
Criterion 1	Curricular Aspects	100
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1.2 Academic Flexibility 30

1.2.1 Number of Certificate/Value added courses offered and online courses of MOOCs, SWAYAM, NPTEL etc. (where the students of the institution have enrolled and successfully completed during the last five years)

AND

1.2.2 Percentage of students enrolled in Certificate/ Value added courses and also completed online courses of MOOCs, SWAYAM, NPTEL etc. as against the total number of students during the last five years

TABLE OF CONTENTS

Academic Year	Semester	Name of the Department	Number of Value Added/ Certificate Programs Offered	Name of Addon/Certificate Programs Offered	No of Students Enrolled	Page number
2023-2024	ODD	CSE	1	AI for Business process Automation	94	4-12
		MBA	1	Value proposition in engineering Startups-Business model for success	74	13-25
		S&H	1	Water quality Testing & pollution analysis	125	26-34
		ECE	1	Face recognition system using machine learning	23	35-43
	EVEN	CSE	1	IT Service management and business value : Strategies for optimizing service delivery	94	44-52
		MBA	1	Impact of industry 4.0 on engineering product life cycle management	77	53-61
		S&H	1	Design & Testing of biodegradable plastics in chemistry	125	62-70
		ECE	1	Design of low cost solar inverter for household use	23	71-78
Total Certificate Courses offered in the Academic year 2023-2024			8	Total No. of Students Enrolled in the Certificate Program	635	

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

TEST QUESTION PAPER-VALUE ADDED COURSE

“AI for Business Process Automation”

From 21.08.2023 to 26.08.2023 (6 days)

Duration: 36 Hours

Academic Year : 2023 -2024 / ODD

Date of Test : 26.08.2023

MULTIPLE CHOICE QUESTIONS (25X1=25 Marks)

Name of the Student:

Year/Sem:

AU Register Number:

Answer all the questions:

1. What is the primary goal of Business Process Automation (BPA)?

- A) To reduce the complexity of business processes
- B) To eliminate human intervention in processes
- C) To improve efficiency, reduce costs, and increase productivity
- D) To create new business processes

2. Which of the following is NOT a type of business process typically automated using AI?

- A) Repetitive administrative tasks
- B) Complex decision-making requiring human judgment
- C) Data entry and form filling
- D) Customer support via chatbots

3. What role does Robotic Process Automation (RPA) play in Business Process Automation?

- A) It automates rule-based, repetitive tasks
- B) It analyzes customer feedback
- C) It predicts future trends using historical data
- D) It creates new business processes

4. Which AI technology is primarily used for automating tasks like customer support, email handling, and text analysis?

- A) Machine Learning
- B) Natural Language Processing (NLP)
- C) Robotics
- D) Computer Vision

5. What is the primary advantage of using AI in Business Process Automation?

- A) It reduces the number of employees needed for customer support
- B) It can perform tasks 24/7 without human supervision
- C) It requires less data storage
- D) It improves the appearance of the user interface



6. Which of the following is a common application of AI in Business Process Automation?
- A) Predictive maintenance
 - B) Image recognition
 - C) Financial auditing
 - D) All of the above
7. In the context of AI for BPA, what does "hyperautomation" refer to?
- A) Automating only the most critical business processes
 - B) The use of multiple AI technologies and tools to automate complex business processes
 - C) Reducing the reliance on AI technologies
 - D) A strategy to automate manual interventions in the automation process
8. Which of the following processes can be automated using RPA?
- A) Customer service
 - B) Data extraction from structured documents
 - C) Financial forecasting
 - D) Decision-making in customer complaints
9. How does machine learning (ML) contribute to business process automation?
- A) By automating tasks that involve human decision-making based on data
 - B) By providing automated responses to customer queries
 - C) By replacing the need for human employees
 - D) By simply storing business data for later analysis
10. What is a key challenge of automating business processes with AI?
- A) The cost of implementing AI tools
 - B) Integrating AI with existing business systems
 - C) Finding enough data to train AI models
 - D) Ensuring AI tools are more intelligent than humans
11. What is the first step when automating a business process with AI?
- A) Deploying the automation tools
 - B) Mapping and analyzing the existing business process
 - C) Hiring an AI specialist
 - D) Training AI models
12. Which of the following is NOT a typical use case for NLP in business process automation?
- A) Sentiment analysis of customer reviews
 - B) Automating data entry from scanned documents
 - C) Generating automated responses to emails
 - D) Image recognition from video surveillance
13. What is the purpose of "process mining" in AI-driven business process automation?
- A) To generate new business processes from scratch
 - B) To visualize and analyze existing business workflows for potential automation
 - C) To monitor employee performance
 - D) To train machine learning models
14. Which AI technology can be used to predict future trends based on historical business data?
- A) Machine Learning
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15. What is a major benefit of using chatbots powered by AI in customer support?
- A) They are able to provide human-like empathy
 - B) They can resolve customer issues instantly and at any time
 - C) They require constant supervision
 - D) They reduce the need for automation in other business areas
16. Which of the following can be an ethical concern when implementing AI for business process automation?
- A) The cost of AI tools
 - B) The risk of biased AI models leading to unfair outcomes
 - C) The lack of data storage space
 - D) The number of employees affected by AI automation
17. What does the term "robotic process automation (RPA)" refer to?
- A) Automating physical tasks using industrial robots
 - B) Automating tasks that involve human-like decision-making
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18. Which of the following best describes the role of AI in business intelligence (BI)?
- A) AI reduces the need for human intelligence
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19. Which business area benefits from AI-based predictive analytics in automation?
- A) Data entry
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20. Which of the following is a typical benefit of AI in automating back-office operations?
- A) Reduction in human error and cost
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21. What is the role of "AI-driven decision-making" in business process automation?
- A) To replace human managers
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23. Which of the following is a tool commonly used in RPA for automating business tasks?
- A) UiPath
 - B) TensorFlow
 - C) PyTorch
 - D) Scikit-Learn


24. What is a key challenge of AI in business process automation related to data?

- A) Difficulty in training AI models without sufficient labeled data
- B) AI tools are too expensive to integrate
- C) AI models cannot perform tasks faster than humans
- D) AI does not improve business performance

25. Which of the following is an example of AI-powered automation in the finance industry?

- A) AI-based risk assessment for loan approvals
- B) Automated employee payroll
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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

TEST QUESTION ANSWER KEY-VALUE ADDED COURSE

“AI for Business Process Automation”

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Duration:36 Hours

Academic Year : 2023 -2024 /ODD

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TEST QUESTION PAPER-VALUE ADDED COURSE

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DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION

TEST QUESTION PAPER-VALUE ADDED COURSE

**“Impact of Industry 4.0 on Engineering Product
Life Cycle Management”**

From 09.10.2023 to 14.10.2023 (6days)

Duration: 36 Hours

Academic Year : 2023 -2024 /ODD

Date of Test : 14.10.2023

MULTIPLE CHOICE QUESTIONS (25X1=25 Marks)

Name of the Student:

Year/ Sem:

AU Register Number:

Answer all the questions:

1. Which of the following is a key feature of Industry 4.0 in product life cycle management?

- A) Limited use of data analytics
- B) Real-time data collection and analysis for decision-making
- C) Focus only on production without considering design and development
- D) Relying on traditional manual processes

2. How do digital twins improve product life cycle management?

- A) They simulate only the manufacturing process.
- B) They provide a real-time digital replica of the physical product, helping with maintenance and optimization.
- C) They replace all human decision-making in product life cycles.
- D) They have no significant impact on product life cycle management

3. What role does artificial intelligence (AI) play in Industry 4.0 for EPLM?

- A) AI only helps in marketing and sales.
- B) AI is used to automate manual tasks in the product development phase.
- C) AI analyzes big data to predict performance and optimize decision-making throughout the product life cycle.
- D) AI eliminates the need for product designers and engineers.

