-3	Apply
13	Explain process compliance and process automation in PLM systems.	CO2	(16)	BTL-3	Apply
14	Discuss case studies of PLM implementation in the automotive sector.	CO2	(16)	BTL-3	Apply
15	Explain case studies of PLM implementation in the aerospace sector.	CO2	(16)	BTL-3	Apply
16	Discuss case studies of PLM implementation in the electronics sector.	CO2	(16)	BTL-3	Apply
17	Evaluate the role of PLM in other possible sectors such as healthcare or construction.	CO2	(16)	BTL-3	Apply
18	Explain how PLM visioning, strategy, and feasibility studies together ensure successful implementation.	CO2	(16)	BTL-3	Apply

UNIT V	BASICS ON CUSTOMISATION/INTEGRATION OF PDM/PLM SOFTWARE				9
PLM Customization, use of EAI technology (Middleware), Integration with legacy data base, CAD, SLM and ERP					
	PART A (2 MARKS)				
1	Define PLM customization.	CO5	BTL-1	Remember	
2	State two reasons why PLM customization is needed.	CO5	BTL-1	Remember	
3	What is meant by middleware in PLM integration?	CO5	BTL-1	Remember	
4	Define Enterprise Application Integration (EAI).	CO5	BTL-1	Remember	
5	State two benefits of using EAI technology in PLM.	CO5	BTL-2	Understand	
6	What is meant by legacy database integration?	CO5	BTL-2	Understand	
7	Mention two challenges in integrating legacy databases with PLM.	CO5	BTL-1	Remember	
8	Define CAD integration in PLM.	CO5	BTL-1	Remember	
9	State two benefits of CAD integration with PLM.	CO5	BTL-2	Understand	
10	What is meant by SLM in PLM context?	CO5	BTL-2	Understand	
11	State two advantages of integrating SLM with PLM.	CO5	BTL-2	Understand	
12	Define ERP integration in PLM.	CO5	BTL-2	Understand	
13	Mention two benefits of ERP integration with PLM.	CO5	BTL-2	Understand	
14	What is meant by interoperability in PLM systems?	CO5	BTL-1	Remember	
15	State two customization options commonly applied in PLM software.	CO5	BT-2	Understand	
16	Define data migration in PLM integration.	CO5	BTL-2	Understand	
17	State two risks in integrating legacy systems with PLM.	CO5	BTL-2	Understand	
18	What is meant by real-time data exchange in PLM?	CO5	BTL-1	Remember	
19	Mention two middleware tools used in PLM integration.	CO5	BTL-1	Remember	
20	Define system scalability in PLM customization.	CO5	BTL-2	Understand	
21	State two benefits of customizing PLM workflows.	CO5	BTL-1	Remember	
22	What is meant by application integration in PLM?	CO5	BTL-1	Remember	
23	Mention two advantages of integrating PLM with ERP systems.	CO5	BTL-1	Remember	
24	Define the role of APIs in PLM customization.	CO5	BTL-1	Remember	
25	State two benefits of integrating PLM with CAD and SLM.	CO5	BTL-1	Remember	
	PART B (16 MARKS)				
1	Explain PLM customization and discuss its importance in adapting to industry needs.	(16)	CO5	BTL-3	Apply
2	Discuss the role of middleware and EAI technology in PLM integration.	(16)	CO5	BTL-3	Apply
3	Explain the challenges and solutions in integrating legacy databases with PLM systems.	(16)	CO5	BTL-3	Apply
4	Discuss CAD integration in PLM and its impact on product design and development.	(16)	CO5	BTL-3	Apply

5	Explain the integration of SLM with PLM and its role in service lifecycle management.	(16)	CO5	BTL-3	Apply
6	Discuss ERP integration with PLM and its benefits for enterprise resource planning.	(16)	CO5	BTL-3	Apply
7	Explain the importance of interoperability in PLM customization and integration.	(16)	CO5	BTL-3	Apply
8	Discuss the role of middleware in enabling real-time data exchange between PLM and other systems.	(16)	CO5	BTL-3	Apply
9	Explain the process of data migration during PLM integration with legacy systems.	(16)	CO5	BTL-3	Apply
10	Discuss the customization of PLM workflows and its impact on process efficiency.	(16)	CO5	BT-3	Apply
11	Explain the role of APIs in PLM customization and integration with external applications.	(16)	CO5	BTL-3	Apply
12	Discuss the benefits and limitations of integrating PLM with CAD tools.	(16)	CO5	BTL-3	Apply
13	Explain the advantages of integrating PLM with ERP systems for business performance.	(16)	CO5	BTL-3	Apply
14	Discuss the role of PLM customization in supporting heterogeneous applications.	(16)	CO5	BTL-3	Apply
15	Explain the challenges of integrating PLM with legacy databases and propose solutions.	(16)	CO5	BTL-3	Apply
16	Discuss the combined role of CAD, SLM, and ERP integration in enhancing PLM effectiveness.	(16)	CO5	BTL-3	Apply
17	Explain how middleware supports seamless communication between PLM and enterprise systems.	(16)	CO5	BTL-3	Apply
18	Evaluate the overall impact of PLM customization and integration on organisational competitiveness.	(16)	CO5	BTL-4	Analyze