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Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester BVOC AUTOMOBILE Degree Examination, November 2024

GEC5PS23 – Life Skill Application

(2021 Admission onwards)

Time: 2 hours Max. Marks : 60

PART—A
Answer all questions.
Each question carries Two mark.
Ceiling-20 Marks

1. Define interpersonal attraction.
2. Explain critical thinking skill.
3. Define life skill .
4. What is self awareness
5. Define Problem solving.
6. What is non verbal communication.
7. Write a note on women empowerment.
8. Differentiate between active and passive listening.
9. What is career planning.
10. Describe creativity.
11. Elaborate the term coping.
12. What are negotiating skills.

PART—B
Answer all questions.
Each question carries Five marks.
Ceiling-30Marks

13. Explain the steps in problem solving.
14. Why is self awareness important. What are the skills to become self aware.
15. Describe life skill for preventing addiction .
16. Briefly explain ten core life skills.
17. Briefly explain how to improve interpersonal relations.
18. Describe the role of empathy in building relationships.
19. How does non verbal communication contribute in effective communication

PART-C
Answer any one question.
Each question carries Ten marks.

20. What is life skill education. Describe the needs and importance.
21. Explain the application of life skill training in different areas.

(1 x 10 = 10 Marks)

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester BVOC AUTOMOBILE Degree Examination, November 2024

SDC5AU24 – Internet of Things (IoT)

(2021 Admission onwards)

Time: 2 hours Max. Marks : 60

PART- A
Answer all questions. Each question carries Two mark.
Ceiling-20 Marks

1. Differentiate between digitalRead() and analogRead() functions.
2. Define the term IoT Architecture.
3. List two alternative IoT models.
4. What is the primary function of the void setup() function in Arduino?
5. List two factors that can affect the accuracy of ultrasonic distance measurements.
6. How do you connect a sensor to an Arduino board?
7. What is Bottle and what is its use ?
8. Mention the three control wires of a servo motor.
9. How do you check the IP address of a Raspberry Pi?
10. What is the difference between a digital and analog input?
11. How can you measure distance using an ultrasonic sensor and Raspberry Pi?
12. What is PWM and how is it used to control LED brightness?

PART- B
Answer all questions. Each question carries Five marks.
Ceiling-30 Marks

13. Explain the different types of loops available in Arduino.
14. What is a serial port? Discuss the various types of serial ports available.
15. Write a note on serial data transmission.
16. What is a Raspberry Pi? What are its primary uses?
17. What is the NOOBS operating system? How do you install it on a Raspberry Pi?
18. Design a circuit to interface two buttons with a Raspberry Pi to control the brightness of an LED.
19. Describe the functions of Tx and Rx pins in serial communication. How are they connected in a typical setup?

PART- C

Answer any One question. Each question carries Ten marks.

20. Design a basic home automation system using a Raspberry Pi, sensors, and actuators.

21. a) Explain the principle of operation of an LDR (Light-Dependent Resistor).

    b) Develop an Arduino code to detect obstacles using IR LED pairs and blink an LED as an indicator.

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester BVOC AUTOMOBILE Degree Examination, November 2024

SDC5AU25 – Automotive Electrical System

(2022 Admission onwards)

Time: 2 ½ hours Max. Marks : 80

PART – A
Answer *all* questions.
Each question carries Two marks.
Ceiling -25 Marks

1 What is an open system in the context of vehicle electrical systems?

2 What are the main components of a vehicle wiring harness?

3 What is the function of a fuse in a vehicle electrical circuit?

4 What is the primary purpose of multiplexing in automotive electrical systems?

5 Explain the role of a protocol in a network communication system.

6 What is Automotive Ethernet?

7 Explain the difference between a schematic diagram and a wiring diagram.

8 What are the common sources of electromagnetic interference in vehicles?

9 What are the applications of Wi-Fi and Bluetooth technology in smart cars?

10 List out three types of HeadLight Reflectors.

11 Explain the function of a headlight leveling system.

12 What are the advantages of using LED headlights over traditional halogen bulbs?

13 Prepare a short note on wiper linkage.

14 List any three functions of windscreen washers.

15 Explain the role of an engine cooling fan motor?

PART – B

Answer *all* questions.
Each question carries Five marks.
Ceiling -35 Marks

16 Describe the color coding of cables in electrical wiring. Why is it important?

17 Compare and contrast the characteristics and applications of CAN bus, LIN, and FlexRay in automotive networks.

18 Discuss the importance of EMC (Electromagnetic Compatibility) in automotive electrical systems

19 Explain the applications of Bluetooth technology in automotive systems.

20 Draw the circuit diagram for Brake Light.

21 Compare and contrast LED lighting and Xenon lighting in automotive systems.

22 What are the functional requirements of wipers?

23 Describe the working mechanism of windscreen wipers and their importance in ensuring driving safety.

PART - C

Answer any *two* questions.
Each question carries Ten marks.