4. How does additive manufacturing (3D printing) affect product life cycle management?

- A) It only accelerates the final production stage.
- B) It reduces the need for prototyping and testing.
- C) It accelerates prototyping, enables customization, and reduces waste throughout the product life cycle.
- D) It has no impact on product life cycle management.

5. Industry 4.0 promotes the use of which technology to enhance collaboration in product development?

- A) Blockchain for data security
- B) Virtual Reality (VR) for product simulation and design
- C) Artificial intelligence to replace human workers
- D) Email systems for better communication

6. In what way does the Internet of Things (IoT) contribute to EPLM under Industry 4.0?

- A) IoT connects devices and provides real-time data to monitor product performance and enable predictive maintenance.
- B) IoT automates the design phase entirely.
- C) IoT is only useful for manufacturing equipment maintenance.
- D) IoT has no role in product life cycle management.

7. What is the primary advantage of using cloud computing in EPLM within the context of Industry 4.0?

- A) Cloud computing reduces product customization.
- B) Cloud computing enhances real-time collaboration and data sharing across teams and locations.
- C) Cloud computing eliminates the need for product testing.
- D) Cloud computing reduces the accuracy of product simulations.

8. Which of the following is NOT a benefit of Industry 4.0 for product life cycle management?

- A) Enhanced product traceability and monitoring
- B) Improved product quality through advanced simulations and real-time feedback
- C) Decreased need for data security and protection
- D) Faster and more accurate decision-making through data analytics



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9. How does Industry 4.0 support sustainability in product life cycle management?

- A) By using more energy-consuming processes
- B) By enabling better resource tracking and reducing waste through optimized production
- C) By eliminating the need for recycling processes
- D) By increasing the use of non-renewable materials in manufacturing

10. What is the effect of Industry 4.0 on the design phase of the product life cycle?

- A) It makes the design phase less important.
- B) It increases reliance on traditional CAD systems without any integration of new technologies.
- C) It allows for more innovative designs and faster iterations through advanced simulation tools and digital prototyping.
- D) It reduces the need for any design changes during the product life cycle.

11. Which of the following tools is commonly used for product design and simulation in Industry 4.0?

- A) Email communication
- B) Advanced CAD and CAE tools with integrated simulation capabilities
- C) Paper prototypes
- D) Basic spreadsheets for calculations

12. Industry 4.0's impact on EPLM emphasizes the importance of which factor in the product development process?

- A) Reduced collaboration between design, manufacturing, and service teams
- B) Centralized decision-making from a single department
- C) Greater collaboration and integration of digital technologies throughout the product life cycle
- D) Limiting the use of digital tools to the manufacturing stage only

13. Which of the following best describes the concept of the "smart factory" in Industry 4.0?

- A) A factory that uses only manual processes
- B) A fully automated factory with interconnected machines that communicate in real time to optimize production
- C) A factory with no digital integration
- D) A factory that focuses only on assembling product

14. How does Industry 4.0 improve the manufacturing phase of the product life cycle?

- A) By reducing the need for product testing and quality assurance
- B) By increasing the reliance on traditional assembly lines
- C) By enhancing flexibility, speed, and precision through automation and real-time data analytics
- D) By eliminating the need for workers in the production process

15. Which technology is used for real-time monitoring of product performance in the post-production phase under Industry 4.0? -

- A) Blockchain
- B) Internet of Things (IoT)
- C) Additive manufacturing
- D) Big Data storage systems

16. How does Industry 4.0 enhance product testing in the product life cycle?

- A) By reducing the need for any testing, relying on automated systems
- B) By automating and accelerating testing through simulations and virtual environments
- C) By eliminating the need for prototypes
- D) By making testing more costly and time-consuming

17. What is the role of data analytics in EPLM under Industry 4.0?

- A) Data analytics plays a minimal role, as decisions are still made based on intuition.
- B) Data analytics is used to optimize production and service processes but not product design.
- C) Data analytics supports decision-making across all stages, from design to post-production, by analyzing large datasets for patterns and insights.
- D) Data analytics is used only in marketing and sales phases

18. Which of the following is an example of a digital tool used in Industry 4.0 to improve EPLM?

- A) Manual pen and paper designs
- B) Artificial Intelligence (AI) for predictive maintenance and quality control
- C) Fax machines for data sharing
- D) Traditional mechanical devices without digital integration



19. Which of the following represents a challenge of integrating Industry 4.0 technologies in product life cycle management?

- A) Increased product life cycle duration
- B) High upfront investment costs in digital infrastructure and training
- C) Decreased accuracy in product testing
- D) Limited impact on data security

20. How does Industry 4.0 influence the after-sales phase of product life cycle management?

- A) It eliminates the need for after-sales service teams.
- B) It enables predictive maintenance and real-time monitoring, improving the customer experience.
- C) It reduces the need for customer feedback.
- D) It focuses only on product design, not on post-sale services.

21. What is the role of blockchain technology in EPLM under Industry 4.0?

- A) Blockchain ensures transparency, traceability, and security of product data across the entire life cycle.
- B) Blockchain automates the design process.
- C) Blockchain replaces the need for traditional manufacturing processes.
- D) Blockchain has no role in product life cycle management.

22. Which of the following is a direct benefit of real-time data in EPLM?

- A) Decreased product quality control measures
- B) Increased communication barriers between teams
- C) Improved decision-making and quick responses to issues during product development and production
- D) Elimination of customer feedback from the product development process

23. What is a potential risk associated with Industry 4.0 integration in EPLM?

- A) Improved collaboration across all departments
- B) Increased reliance on automated systems, leading to job displacement
- C) Reduced data security and privacy concerns
- D) Less emphasis on digital technologies in product design

24. How does Industry 4.0 contribute to the customization of products during the manufacturing process?

- A) By offering greater flexibility and adaptability through advanced production techniques like 3D printing and AI-driven design tools
- B) By reducing the need for product variations and keeping designs standard
- C) By eliminating the need for custom orders altogether
- D) By slowing down production to allow for complex customizations

25. Which of the following is an example of how Industry 4.0 impacts the supply chain in EPLM?

- A) It introduces highly manual processes for tracking and reporting supply chain data.
- B) It reduces the need for transparency in supply chain management.
- C) It uses IoT and data analytics to improve forecasting, inventory management, and logistics.
- D) It eliminates supply chain management in favor of centralized production.


