

1B6A25282

(Pages : 2)

Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Sixth Semester B.Sc Computer Science Degree Examination, April 2025

BCS6E 04 – Introduction to Internet of things (IOT)

(2022 Admission onwards)

Time: 2 hours

Max. Marks : 60

**PART A**

**Answer all questions. Each carries 2 marks.**

1. Explain the key features and benefits of the Arduino environment
2. Describe the board layout of an Arduino and its functions.
3. Explain the different data types used in Arduino programming with examples.
4. Discuss the advanced I/O functions in Arduino and their applications.
5. Differentiate between constants and variables in Arduino. Provide examples of both.
6. What are character functions in Arduino? Provide examples.
7. Describe the usage of Pulse Width Modulation (PWM) in Arduino.
8. What are interrupts in Arduino programming? How are they used in real-time systems?
9. Describe the hardware architecture of Raspberry Pi and the different versions available.
10. How does Apache Installed on Pi?
11. Explain how to set up Raspberry Pi's network using GUI and command-line methods.
12. Discuss the importance of SSH in Raspberry Pi configuration. How do you enable and use SSH?

**(Ceiling 20 Marks)**

**PART B**

**Answer all questions. Each carries 5 marks.**

13. Explain the concept and role of control statements in Arduino. Provide examples of if, else, and switch.
14. Describe how loops (for, while, do-while) are used to automate repetitive tasks in Arduino programming.
15. How does the Arduino handle random number generation, and what are its uses in embedded systems?
16. Outline the basic steps for configuring Raspberry Pi and the setup of different operating systems.

17. Explain how to set up the GPIO pins on Raspberry Pi. Discuss testing and configuring the pins using libraries.
18. Explain how Python can be used for GPIO pin control on Raspberry Pi. Provide an example.
19. Discuss the steps involved in turning a Raspberry Pi into a web server using Apache. How would you configure and deploy a website?

**(Ceiling 30 Marks)**

**PART C: Answer any one question. One question carries 10 marks.**

20. Compare and contrast the use of Arduino and Raspberry Pi in embedded systems. Discuss their hardware capabilities, software environment, and practical applications.
21. Explain how Python is used on Raspberry Pi to interact with hardware components. Provide examples of Python scripts for GPIO manipulation and web server functionality.

**(1 x 10 = 10 Marks)**

1B6A25281

(Pages : 2)

Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Sixth Semester B.Sc Computer Science Degree Examination, April 2025

BCS6B14 - System Software

(2022 Admission onwards)

Time: 2 hours

Max. Marks : 60

**PART A:** Answer All questions (2 Marks Each)

1. Define system software and explain its significance.
2. Explain the concept of an assembler.
3. What is the function of a loader in system programming?
4. Define an interpreter and explain its role in system programming.
5. Define macro calls with an example.
6. Define intermediate code generation and explain its role in the compilation process.
7. Explain the concept of dynamic linking.
8. What is relocatability in the context of program loading?
9. What is the role of a symbol table in a compiler?
10. Define lexical analysis in the compilation process.
11. Describe the use of YACC in syntax analysis.
12. Explain the role of LEX in lexical analysis.

**(Ceiling 20)**

**PART B:** Answer All questions (5 Marks Each)

13. Discuss the features of macros and how they are used in system programming.
14. Describe the working of LEX and YACC tools for lexical and syntax analysis.
15. Compare and contrast macro definitions and instructions.
16. Discuss the various loader schemes and their types.
17. Explain the concept of dynamic binders and their role in system programming.
18. Describe the different types of compilers and their functions.
19. Explain the structure and function of a compiler in detail.

**(Ceiling 30)**

**PART C:** Answer any one question (10 Marks)

20. Explain the various phases of a compiler. Discuss the importance of each phase in the compilation process.
21. Discuss in detail the various loader schemes. Explain how dynamic loading and dynamic linking work, and their significance in relocatable programs.