24 Discuss the key features and benefits of Automotive Ethernet in modern vehicle systems and its role in supporting advanced driver-assistance systems (ADAS).

25 Explain the role and functionality of the Generic Electronic Module (GEM) in vehicle control systems.

26 Write different stages of the process of checking an auxiliary system circuit.

27 Write an essay on the different signaling circuits used in vehicles (flasher, indicator, brake, and hazard circuits)

2 x 10 = 20 Marks

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester BVOC AUTOMOBILE Degree Examination, November 2024

SDC5AU26 – Electric & Hybrid Vehicles

(2022 Admission onwards)

Time: 2 ½ hours Max. Marks : 80

PART – A
Answer *all* questions.
Each question carries Two marks.
Ceiling -25 Marks

1 Classify different types of electric vehicles in use today?

2 What is a hybrid electric vehicle?

3 Name two forces acting on an electric vehicle in static conditions.

4 Explain the electric drive-train.

5 Define regenerative braking.

6 What is a drive-train topology?

7 Name two electric components used in hybrid electric vehicles.

8 What are battery parameters?

9 What is the function of an induction motor in an electric vehicle?

10 What are the considerations for choosing energy storage technology for an EV?

11 Define driving cycle in the context of electric vehicles?

12 Define hybrid electric vehicle (HEV) range modeling.

13 Define energy management in the context of electric vehicles.

14 What are the key components of an EMS in a hybrid electric vehicle (HEV)?

15 Name two energy management strategies used in hybrid electric vehicles

PART – B
Answer *all* questions.
Each question carries Five marks.
Ceiling -35 Marks

16 Explain the impact of modern drive train on energy supplies.

17 Analyze the factors affecting the range of an electric vehicle.

18 Differentiate between hybrid traction and electric traction.

19 Describe the requirements for energy storage in hybrid electric vehicles.

20 Explain the configuration and control of DC motor drive.

21 Explain the steps and considerations for sizing the propulsion motor.

22 Discuss the challenges and considerations in selecting the appropriate energy storage technology for different types of electric vehicles

23 Describe the various charging techniques used for electric vehicles.

PART - C

Answer any *two* questions.
Each question carries Ten marks.

24 Explain various forces acting on the vehicle in static and dynamic conditions.

25 With a neat figure, explain the working of different types of HEV.

26 Compare and contrast battery-based and fuel cell-based energy storage systems.

27 Analyze the challenges and implementation issues of energy management strategies in hybrid and electric vehicles.

2 x 10 = 20 Marks

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester BVOC AUTOMOBILE Degree Examination, November 2024

SDC5AU27 – Automobile HVAC

(2021 Admission onwards)

Time: 2 ½ hours Max. Marks : 80

(Use of Steam tables and Psychrometric charts are permitted)

PART-A

Answer all questions.
Each question carries Two marks.
Ceiling -25 Marks

1. Define refrigeration
2. Draw Vortex Tube refrigeration
3. List the refrigerants used for cryogenic refrigeration.
4. Explain the role of generator in VARS.
5. Explain the working of receiver dryer in car air conditioning system.
6. List the industrial applications of air conditioning system.
7. Brief the environmental impacts of CFC.
8. Define DBT and DPT.
9. What are the main sources of humidity in an automobile cabin?
10. What is a compressor clutch?
11. Describe Accumulator.
12. Briefly explain High pressure cut-out switch.
13. List any our Driveability control
14. Narrate Anti-dieseling relay.
15. Explain halide torch leak detection.

PART- B

Answer all questions.
Each question carries Five marks.
Ceiling - 35 Marks

16. With a neat diagram, explain steam jet refrigeration system.
17. Give different classifications of refrigerants with examples.
18. Narrate the environmental impacts of halocarbon refrigerants.
19. With a neat diagram, explain the working of car air conditioning system.
20. Explain different parameters on which the amount of heat absorbed in a car is dependent on ?
21. Explain the working of compressor clutch.
22. Explain the working of Trinary switch.
23. Describe Valves-In-Receiver (VIR)

PART - C

Answer any two questions.
Each question carries Ten marks.

24. With a neat diagram explain the working of Vapour absorption refrigeration system.
25. A sling psychrometer reads 40°C DBT and 28°C WBT. Find the following:

    a) Specific humidity (b) Relative humidity

    b) Dew point temperature (d) vapour density

    Take at p_{vs} = 0.0737 bar at 40° C and p_w = 0.03778 bar at 28° C
26. With a neat diagram, explain the working of automobile air conditioning and heating system using expansion valve.
27. List and explain various compressor controls used for car air conditioning system.