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TEST QUESTION ANSWER KEY – VALUE ADDED COURSE

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From 09.10.2023 to 14.10.2023 (6days)

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Academic Year : 2023 -2024 /ODD

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DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION

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- A) Limited use of data analytics
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- C) Focus only on production without considering design and development ✓
- D) Relying on traditional manual processes


2. How do digital twins improve product life cycle management?

- A) They simulate only the manufacturing process.
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- C) Greater collaboration and integration of digital technologies throughout the product life cycle
- D) Limiting the use of digital tools to the manufacturing stage only

13. Which of the following best describes the concept of the "smart factory" in Industry 4.0?

- A) A factory that uses only manual processes
- B) A fully automated factory with interconnected machines that communicate production

- C) A factory with no digital integration
- D) A factory that focuses only on assembling product

14. How does Industry 4.0 improve the manufacturing phase of the product life cycle?

- A) By reducing the need for product testing and quality assurance
- B) By increasing the reliance on traditional assembly lines
- C) By enhancing flexibility, speed, and precision through automation and real-time data analytics
- D) By eliminating the need for workers in the production process

15. Which technology is used for real-time monitoring of product performance in the post-production phase under Industry 4.0?

- A) Blockchain
- B) Internet of Things (IoT)
- C) Additive manufacturing
- D) Big Data storage systems

16. How does Industry 4.0 enhance product testing in the product life cycle?

- A) By reducing the need for any testing, relying on automated systems
- B) By automating and accelerating testing through simulations and virtual environments
- C) By eliminating the need for prototypes
- D) By making testing more costly and time-consuming

17. What is the role of data analytics in EPLM under Industry 4.0?

- A) Data analytics plays a minimal role, as decisions are still made based on intuition.
- B) Data analytics is used to optimize production and service processes but not product design.
- C) Data analytics supports decision-making across all stages, from design to post-production, by analyzing large datasets for patterns and insights.
- D) Data analytics is used only in marketing and sales phases

18. Which of the following is an example of a digital tool used in Industry 4.0 to improve EPLM?

- A) Manual pen and paper designs
- B) Artificial Intelligence (AI) for predictive maintenance and quality control
- C) Fax machines for data sharing
- D) Traditional mechanical devices without digital integration

19. Which of the following represents a challenge of integrating Industry 4.0 technologies in product life cycle management?

- A) Increased product life cycle duration
- B) High upfront investment costs in digital infrastructure and training
- C) Decreased accuracy in product testing
- D) Limited impact on data security

20. How does Industry 4.0 influence the after-sales phase of product life cycle management?

- A) It eliminates the need for after-sales service teams.
- B) It enables predictive maintenance and real-time monitoring, improving the customer experience.
- C) It reduces the need for customer feedback.
- D) It focuses only on product design, not on post-sale services.

21. What is the role of blockchain technology in EPLM under Industry 4.0?

- A) Blockchain ensures transparency, traceability, and security of product data across the entire life cycle.
- B) Blockchain automates the design process.
- C) Blockchain replaces the need for traditional manufacturing processes.
- D) Blockchain has no role in product life cycle management.

22. Which of the following is a direct benefit of real-time data in EPLM?

- A) Decreased product quality control measures
- B) Increased communication barriers between teams
- C) Improved decision-making and quick responses to issues during product development and production
- D) Elimination of customer feedback from the product development process

23. What is a potential risk associated with Industry 4.0 integration in EPLM?

- A) Improved collaboration across all departments
- B) Increased reliance on automated systems, leading to job displacement
- C) Reduced data security and privacy concerns
- D) Less emphasis on digital technologies in product design





24. How does Industry 4.0 contribute to the customization of products during the manufacturing process?

- A) By offering greater flexibility and adaptability through advanced production techniques like 3D printing and AI-driven design tools
- B) By reducing the need for product variations and keeping designs standard
- C) By eliminating the need for custom orders altogether
- D) By slowing down production to allow for complex customizations ✓

25. Which of the following is an example of how Industry 4.0 impacts the supply chain in EPLM?

- A) It introduces highly manual processes for tracking and reporting supply chain data.
- B) It reduces the need for transparency in supply chain management.
- C) It uses IoT and data analytics to improve forecasting, inventory management, and logistics. ✓
- D) It eliminates supply chain management in favor of centralized production.

 *we*
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DEPARTMENT OF SCIENCE & HUMANITIES
TEST QUESTION PAPER-VALUE ADDED COURSE

“Water Quality Testing and Pollution Analysis”

From 16.10.2023 to 21.10.2023(6days)

Duration: 36 Hours

Academic Year : 2023 -2024 /ODD

Date of Test :21.10.2023

MULTIPLE CHOICE QUESTIONS (25X1=25 Marks)

Name of the Student:

Year/ Sem:

AU Register Number:

Answer all the questions:

1. What is the primary purpose of water quality testing?
 - A) To determine the temperature of the water
 - B) To assess the presence of pollutants
 - C) To measure the amount of oxygen in the water
 - D) To identify the types of aquatic organisms

2. Which of the following is a major indicator of water pollution?
 - A) pH level
 - B) Temperature
 - C) Dissolved oxygen (DO)
 - D) Turbidity

3. Which of the following is NOT a common water pollutant?
 - A) Heavy metals
 - B) Pathogens
 - C) Nitrogen compounds
 - D) Oxygen

4. The presence of *E. coli* bacteria in water indicates:
 - A) High salinity levels
 - B) Contamination by fecal matter
 - C) Low turbidity
 - D) Acidic water conditions

5. What does the term "Biochemical Oxygen Demand" (BOD) refer to?
 - A) The amount of oxygen consumed by aquatic organisms
 - B) The amount of oxygen required by microorganisms to decompose organic material
 - C) The total oxygen content in water
 - D) The amount of oxygen in polluted water