1B6A25280

(Pages : 2)

Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Sixth Semester B.Sc Computer Science Degree Examination, April 2025

BCS6B13 - Mobile Operating System

(2022 Admission onwards)

Time: 2 ½ hours

Max. Marks : 80

**PART A**

**Answer all questions.**

- 1 List latest two versions of android.
- 2 What is AVD?
- 3 What is manifest file?
- 4 What is android resource?
- 5 How image resource can add in android studio?
- 6 What are intents?
- 7 Name any four commonly used controls in android.
- 8 Why table layouts are used in android?
- 9 What is the purpose of dynamic menu?
- 10 How dialogs used in android?
- 11 What is toast?
- 12 What is an activity?
- 13 Mention any two uses of shared preferences.
- 14 Why SQLite is used with android?
- 15 What is content provider?

(15 x 2 = 30, Maximum ceiling 25 marks)

**PART B**  
**Answer all questions**

- 16 Describe developmental history of android.
- 17 Explain about the fundamental components in android.
- 18 Distinguish between layout and colour resources.
- 19 Explain about different types of intents.
- 20 Write notes on: (a) map view control (b) gallery control
- 21 Draw a diagram for lifecycle of a fragment.
- 22 Compare tabbed and list navigation action bar activities.
- 23 How can read, write and update data using content URIs?

**(8 x 5 = 40, Maximum ceiling 35 marks)**

**PART C**  
**Answer any two questions**

- 24 Explain about the structure of an android application.
- 25 Explain how does an adapter act as a bridge between data and UI components.
26. What is service in android? Explain the life cycle of service.
27. List and explain different methods available in android to persist data.

**(2 x 10 = 20 marks)**

1B6A25279

(Pages : 2)

Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Sixth Semester B.Sc Computer Science Degree Examination, April 2025

**BCS6B12 - Computer Graphics**

(2022Admission onwards)

Time: 2 ½ hours

Max. Marks : 80

**PART A**

**Answer all questions. Each carries 2 marks.**

1. Define Computer Graphics and explain its applications.
2. Explain Random Scan displays.
3. What is a Pixel? Explain its significance in computer graphics.
4. Explain the DDA line drawing algorithm with an example.
5. Describe the Midpoint Circle Drawing Algorithm and its working principle.
6. Discuss the Scan-line Polygon Filling Algorithm.
7. What is homogeneous coordinate system in 2D transformations? Explain its significance.
8. Explain the concept of translation in 2D transformations with an example.
9. Describe the process of rotation in 2D transformations and give its matrix representation.
10. Define scaling in 2D transformations. How is it applied to a 2D object?
11. Explain the concept of Shear transformation and give an example.
12. Discuss the importance of window-to-viewport transformation in computer graphics.
13. Differentiate between RGB and CMY color models.
14. What is the significance of the YIQ color model in television systems?
15. Describe the basic tools and features of GIMP for image manipulation.

**(Ceiling 25 Marks)**

**PART B**

**Answer all questions. Each carries 5 marks.**

16. Compare and contrast the Raster and Random Scan methods of display. Discuss their advantages and limitations.
17. Discuss the significance of a frame buffer in raster scan displays. How does it affect image rendering?
18. Explain the concept of window-to-viewport transformation and give an example of its application.

19. Discuss the different types of polygon filling techniques.
20. What are the key operations in 2D transformations? Explain each operation with examples.
21. Describe the process of reflection in 2D graphics. Provide matrix representations for reflection along the X-axis, Y-axis, and origin.
22. What are the different types of reflections in 2D graphics. Explain with examples.
23. Describe Cohen-Sutherland line clipping algorithm in detail. How does it handle clipping?

(Ceiling 35 Marks)

### PART C

Answer any *two* questions. Each question carries 10 marks.

24. Discuss the various 2D transformation techniques in computer graphics. Explain translation, rotation, and scaling with appropriate matrix representations and examples.
25. Explain the concept of clipping in computer graphics. Discuss the polygon clipping algorithm in detail with example.
26. Discuss the different color models used in computer graphics, with special emphasis on RGB, CMY, and YIQ models. Provide examples of applications where each model is useful.
27. Describe the features and tools of GIMP used for image manipulation. Discuss its utility in adjusting image properties such as brightness, contrast, and sharpness, and explain its role in digital image editing.

(2 x 10 = 20 Marks)