(2 x 10 = 20 Marks)

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester BVOC AUTOMOBILE Degree Examination, November 2024

SDC5AU28 – Vehicle Body Engineering

(2022 Admission onwards)

Time: 2 ½ hours Max. Marks : 80

PART-A
Answer all questions.
Each question carries Two marks.
Ceiling -25 Marks

1. Write any two requirements of the Automobile Body?
2. Define Trunk.
3. Write any 4 classification of Passenger carry Bus according to the style of the vehicle.
4. What are the different types of sections used in Bus chassis construction.
5. Explain Single deck Passenger carry Bus.
6. Explain about Light commercial vehicle body Type Truck.
7. Explain about Fixed side Truck.
8. List out the approaches to ensure vehicle safety.
9. Name the crash testing agencies in Europe and USA.
10. Describe the role of Wind screens in safety.
11. Describe Adaptive cruise control.
12. Narrate the role of high speed photography in accident testing.
13. Name the parts of the frame of a racing car.
14. Describe Vehicle Dynamics Integrated Management.
15. Describe ABS.

PART- B

Answer all questions.
Each question carries Five marks.
Ceiling - 35 Marks

16. E Explain regulations and Parameters of visibility in Automobile
17. Explain the importance of Vehicle body engineering.
18. Draw and Explain classic type and single decker Passenger Carry Bus.
19. Explain the importance of floor design in Passenger Carry Bus.
20. Draw and explain Tipper body and Tanker body Trucks.
21. Compare Air flow in Truck without and with deflector in tractor truck design.
22. What are the different advantages of Light Commercial Trucks.
23. How do safety belts enhance safety, explain ?

PART - C

Answer any two questions.
Each question carries Ten marks.

24. Classify cars based on their Body styling with supporting diagrams.
25. Explain the constructional details of the Passenger Carry Bus.
26. Explain how a seat belt and air bags enhance safety of the passengers.
27. Explain EBA, TCS, Assisted Parking, ESP and GCC.

(2 x 10 = 20 Marks)

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester BVOC SD Degree Examination, November 2024

SDC5IT23 – Big Data Analytics

(2021 Admission onwards)

Time: 2 hours Max. Marks : 60

PART-A
Answerer all questions.
Each question carries Two mark.
Ceiling-20 Marks

1. List out the best practices of Big Data Analytics ?
2. Define Map Reduce?
3. List out the computing resources of Big Data Storage?
4. What is Cluster Analysis.?
5. Define "decision tree"
6. What are Bayesian Classifiers ?
7. What is Association Mining ?
8. What is content based recommendation ?
9. List out the applications of data stream?
10. Write a short note on Decaying Window Algorithm ?
11. Define NO SQL Database ?
12. What is Sharding?

PART-B
Answer *all* questions.
Each question carries Five marks.
Ceiling-30 Marks

13. Describe the characteristics of big data?
14. Explain about Classification of Decision trees in detail.?
15. Explain recommendation systems.
16. Write a short note on real time analytics platform.
17. Explain Association Rules in detail ?
18. Discuss about HIVE.?
19. Describe about Twitter Data Analytics?

PART-C
Answer any *one* questions.
Each question carries Ten marks.

20. Explain in detail about Naïve Bayes Classification?
21. Explain with a neat diagram about Stream data model and its Architecture ?

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester BVOC SD Degree Examination, November 2024

SDC5IT24 – Machine Learning and Artificial Intelligence

(2021 Admission onwards)

Time: 2 hours Max. Marks : 60

PART – A
Answer *all* questions.
Each question carries Two mark.
Ceiling -20 Marks

1. Define machine learning.
2. What is the difference between supervised and unsupervised learning?
3. What is a hypothesis class in machine learning?
4. Explain the term 'precision' in classifier performance.
5. What is the purpose of cross-validation in classification?
6. Define Bayes Theorem.
7. What is entropy in the context of decision trees?
8. What is information gain in decision tree construction?
9. Explain the concept of a soft-margin hyperplane in SVM.
10. What are kernel functions used for in SVM?
11. Define clustering in unsupervised learning.
12. Mention one Python library used for machine learning.

PART – B

Answer *all* questions.
Each question carries Five marks.
Ceiling -30 Marks

13. Describe an example of machine learning application in classification.
14. Explain the bootstrapping method in the context of classification.
15. What are the issues faced in decision tree learning?
16. Discuss the significance of activation functions in neural networks.
17. Explain the three basic problems of Hidden Markov Models (HMMs).
18. Describe the K-means clustering algorithm.
19. Compare the use of Scikit-Learn and TensorFlow in machine learning.

PART - C

Answer any *ONE* questions.
Question carries Ten marks.

20. Explain the Bayesian classifier and maximum likelihood estimation, and discuss their roles in making predictions in machine learning models.
21. Explain the working mechanism of the Random Forest algorithm.