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6. Which of the following pollutants is commonly associated with agricultural runoff?
- A) Mercury
 - B) Nitrates and phosphates
 - C) Lead
 - D) Chlorine
7. Which of the following tests is used to measure the concentration of total suspended solids (TSS) in water?
- A) Turbidity test
 - B) pH test
 - C) Filtration and drying method
 - D) Biochemical Oxygen Demand (BOD) test
8. Which type of water pollution is caused by oil spills?
- A) Thermal pollution
 - B) Chemical pollution
 - C) Biological pollution
 - D) Oxygen-demanding pollution
9. What does the term "turbidity" measure in water?
- A) The oxygen content of water
 - B) The clarity or cloudiness of the water
 - C) The acidity or alkalinity of the water
 - D) The temperature of the water
10. Which method is commonly used for detecting heavy metals in water?
- A) Spectrophotometry
 - B) Gravimetric analysis
 - C) Titration
 - D) Gas chromatography
11. What is the maximum permissible limit of lead in drinking water, according to WHO guidelines?
- A) 0.01 mg/L
 - B) 0.05 mg/L
 - C) 0.10 mg/L
 - D) 0.15 mg/L
12. Which of the following is a biological pollutant in water?
- A) Arsenic
 - B) E. coli bacteria
 - C) Phosphates
 - D) Chlorine
13. Which parameter is used to assess the amount of dissolved oxygen in water?
- A) pH level
 - B) DO meter
 - C) Turbidity
 - D) Conductivity meter
14. Which water quality parameter is most affected by temperature?
- A) Turbidity
 - B) pH
 - C) Dissolved oxygen



D) Hardness

15. Which of the following contaminants is a result of industrial effluents?
A) Pathogenic bacteria
B) Pesticides
C) Heavy metals
D) Nitrates
16. Which type of water pollution is primarily caused by untreated sewage discharge?
A) Thermal pollution
B) Biological pollution
C) Oxygen-demanding pollution
D) Chemical pollution
17. What is the acceptable pH range for most drinking water?
A) 4.0 to 5.0
B) 6.5 to 8.5
C) 7.5 to 9.5
D) 8.0 to 9.0
18. What is the major source of thermal pollution in water bodies?
A) Agricultural runoff
B) Power plants and industrial cooling systems
C) Urban runoff
D) Natural events like forest fires
19. Which of the following is the best method for reducing nitrate pollution in water bodies?
A) Planting buffer zones with vegetation
B) Discharging industrial effluents into water sources
C) Increasing fertilizer use in agriculture
D) Decreasing pH of water
20. Which test is used to determine the concentration of chlorine in water?
A) Titration
B) Turbidity test
C) Colorimetric method
D) Spectrophotometry
21. What is the primary concern associated with high levels of phosphates in water?
A) Oxygen depletion
B) Eutrophication
C) Increase in pH
D) Decreased turbidity
22. Which of the following is a common cause of water hardness?
A) High concentration of nitrates
B) Presence of calcium and magnesium ions
C) High temperature
D) Presence of dissolved gases like carbon dioxide
23. Which test is used to determine the chemical oxygen demand (COD) of water?
A) Dissolved oxygen measurement
B) Incubation for BOD analysis
C) Titration with potassium dichromate
D) Filtration and drying





24. Which of the following is NOT a common water quality testing method?
- A) Conductivity measurement
 - B) pH measurement
 - C) Turbidity analysis
 - D) Carbon dioxide concentration measurement
25. Which is a potential consequence of high levels of dissolved oxygen (DO) in water?
- A) The growth of harmful algae
 - B) The death of aquatic life due to oxygen toxicity
 - C) Increased fish mortality in polluted waters
 - D) It generally supports healthy aquatic ecosystems




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DEPARTMENT OF MECHANICAL ENGINEERING
TEST QUESTION PAPER-VALUE ADDED COURSE
**“Face Recognition System Using
Machine Learning”**

From 28.08.2023 to 02.09.2023(6days)

Duration:36 Hours

Academic Year : 2023 -2024 /ODD

Date of Test :02.09.2023

MULTIPLE CHOICE QUESTIONS(25X1=25 Marks)

Name of the Student:

Year/Sem:

AU Register Number:

Answer all the questions:

1. What is the primary goal of a face recognition system?

- A) To detect faces in images
- B) To recognize or verify a person's identity based on facial features
- C) To identify the age and gender of individuals
- D) To convert facial features into text

2. Which of the following is the most common machine learning technique used in face recognition systems?

- A) Clustering
- B) Deep Learning
- C) Reinforcement Learning
- D) Evolutionary Algorithms

3. Which of the following techniques is used to detect faces in an image?

- A) K-means clustering
- B) Haar cascades
- C) Convolutional Neural Networks (CNNs)
- D) Random Forest

4. Which of the following is a widely used method for feature extraction in face recognition?

- A) K-means clustering
- B) Principal Component Analysis (PCA)
- C) Naive Bayes
- D) Random Forest



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5. What does PCA (Principal Component Analysis) help achieve in face recognition?
- A) Reduces the number of faces to match
 - B) Reduces the dimensionality of the facial data
 - C) Converts facial data into text
 - D) Tracks the face in a video
6. Which of the following is commonly used for facial landmark detection?
- A) Haar Cascades
 - B) HOG (Histogram of Oriented Gradients)
 - C) OpenCV
 - D) MTCNN (Multi-task Cascaded Convolutional Networks)
7. What is a Siamese Network used for in face recognition?
- A) Object detection
 - B) Verifying whether two images are of the same person
 - C) Classifying different facial expressions
 - D) Detecting objects in images
8. Which of the following neural network architectures is widely used for face recognition?
- A) Convolutional Neural Networks (CNNs)
 - B) Recurrent Neural Networks (RNNs)
 - C) Generative Adversarial Networks (GANs)
 - D) Fully Connected Neural Networks (FCNNs)
9. What is a "face embedding" in the context of face recognition?
- A) A vector representation of a person's face used for comparison
 - B) A 3D model of the face
 - C) A sequence of facial landmarks
 - D) A compressed image of the face
10. Which of the following is a popular deep learning model used for generating face embeddings?
- A) VGG-Face
 - B) AlexNet
 - C) ResNet
 - D) GAN
11. In face recognition, what does "verification" mean?
- A) Identifying a person from a large database
 - B) Verifying if two images are of the same person
 - C) Matching a face to a database of celebrity faces
 - D) Detecting the presence of a face in an image

12. Which of the following is a commonly used loss function in face recognition?
- A) Cross-entropy loss
 - B) Hinge loss
 - C) Triplet loss
 - D) Mean squared error
13. Which algorithm is widely used for face identification in a large database?
- A) K-nearest neighbors (KNN)
 - B) Naive Bayes
 - C) Support Vector Machine (SVM)
 - D) Decision Tree
14. What is the main advantage of deep learning over traditional machine learning methods in face recognition?
- A) Requires less data
 - B) Automatically extracts relevant features from raw data
 - C) Easier to implement
 - D) Faster to train
15. Which of the following is a challenge in face recognition systems?
- A) High accuracy with deep learning
 - B) Recognition in poor lighting conditions
 - C) Fast computation
 - D) Minimal facial data required
16. What does a "face recognition database" typically store?
- A) Only face images
 - B) Face embeddings
 - C) Facial landmarks
 - D) Facial expressions
17. Which of the following techniques is used to prevent overfitting in face recognition models?
- A) Cross-validation
 - B) Normalization
 - C) Feature scaling
 - D) Data augmentation
18. Which of the following is a commonly used evaluation metric for face recognition systems?
- A) Mean Squared Error (MSE)
 - B) ROC curve
 - C) Confusion matrix
 - D) Precision, recall, F1-score



19. In face recognition, what does "training" a model involve?
- A) Detecting faces in images
 - B) Building a database of known faces
 - C) Teaching the model to identify and classify faces based on labeled data
 - D) Generating synthetic face images
20. Which face recognition technology is most effective for real-time applications?
- A) Haar Cascades
 - B) Eigenfaces
 - C) Deep Learning with CNNs
 - D) K-means clustering
21. What is "FaceNet"?
- A) A deep learning model for face detection
 - B) A dataset for facial recognition
 - C) K-Nearest Neighbors (K-NN)
 - D) Convolutional Neural Networks (CNN)
22. Which of the following methods is typically used for dimensionality reduction in face recognition?
- A) Linear Regression
 - B) PCA (Principal Component Analysis)
 - C) K-Means Clustering
 - D) Decision Trees
23. In face recognition, what does "face verification" determine?
- A) Whether two faces belong to the same person or not
 - B) The identity of a person from a database of faces
 - C) The emotions expressed by a person's face
 - D) The gender or age of a person
24. Which of the following is a challenge in training face recognition systems?
- A) High computational cost of training deep learning models
 - B) Lack of sufficient labeled data for training
 - C) Variations in pose, lighting, and expression
 - D) All of the above
25. What is "data augmentation" in face recognition?
- A) Adding noise to the training data
 - B) Generating additional data by applying transformations such as rotation, scaling, and flipping
 - C) Reducing the size of the training dataset
 - D) Using a larger number of layers in the neural network


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DEPARTMENT OF MECHANICAL ENGINEERING

TEST QUESTION ANSWER KEY- VALUE ADDED COURSE

› “Face Recognition System Using Machine
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From 28.08.2023 to 02.09.2023(6days)

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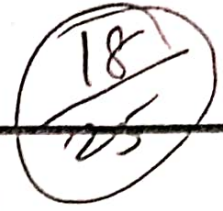
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VAC Coordinator


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- C) Fast computation
- D) Minimal facial data required

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20. Which face recognition technology is most effective for real-time applications?

- A) Haar Cascades
- B) Eigenfaces
- C) Deep Learning with CNNs ✓
- D) K-means clustering

21. What is "FaceNet"?

- A) A deep learning model for face detection ✓
- B) A dataset for facial recognition
- C) K-Nearest Neighbors (K-NN)
- D) Convolutional Neural Networks (CNN)

22. Which of the following methods is typically used for dimensionality reduction in face recognition?

- A) Linear Regression
- B) PCA (Principal Component Analysis) ✓
- C) K-Means Clustering
- D) Decision Trees

23. In face recognition, what does "face verification" determine?

- A) Whether two faces belong to the same person or not
- B) The identity of a person from a database of faces ✓
- C) The emotions expressed by a person's face
- D) The gender or age of a person

24. Which of the following is a challenge in training face recognition systems?

- A) High computational cost of training deep learning models ✓
- B) Lack of sufficient labeled data for training
- C) Variations in pose, lighting, and expression
- D) All of the above

25. What is "data augmentation" in face recognition?

- A) Adding noise to the training data
- B) Generating additional data by applying transformations such as rotation, scaling, and flipping ✓
- C) Reducing the size of the training dataset
- D) Using a larger number of layers in the neural network

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

TEST QUESTION PAPER-VALUE ADDED COURSE

“IT Service Management and Business value: Strategies for Optimizing Service Delivery”

From 12.02.2024 to 16.02.2024 (5days)

Duration:30 Hours

Academic Year : 2023 -2024 /EVEN

Date of Test :16.02.2024

MULTIPLE CHOICE QUESTIONS (25X1=25 Marks)

Name of the Student:

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Answer all the questions:

1. What is the primary goal of IT Service Management (ITSM)?
 - A) To improve the technical skills of IT staff
 - B) To deliver high-quality IT services that meet business needs
 - C) To reduce the cost of IT infrastructure
 - D) To implement new technologies in IT systems

 2. Which ITSM framework is widely adopted to align IT services with business needs?
 - A) ITIL (Information Technology Infrastructure Library)
 - B) COBIT (Control Objectives for Information and Related Technologies)
 - C) ISO/IEC 27001
 - D) Six Sigma

 3. What does the "Service Lifecycle" in ITIL primarily focus on?
 - A) Monitoring IT infrastructure
 - B) The stages through which IT services progress
 - C) Developing new IT technologies
 - D) Managing IT security incidents

 4. Which of the following is an objective of the "Service Strategy" phase in ITSM?
 - A) To define the service provider's vision and objectives
 - B) To ensure services are delivered on time
 - C) To implement operational procedures for services
 - D) To handle customer complaints

 5. What is the purpose of the "Service Design" phase in ITSM?
 - A) To monitor service performance
 - B) To ensure the service meets customer requirements
 - C) To resolve service incidents
 - D) To handle service requests

 6. Which of the following is an example of an IT service management tool?
 - A) ERP (Enterprise Resource Planning) system
 - B) ServiceNow
 - C) Microsoft Word
- M/S*
Dr.M.VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).

D) Adobe Photoshop

7. Which of the following ITIL processes is responsible for managing service disruptions and incidents?

- A) Incident Management
- B) Change Management
- C) Service Level Management
- D) Problem Management

8. What does the "Service Operation" phase of ITSM focus on?

- A) Defining service strategies
- B) Designing the service
- C) Providing and managing services on a day-to-day basis
- D) Reviewing and improving services

9. Which process is responsible for identifying and resolving the root causes of recurring incidents?

- A) Incident Management
- B) Problem Management
- C) Change Management
- D) Release Management

10. Which ITIL process focuses on ensuring that IT services meet agreed-upon service levels?

- A) Service Level Management
- B) Incident Management
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- D) Financial Management

11. What does the concept of "Business Value" in ITSM refer to?

- A) The cost savings achieved by IT services
- B) The alignment of IT services with business goals and objectives
- C) The technical specifications of IT infrastructure
- D) The number of IT services provided

12. What is the purpose of "Change Management" in ITSM?

- A) To restore normal service operations as quickly as possible
- B) To ensure that changes are made with minimal disruption to services
- C) To develop new IT services
- D) To prevent all changes to the IT environment

13. Which of the following is a key benefit of ITSM in terms of business value?

- A) Faster product development
- B) Improved customer satisfaction
- C) Reduced staff turnover
- D) Increased server performance

14. Which of the following defines a "Service Level Agreement" (SLA)?

- A) A contract between the IT team and the business outlining the level of service expected
- B) A document that specifies the pricing for IT services
- C) A list of technical requirements for IT systems
- D) A timeline for service delivery

15. What is the primary function of "Release Management" in ITSM?

- A) To ensure the smooth transition of services from development to production
- B) To monitor the performance of IT services
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[Signature]
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D) To manage customer complaints

16. Which of the following ITIL processes helps identify and manage the risks associated with IT services?

- A) Service Continuity Management
- B) Problem Management
- C) Change Management
- D) Service Asset and Configuration Management

17. What is the role of "Financial Management for IT Services"?

- A) To ensure that IT services are delivered on time
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- A) Implementing an automated system for incident response
- B) Reducing the number of IT staff
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19. Which phase in the ITIL service lifecycle is responsible for continual improvement of services?