1 x 10 = 10 Marks

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester BVOC SD Degree Examination, November 2024

SDC5IT25 – Cloud Computing

(2021 Admission onwards)

Time: 2 hours Max. Marks : 60

PART-A
Answer all questions.
Each question carries 2marks.
Ceiling -20 Marks

1. Define cloud computing?
2. What are the characteristics of cloud architecture that separates it from traditional one?
3. What are the issues with virtualization in cloud computing?
4. What is EC2? what are the features of EC2?
5. What is distributed computing?
6. What is load balancing in cloud computing?
7. Explain Resource Management?
8. What are different scheduling techniques for advance reservation?
9. What is Capacity Management to meet Load Balancing?
10. What is migration?
11. What is fault tolerance ? Explain fault tolerance methods.
12. What is edge computing?

PART-B

Answer all questions.
Each question carries Five marks.
Ceiling -30 Marks

13. Differentiate full virtualization and para virtualization?
14. Explain issues of multitenancy in cloud computing?
15. How to build private cloud using openStack?
16. Elaborate HDFS concepts with suitable illustration?
17. Explain SLA management?
18. Explain Scheduling Techniques for advance reservation of capacity?
19. What is VM migration and explain approaches for live migration?

PART - C

Answer any one questions.
Each question carries 10 marks.

20. Discuss about various features and applications of cloud computing?
21. Explain virtualization architecture? what are the implementation levels of virtualization?

(1 x 10 = 10 Marks)

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester BVOC SD Degree Examination, November 2024

SDC5IT26 – Android App Development

(2021 Admission onwards)

Time: 2 hours Max. Marks : 60

PART – A
Answer *all* questions.
Each question carries Two marks.
Ceiling -20 Marks

1. Why do you mean by an activity ?
2. What do you mean by manifest file?
3. What is the meaning of ACTION_VIEW ?
4. What is ADT stands for ?
5. What you mean by Adapters ?
6. What is linkify ?
7. What do you mean by implicit intent ?
8. How the toast work in android ?
9. What are the different types of layout managers ?
10. Name the different types if UI controls available in android ?
11. What is an action Bar ?
12. What is geo coding ?

PART – B

Answer *all* questions.
Each question carries Five marks.
Ceiling -30 Marks

13 What are Android Location based services ?

14 Write a short note on Async Task.

15 What are the attributes of Checkbox control ? Explain with code ?

16 Explain the basic concepts of object oriented programming ?

17 Explain the structure of an android application ?

18 Explain SQLite in detail ?.

19 What do you mean by content provider?

PART - C

Answer any *one* questions.
Each question carries Ten marks.

20 Explain different types of layouts in android in detail?

21 Explain the application life cycle in detail?

1 x 10 = 10 Marks

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Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester BVOC SD Degree Examination, November 2024

SDC5IT27 – Internet of Things (IoT)

(2021 Admission onwards)

Time: 2 hours Max. Marks : 60

PART- A
Answer all questions. Each question carries Two marks.
Ceiling-20 Marks

1. Mention two key enabling technologies for IoT.
2. What is the purpose of the delay() function in Arduino?
3. Differentiate between Tx and Rx pins.
4. List two factors that can affect the accuracy of ultrasonic distance measurements.
5. How can you control the brightness of an LED using PWM?
6. What is the role of the Serial Monitor in Arduino IDE?
7. Mention two types of sensors based on output.
8. What is the basic principle behind obstacle avoidance using IR sensors?
9. How is temperature measured using a temperature sensor?
10. List two popular operating systems for Raspberry Pi.
11. How do you control GPIO pins on a Raspberry Pi using Python?
12. How do you install Bottle on a Raspberry Pi?

PART- B
Answer all questions. Each question carries Five marks.
Ceiling-30 Marks

13. Describe a simple IoT application using Arduino and sensors
14. Write an Arduino code to control two LEDs alternately with a delay of 1 second between each change.
15. Explain Serial data communication. How do you initialize serial communication in Arduino?
16. Explain the NOOBS operating system. How do you install it on a Raspberry Pi?
17. Design a circuit to interface two buttons with a Raspberry Pi to control the brightness of an LED.

18. Design a simple line-following robot using IR sensors and servo motors. Explain the basic logic and hardware setup.
19. Explain the concept of servo motors.

PART- C

Answer any One question. Each question carries Ten marks.

20. Design and implement an IoT-based smart home system using Arduino, an ultrasonic sensor, and Wi-Fi connectivity to detect object presence and control lights accordingly.
21. Design a basic home automation system using a Raspberry Pi, sensors, and actuators. Include the following components:
    - Temperature and humidity sensor
    - Relay module for controlling lights
    - Python script for data acquisition and control
    - User interface (optional)