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- A) To provide accurate and up-to-date information to support service operations
- B) To monitor and control changes to IT systems



- C) To track customer complaints
- D) To audit the performance of IT services

25. Which ITIL practice is most concerned with understanding and managing the performance of IT services in line with business needs?

- A) Service Level Management
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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

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VAC Coordinator


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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

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DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION

TEST QUESTION PAPER-VALUE ADDED COURSE

“Value Proposition in Engineering
Startups – Business Model for Success”

From 26.02.2024 to 02.03.2024 (6 days)

Duration: 36 Hours

Academic Year : 2023 -2024 /EVEN

Date of Test: 02.03.2024

MULTIPLE CHOICE QUESTIONS (25X1=25 Marks)

Name of the Student:

Year/ Sem:

AU Register Number:

Answer all the questions:

1. What is the primary purpose of a value proposition for an engineering startup?
 - A) To increase product pricing
 - B) To define the customer segment and their needs
 - C) To maximize profit margins
 - D) To create a detailed operational plan

2. Which of the following is a critical component of a successful business model for an engineering startup?
 - A) High initial investment
 - B) Clear customer value proposition
 - C) Minimal competition
 - D) Large team size

3. A well-defined value proposition helps an engineering startup by:
 - A) Reducing time-to-market
 - B) Identifying target markets
 - C) Increasing production costs
 - D) Reducing product features

Which of the following is a key aspect of the business model for a successful engineering startup?

- A) Avoiding market research
- B) Clear understanding of revenue streams
- C) Minimizing customer feedback
- D) Focusing only on product features

The lean startup model emphasizes:

- A) Heavy investment in advertising
- B) Iterative development and feedback loops
- C) Immediate mass production
- D) Avoiding customer interactions


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6. Which of the following is NOT a typical revenue model for an engineering startup?
- A) Subscription-based revenue
 - B) Licensing revenue
 - C) Freemium model
 - D) Fixed-price revenue with no feedback
7. In a value proposition canvas, which element directly addresses customer needs and pain points?
- A) Customer jobs
 - B) Product features
 - C) Channels of distribution
 - D) Cost structure
8. Which of the following is a key challenge for engineering startups when defining their value proposition?
- A) Overestimating customer needs
 - B) Underestimating market demand
 - C) Choosing the wrong pricing model
 - D) Aligning the product with actual customer pain points
9. In business models, what does "Customer Segments" refer to?
- A) Different types of marketing strategies
 - B) The various customer groups a business serves
 - C) The methods of funding a startup
 - D) The production timeline
10. Which of the following is a key indicator that an engineering startup's value proposition is effective?
- A) High customer churn rate
 - B) Low customer engagement
 - C) High customer satisfaction and retention
 - D) High marketing costs
11. A minimum viable product (MVP) is most important for:
- A) Gaining early customer feedback
 - B) Launching a final product
 - C) Setting high prices
 - D) Expanding the team
12. Which of the following best describes the "Cost Structure" component of a business model?
- A) The total price customers are willing to pay
 - B) The key activities and costs incurred to deliver the product
 - C) The channels used to reach customers
 - D) The total revenue generated from sales
13. What is the purpose of a customer journey map in an engineering startup?
- A) To track employee performance
 - B) To visualize the customer's experience with the product/service
 - C) To define product features
 - D) To outline the pricing structure
14. Which of the following is essential for scaling an engineering startup?
- A) Avoiding all competition
 - B) Ensuring repeatable and scalable processes
 - C) Keeping the company small and agile
 - D) Focusing on a single product feature

15. Which strategy is commonly used by engineering startups to gain market validation before full product development?
- A) Mass production
 - B) Crowdfunding
 - C) Launching without testing
 - D) Avoiding customer engagement
16. What role does "Customer Feedback" play in refining a startup's business model?
- A) It increases production costs
 - B) It helps in identifying potential investors
 - C) It assists in improving the product and its value proposition
 - D) It delays the product development process
17. Which of the following best describes "Key Partners" in a business model?
- A) Customers who are repeat buyers
 - B) External companies or organizations that help the startup achieve its goals
 - C) Internal team members
 - D) Marketing channels
18. What is the main advantage of using the "Business Model Canvas" in an engineering startup?
- A) It helps to streamline product features
 - B) It provides a comprehensive and structured overview of the business
 - C) It focuses solely on the financial aspects of the business
 - D) It eliminates the need for customer research
19. What does the "Channels" component of a business model refer to?
- A) The methods used to communicate with customers
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- A) Solving an existing problem in a more efficient and cost-effective way
 - B) Offering high-end features that are not needed by the majority of customers
 - C) Using complex technologies that appeal to a niche market
 - D) Maintaining traditional business processes
22. The "Revenue Streams" component of the business model focuses on:
- A) The costs associated with producing the product
 - B) The various ways the business generates income from customers
 - C) The customer base and segments
 - D) The marketing channels
23. What is the primary benefit of using agile development in an engineering startup?
- A) It reduces competition
 - B) It minimizes customer engagement
 - C) It allows for iterative progress and faster market adaptation
 - D) It guarantees profitability



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24. Which of the following is an example of a "Key Activity" in a business model for an engineering startup?
- A) Manufacturing and product testing
 - B) Marketing and sales strategies
 - C) Developing partnerships
 - D) All of the above
25. Which factor is most critical when scaling a product in an engineering startup?
- A) High investment in marketing
 - B) Maintaining a small, agile team
 - C) Ensuring the product meets market demand and can scale
 - D) Limiting customer feedback

A handwritten signature in green ink, appearing to read 'M.V.', is written above the principal's name.

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VAC Coordinator


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Dr. M. VIJAYAKUMAR M.E., Ph.D.,
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A) It reduces competition
B) It minimizes customer engagement
C) ~~It allows for iterative progress and faster market adaptation~~ ✓
D) It guarantees profitability

24. Which of the following is an example of a "Key Activity" in a business model for an engineering startup?
- A) Manufacturing and product testing
 - B) Marketing and sales strategies
 - C) Developing partnerships
 - D) All of the above
25. Which factor is most critical when scaling a product in an engineering startup?
- A) High investment in marketing
 - B) Maintaining a small, agile team
 - C) Ensuring the product meets market demand and can scale
 - D) Limiting customer feedback

DEPARTMENT OF SCIENCE & HUMANITIES

TEST QUESTION PAPER-VALUE ADDED COURSE

“Design & Testing of Bio Degradable Plastics in Chemistry”

From 11.03.2024 to 16.03.2024(6days)

Duration:36 Hours

Academic Year : 2023 -2024 /EVEN

Date of Test :16.03.2024

MULTIPLE CHOICE QUESTIONS 25X1=25 Marks)

Name of the Student:

Year/ Sem:

AU Register Number:

Answer all the questions:

1. What is the primary characteristic of biodegradable plastics?
 - a) They break down into non-toxic components when exposed to the environment.
 - b) They do not break down in nature.
 - c) They are more durable than conventional plastics.
 - d) They are always made from petroleum-based products.

2. Which of the following is a commonly used raw material in the production of biodegradable plastics?
 - a) Polyethylene
 - b) Polystyrene
 - c) Starch
 - d) Nylon

3. Which of the following is a key advantage of biodegradable plastics over traditional plastics?
 - a) Higher cost of production
 - b) Longer degradation time
 - c) Reduced environmental pollution
 - d) Better strength and durability

4. Which of the following methods is commonly used to test the biodegradability of plastics?
 - a) Thermal decomposition analysis
 - b) Soil burial test
 - c) Chemical resistance test
 - d) Tensile strength test

5. Which of the following is a biopolymer commonly used in biodegradable plastics?
 - a) Polypropylene
 - b) Polyvinyl chloride (PVC)
 - c) Polylactic acid (PLA)
 - d) Polyethylene terephthalate (PET)

-
6. Which factor does NOT affect the degradation rate of biodegradable plastics?
- Environmental temperature
 - Presence of microorganisms
 - Plastic color
 - Humidity
7. Which of the following is a challenge in the use of biodegradable plastics?
- They degrade too quickly in most environments.
 - They require significant amounts of energy to produce.
 - They do not degrade in the presence of moisture.
 - They can be more expensive than petroleum-based plastics.
8. What is the role of plasticizers in biodegradable plastics?
- To increase the degradation rate of plastics
 - To reduce the rigidity and increase flexibility
 - To make the plastic more resistant to heat
 - To enhance the plastic's ability to resist UV light
9. Which of the following biodegradable plastics is derived from corn starch?
- Polyhydroxyalkanoates (PHA)
 - Poly(lactic acid) (PLA)
 - Polycaprolactone (PCL)
 - Poly(vinyl alcohol) (PVA)
10. Which of the following is a disadvantage of biodegradable plastics?
- High degradation rate
 - Limited feedstock availability
 - High toxicity during degradation
 - Non-recyclable nature
11. The biodegradation of plastics primarily depends on which factor?
- Polymer size
 - Environmental conditions
 - Thickness of the plastic
 - Temperature of the plastic during production
12. Which of the following is true regarding oxo-biodegradable plastics?
- They degrade only in the presence of sunlight.
 - They degrade more slowly than regular plastics.
 - They contain additives that promote oxidation and degradation.
 - They do not degrade at all.
13. Which of the following can be used to test the mechanical properties of biodegradable plastics?
- Differential Scanning Calorimetry (DSC)
 - Tensile strength test
 - UV-VIS spectroscopy
 - X-ray diffraction (XRD)

14. Which of the following is the most commonly used method for producing biodegradable plastics like PLA?

- a) Condensation polymerization
- b) Addition polymerization
- c) Solution polymerization
- d) Ring-opening polymerization

15. Which of the following biodegradable plastics is commonly used for food packaging?

- a) Polyvinyl chloride (PVC)
- b) Polylactic acid (PLA)
- c) Polyethylene (PE)
- d) Polycarbonate (PC)

16. Which of the following properties is often tested to evaluate the environmental impact of biodegradable plastics?

- a) Heat distortion temperature
- b) Toxicity during degradation
- c) Optical clarity
- d) Molecular weight distribution

17. Which of the following best describes the process of biodegradation?

- a) The breakdown of plastics by UV radiation
- b) The chemical degradation of plastics in a landfill
- c) The breakdown of plastics into harmless byproducts through the action of microorganisms
- d) The physical breaking down of plastics through mechanical forces

18. Which of the following is a primary environmental concern with biodegradable plastics?

- a) They degrade too rapidly and contaminate the environment.
- b) They create more waste than conventional plastics.
- c) They may degrade into microplastics that pollute ecosystems.
- d) They are not renewable and rely on fossil fuels.

19. Which type of microorganism is commonly involved in the biodegradation of plastics?

- a) Viruses
- b) Fungi
- c) Bacteria
- d) Algae

20. What is the main advantage of polyhydroxyalkanoates (PHA) as biodegradable plastics?

- a) They are cheaper to produce than PLA.
- b) They are biodegradable in marine environments.
- c) They are non-toxic and not biodegradable.
- d) They are stronger than polyethylene.

21. Which of the following is a method used to speed up the degradation of biodegradable plastics?

- a) Increasing the molecular weight
- b) Adding bio-based plasticizers
- c) Introducing starch or cellulose-based fillers
- d) Increasing the thickness of the plastic

22. Which of the following is NOT a type of biodegradable plastic?
- a) Polyvinyl alcohol (PVA)
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 - d) Polyhydroxyalkanoates (PHA)
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- a) They prevent the degradation process.
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 - c) They increase the strength of the plastic.
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24. What is the main limitation of current biodegradable plastics in terms of commercial applications?
- a) High energy consumption during manufacturing
 - b) Limited biodegradability under typical environmental conditions
 - c) Poor mechanical properties compared to conventional plastics
 - d) Lack of suitable raw materials
25. Which of the following is a key factor in determining the compostability of biodegradable plastics?
- a) The molecular weight of the polymer
 - b) The presence of heavy metals in the plastic
 - c) The temperature and moisture content of the composting environment
 - d) The color of the plastic


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DEPARTMENT OF SCIENCE & HUMANITIES

TEST QUESTION ANSWER KEY-VALUE ADDED COURSE

“Design & Testing Of Bio Degradable Plastics in Chemistry”

From 11.03.2024 to 16.03.2024(6days)

Duration: 36 Hours

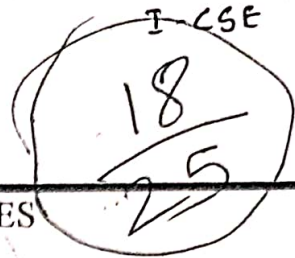
Academic Year : 2023 -2024 /EVEN

Date of Test :16.03.2024

1	a	6	c	11	b	16	b	21	b
2	c	7	d	12	c	17	c	22	c
3	c	8	b	13	b	18	c	23	b
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5	c	10	b	15	b	20	b	25	c


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DEPARTMENT OF SCIENCE & HUMANITIES

TEST QUESTION PAPER-VALUE ADDED COURSE

“Design & Testing of Bio Degradable Plastics in Chemistry”

From 11.03.2024 to 16.03.2024(6days)

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Name of the Student:

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- d) Increasing the thickness of the plastic



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✓

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✓

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- c) Poor mechanical properties compared to conventional plastics
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✓

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DEPARTMENT OF MECHANICAL ENGINEERING

TEST QUESTION PAPER-VALUE ADDED COURSE

**“Design of Low-Cost solar Inverter for
Household Use”**

From 05.02.2024 to 10.02.2024 (6days)

Duration: 36 Hours

Academic Year : 2023 -2024 /EVEN

Date of Test :10.02.2024

MULTIPLE CHOICE QUESTIONS (25X1=25 Marks)

Name of the Student:

Year/Sem:

AU Register Number:

Answer all the questions:

- 1. What is the primary function of a solar inverter in a household solar system?**
 - a) Convert DC to AC
 - b) Store solar energy
 - c) Control the solar panels
 - d) Charge the batteries
- 2. Which of the following inverter types is most commonly used in low-cost solar installations?**
 - a) Central inverter
 - b) Micro inverter
 - c) String inverter
 - d) Hybrid inverter
- 3. Which of the following is a key challenge in designing a low-cost solar inverter?**
 - a) Maintaining high efficiency while minimizing cost
 - b) Achieving high power output
 - c) Implementing complex control algorithms
 - d) Using expensive materials like copper
- 4. What does MPPT (Maximum Power Point Tracking) do in a solar inverter?**
 - a) Converts DC to AC
 - b) Adjusts the voltage to match the grid
 - c) Maximizes the energy extracted from the solar panels
 - d) Protects the system from overloading
- 5. What is the typical input voltage range for a household solar inverter?**
 - a) 12V to 24V
 - b) 120V to 240V
 - c) 380V to 480V
 - d) 100V to 400V


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15. What is the primary disadvantage of using a microinverter in a solar system?
- Higher initial cost
 - Lower efficiency
 - Larger size
 - Limited power output per panel
16. What is the purpose of using a transformer in a solar inverter?
- Convert DC to AC
 - Regulate the output voltage
 - Step-up or step-down the voltage
 - Reduce energy loss
17. What is the typical lifespan of a solar inverter?
- 2-3 years
 - 5-10 years
 - 10-15 years
 - 20-30 years
18. Which factor contributes most to the high cost of a solar inverter?
- Control system complexity
 - Use of digital technology
 - Use of high-quality components
 - Low-frequency transformers
19. What is the main benefit of using a hybrid inverter?
- It can be used only for off-grid systems
 - It integrates solar power and battery storage
 - It is cheaper than other types
 - It requires no maintenance
20. What is a typical feature of low-cost solar inverters?
- High-efficiency MPPT
 - Minimal cooling and filtering systems
 - High-frequency transformers
 - Advanced power quality features
21. What is the main safety feature in most solar inverters?
- Short-circuit protection
 - Energy storage
 - Over-voltage protection
 - Maximum power output regulation
22. Which of the following is used to convert DC into AC in a solar inverter?
- Inverter circuit
 - Rectifier
 - Capacitor
 - Step-up transformer

23. Which type of inverter is typically most cost-effective for small-scale residential use?
- a) Hybrid inverter
 - b) Micro inverter
 - c) Central inverter
 - d) String inverter
24. What does the efficiency of a solar inverter represent?
- a) The amount of energy lost as heat
 - b) The ratio of output AC power to input DC power
 - c) The amount of energy stored in the system
 - d) The inverter's power rating
25. What is the main reason for using high-frequency switching in solar inverters?
- a) To reduce the inverter size and weight
 - b) To improve voltage regulation
 - c) To increase output frequency
 - d) To extend the lifespan of the inverter



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DEPARTMENT OF MECHANICAL ENGINEERING

TEST QUESTION ANSWER KEY- VALUE ADDED COURSE

**“Design of Low-cost solar Inverter for
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From 05.02.2024 to 10.02.2024 (6days)



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5	d	10	b	15	a	20	b	25	a


VAC Coordinator


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DEPARTMENT OF MECHANICAL ENGINEERING

TEST QUESTION PAPER-VALUE ADDED COURSE

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MULTIPLE CHOICE QUESTIONS (25X1=25 Marks)

Name of the Student:

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Answer all the questions:

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- a) Convert DC to AC ✓
- b) Store solar energy
- c) Control the solar panels
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2. Which of the following inverter types is most commonly used in low-cost solar installations?

- a) Central inverter
- b) Microinverter ✓
- c) String inverter
- d) Hybrid inverter

3. Which of the following is a key challenge in designing a low-cost solar inverter?

- a) Maintaining high efficiency while minimizing cost ✓
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4. What does MPPT (Maximum Power Point Tracking) do in a solar inverter?

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- b) Adjusts the voltage to match the grid
- c) Maximizes the energy extracted from the solar panels ✓
- d) Protects the system from overloading

5. What is the typical input voltage range for a household solar inverter?

- a) 12V to 24V
- b) 120V to 240V
- c) 380V to 480V
- d) 100V to 400V ✓

6. Which of the following components in a solar inverter is responsible for converting DC into AC?
a) Rectifier
b) Inverter circuit (power switches) ✓
c) Transformer
d) Filter capacitor
7. What type of current do solar panels generate?
a) Alternating Current (AC)
b) Direct Current (DC) ✓
c) Pulsating Current
d) Varying Current
8. Which type of semiconductor is most commonly used in the power electronics of solar inverters?
a) Silicon
b) Gallium Arsenide
c) Germanium
d) Copper X
9. Which of the following is the main disadvantage of using a low-cost inverter?
a) Higher maintenance costs
b) Lower efficiency and shorter lifespan ✓
c) Limited power output
d) Complex installation
10. What is the most common topology used in low-cost solar inverters?
a) Full-bridge inverter
b) Half-bridge inverter ✓
c) Push-pull inverter
d) Buck converter
11. In a low-cost inverter design, which of the following is critical for reducing energy loss?
a) Using high-frequency switching circuits ✓
b) Using large transformers
c) Increasing the inverter size
d) Using analog control systems
12. Which of the following is often used to reduce the size of a solar inverter?
a) Low-frequency transformers
b) High-frequency switching ✓
c) Larger heat sinks
d) More capacitors
13. What is the typical output voltage of a solar inverter in a household system?
a) 120V AC
b) 230V AC
c) 48V DC X
d) 600V AC
14. What is a common method for cooling low-cost solar inverters?
a) Liquid cooling
b) Air cooling with heat sinks and fans ✓
c) Thermoelectric cooling
d) Absorption cooling



15. What is the primary disadvantage of using a microinverter in a solar system?
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19. What is the main benefit of using a hybrid inverter?
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