

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(First Semester)
Branch - COMPUTER SCIENCE

PROBLEM SOLVING USING C PROGRAMMING

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Choose the method which uses a list of well-defined instructions to complete a task starting from a given initial state to end state. a) Algorithm b) Flowchart c) Program d) Pseudocode	K1	CO1
	2	_____ could include summaries of surveys, specification sheets or transport timetables. a) Graphs b) Tables c) Words d) Diagrams	K2	CO1
2	3	Who is the father of C language? a) Steve Jobs b) James Gosling c) Dennis Ritchie d) Rasmus Lerdorf	K1	CO2
	4	Show the value of the expression 4 % 3 in C is _____ a) 0.75 b) 0 c) 1.33 d) 1	K2	CO2
3	5	What is the index of the first element in a C array? a) 0 b) 1 c) -1 d) The index varies based on the array size.	K1	CO3
	6	The keyword used to transfer control from a function back to the calling function is _____ a) switch b) return c) go back d) goto	K2	CO3
4	7	Which operator connects the structure name to its member name? a) - b) -> c) . d) both . and ->	K1	CO4
	8	FILE is of type _____. a) int b) char * c) float d) struct	K2	CO4
5	9	Name the type of array generated in Command line argument. a) Single dimension array b) 2-Dimensional Square Array c) Jagged Array d) 2-Dimensional Rectangular Array	K1	CO5
	10	Show #include <stdio.h> refers to _____. a) Preprocessor directive b) Inclusion directive c) File inclusion directive d) File error handling directive	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain about Strong and weak claims.	K5	CO1
	(OR)			
	11.b.	Write a note on “Making choices and decisions”.		
2	12.a.	Explain the structure of C program with relevant examples.	K5	CO2
	(OR)			
	12.b.	Develop a program to print sum of digits using while loop in C.		
3	13.a.	Illustrate the concept of Two-dimensional arrays in C.	K3	CO3
	(OR)			
	13.b.	Build a C program to find out the factorial of a number using recursion.		
4	14.a.	Categorize the kinds of File operations in C.	K4	CO4
	(OR)			
	14.b.	Illustrate the fgets function and its usage for reading strings from files.		
5	15.a.	Elaborate the functions of fread and fwrite.	K6	CO5
	(OR)			
	15.b.	Discuss fseek() and rewind() operations in C.		

SECTION - C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Illustrate the essential steps in the execution of a C program.	K4	CO1
2	17	Explain about Gets and Puts function in C with relevant examples.	K5	CO2
3	18	Elaborate the functions malloc, calloc, and realloc for allocating dynamic memory.	K6	CO3
4	19	Compare and contrast "Structures with Unions" in C.	K4	CO4
5	20	Create a C program to Copy the content of one file to another file using command line arguments.	K5	CO5

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Second Semester)

Branch - **COMPUTER SCIENCE**

DATA STRUCTURES & ALGORITHMS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry EQUAL marks

$$(10 \times 1 = 10)$$

Module No.	Question No.	Question	K Level	CO
1	1	Which one of the following is the size of int arr [9] assuming that int is of 4 bytes? a) 9 b) 36 c) 35 d) None of the above	K1	CO1
	2	Which of the following algorithm follows divide and conquer approach a) Bubble sort b) Insertion sort c) Merge sort d) Selection sort	K2	CO1
2	3	What is the value of the postfix expression 6 3 2 4 + - *. a) 1 b) 40 c) 74 d) -18	K1	CO2
	4	Which of the following information is stored in a doubly-linked list's nodes. a) Value of node b) Address of next node c) Address of the previous node d) All of the mentioned	K2	CO2
3	5	What is the need for a circular queue. a) Effective usage of memory b) Easier computations c) To delete elements based on priority d) Implement LIFO principle in queues	K1	CO3
	6	Which algorithm is used to form the Level order traversal of a tree a) Breadth first search b) Depth first search c) Dijkstra's algorithm d) Prims algorithm	K2	CO3
4	7	What type of strategy used to a problem can be solved by combining optimal solutions to non-overlapping problems a) Dynamic programming b) Greedy c) Divide and conquer d) Recursion	K1	CO4
	8	Which of the following data structure used for Depth first search algorithm implementation a) Graph b) Stack c) Trees d) Queue	K2	CO4
5	9	What is the type of the algorithm used in solving the 8 Queens problem? a) Greedy b) Dynamic c) Branch and Bound d) Backtracking	K1	CO5
	10	Which of the following Approach is the prime example for Dijkstra's Algorithm a) Dynamic programming b) Back tracking c) Branch and bound d) Greedy approach	K2	CO5

Cont...

SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 × 7 = 35)

ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the purpose of structures with an example.	K5	CO1
	(OR)			
	11.b.	Explicate about the Sparse Matrices with an example.		
2	12.a.	Construct the Dynamic Memory Allocation with an example.	K3	CO2
	(OR)			
	12.b.	Utilize stack operations using arrays.		
3	13.a.	Illustrate about Heap sort with an example.	K3	CO3
	(OR)			
	13.b.	Build a Binary Tree Traversal with suitable example.		
4	14.a.	Distinguish Breadth First Search and Depth First Search with an example.	K4	CO4
	(OR)			
	14.b.	Analyze the Travelling salesman problem with examples.		
5	15.a.	List out the purpose of Prim's Algorithm.	K4	CO5
	(OR)			
	15.b.	Inference about the N-Queen problem with example.		

SECTION - C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Compare Quick sort and Merge Sort algorithms.	K4	CO1
2	17	List out the various operations of Linked List. Explain any three operations with examples.	K4	CO2
3	18	Analyze the AVL search Trees its rotation techniques with an example.	K4	CO3
4	19	Determine the knapsack problem with suitable example.	K5	CO4
5	20	Explain about the Dijkstra's algorithm with an example graph.	K5	CO5

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Third Semester)

Branch - **COMPUTER SCIENCE**

OBJECT ORIENTED PROGRAMMING USING JAVA

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Identify the tool used to compile Java code. a) JRE b) JDK c) JVM d) javac	K1	CO1
	2	_____ is the correct way to call a parent class constructor from a child class in Java. a) super() b) this() c) parent() d) superclass()	K2	CO1
2	3	The keyword used to declare a package in Java is _____. a) include b) package c) import d) namespace	K2	CO2
	4	Which of the following exceptions is a checked exception? a) ArrayIndexOutOfBoundsException b) NullPointerException c) FileNotFoundException d) ArithmeticException	K1	CO2
3	5	Choose the method of the Thread class is used to pause a thread's execution for a specified period. a) sleep() b) wait() c) pause() d) halt()	K1	CO3
	6	_____ is not part of the Java Collections Framework. a) ArrayList b) HashMap c) StringBuilder d) Vector	K2	CO3
4	7	What is the purpose of the Reader class in Java I/O? a) To write characters to an output stream b) To read bytes from an input stream c) To read characters from an input stream d) To write bytes to an output stream	K1	CO4
	8	_____ is the default selection mode for a JList. a) SINGLE_SELECTION b) MULTIPLE_INTERVAL_SELECTION c) SINGLE_INTERVAL_SELECTION d) NO_SELECTION	K2	CO4
5	9	How can you handle SQL exceptions in JDBC? a) try-catch blocks b) throw statements c) throws clauses d) finally blocks	K1	CO5
	10	The _____ JDBC driver type is used for direct communication with a database using native API. a) Type 1 b) Type 2 c) Type 3 d) Type 4	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Recall the lexical issues in Java. In that explain any two of them with relevant examples.	K1	CO1
	(OR)			
	11.b.	How to assign one object reference variable to another in Java? Discuss it with relevant examples.		
2	12.a.	Tabulate the different levels of access specifiers in Java to provide a variety of ways to access the class member.	K1	CO2
	(OR)			
	12.b.	Show the general form of an exception handling block with suitable examples.		
3	13.a.	Mention the different methods of Thread class in Java.	K2	CO3
	(OR)			
	13.b.	Demonstrate how to compute String length.		
4	14.a.	Outline the concept of File in Java.	K2	CO4
	(OR)			
	14.b.	Write down the steps required to set-up a simple JTable for displaying data.		
5	15.a.	With a neat labeled sketch mention the typical uses of JDBC.	K3	CO5
	(OR)			
	15.b.	Identify the main components of a lambda expression.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	What is a constructor in Java, and how does it differ from a method?	K1	CO1
2	17	Demonstrate a Nested Interface in Java.	K2	CO2
3	18	Construct a Java program to reverse the characters within a StringBuffer object using reverse().	K3	CO3
4	19	Show how to handle multiple selections in a JList and display the selected items.	K2	CO4
5	20	Express some common functional interfaces provided by the Java standard library.	K4	CO5

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Third Semester)

Branch - **COMPUTER SCIENCE**

DATABASE MANAGEMENT SYSTEMS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Question No.	Question	K Level	CO
1	The performance of a DBMS is measured by its ____ a) data b) size c) response time d) privacy	K1	CO1
2	An attribute of one table matching the primary key of another table is called ____ a) key b) relation c) unique key d) foreign key	K2	CO1
3	____ is a Single Row function. a) AVG() b) UPPER() c) MAX() d) COUNT()	K1	CO1
4	A ____ is a series of one or more logically related SQL statements you define to accomplish some task. a) function b) transaction c) view d) statement	K2	CO1
5	____ usually have two parts, a specification and a body. a) Function b) Procedure c) Packages d) Triggers	K1	CO1
6	Which of the following is raised when a SELECT INTO statement returns no rows? a) CASE_NOT_FOUND b) NOT_LOGGED_ON c) NO_DATA_FOUND d) ACCESS_INTO_NULL	K2	CO1
7	Document-based NoSQL databases have which characteristic? a) It supports transactions and joins. b) It is best suited for handling structured data. c) It stores data in a tabular format. d) It uses a hierarchical, JSON-like data model.	K1	CO1
8	Which of the following are the simplest NoSQL databases? a) Key-value b) Wide-column c) Document d) SQL SERVER	K2	CO1
9	Which of the following data type is depreciated? a) Double b) String c) Object d) Undefined	K1	CO1
10	In the mongo shell, the creation time of the ObjectId, retrieved by using the ____ method. a) getTime() b) getTimestamp() c) Timestamp() d) IdTime()	K2	CO1

Cont...

SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 × 7 = 35)

Question No.	Question	K Level	CO
11.a.	Identify the advantages and disadvantages of DBMS.	K3	CO2
	(OR)		
11.b.	Write about the structure of a relational model.		
12.a.	Inspect various group functions in SQL.	K4	CO3
	(OR)		
12.b.	Construct the different types of constraints in SQL.		
13.a.	Explain the PL/SQL structure.	K4	CO3
	(OR)		
13.b.	Examine triggers in PL/SQL.		
14.a.	Explain the types of NoSQL databases.	K5	CO2
	(OR)		
14.b.	Compare SQL vs NoSQL.		
15.a.	Inspect the terms in RDBMS and MangoDB.	K4	CO5
	(OR)		
15.b.	Examine how to create and delete nodes in graph based database.		

SECTION -C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks (3 × 10 = 30)

Question No.	Question	K Level	CO
16	Explain the different types of normal forms.	K5	CO4
17	Discuss about ORACLE DML statements.	K5	CO4
18	Discuss about implicit and explicit cursors in ORACLE.	K5	CO5
19	What are the different orientations of NoSQL? Explain.	K4	CO4
20	Examine the CURD operations of MangoDB.	K4	CO4

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fourth Semester)

Branch - COMPUTER SCIENCE

COMPUTER NETWORKS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

1. OSI stands for _____
(i) Operating system interface (ii) Optical service implementation
(iii) Open service Internet (iv) Open system interconnection
2. In layering, n layers provide service to _____
(i) n layer (ii) n-1 layer
(iii) n+1 layer (iv) nx2 layer
3. Most packet switches use this principle _____
(i) Stop and wait (ii) Store and forward
(iii) Store and wait (iv) Stop and forward
4. Which of the following protocol is not belongs to sliding window protocol.
(i) Stop and wait (ii) User Datagram Protocol
(iii) Go Back N (iv) Selective Repeat
5. _____ is the science and art of transforming messages to make them secure and immune to attacks
(i) Cryptography (ii) Calligraphy
(iii) Cryptanalysis (iv) Cartography

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

6. (a) Mention the names of network topologies.
OR
(b) Summarize the concept of attenuation and its types.
7. (a) Explain the advantages of Wimax in networking.
OR
(b) Outline the features of Multiplexing.
8. (a) Bring out the advantages of Circuit switching.
OR
(b) State the importance of Distance Vector routing algorithm.

Cont...

9. (a) Discuss about the TCP connection establishment.

OR

- (b) Analyze the nature of timers in TCP model.

10. (a) Narrate the importance of SMTP in application layer.

OR

- (b) Describe the features of Pretty Good Privacy (PGP) in brief.

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks

(5 x 6 = 30)

11. (a) Identify the various layers involved in TCP/IP reference model.

OR

- (b) Elucidate the various Data encoding techniques in networks.

12. (a) Summarize the working principle of Geostationary Earth Orbit (GEO) satellite.

OR

- (b) Enumerate the stop and wait protocol in detail.

13. (a) Summarize the features of TCP connection termination.

OR

- (b) Discuss about the Subnetting in networking.

14. (a) Examine the design issues in protocols at different levels.

OR

- (b) Difference between Flow Control and Congestion Control.

15. (a) Point out the significant characteristics of HTTP.

OR

- (b) Highlight the importance of Diffie Hellman algorithm.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – COMPUTER SCIENCE

MAJOR ELECTIVE COURSE – I : CYBER SECURITY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Which of the following is a key objective of Cyber Security?
(i) Entertainment
(ii) Protecting systems and networks from digital attacks
(iii) Increasing financial transactions
(iv) Reducing internet speed
- 2 What is a characteristic of Blockchain technology?
(i) Centralized control (ii) Immutable ledger
(iii) Requires physical storage (iv) Limited scalability
- 3 Which of the following is a common security threat in social media?
(i) Physical theft (ii) Phishing attacks
(iii) Broken hardware (iv) File compression
- 4 Which of the following is an example of a digital payment system?
(i) Netflix (ii) Unified Payment Interface (UPI)
(iii) Physical currency (iv) Television
- 5 Which of the following is a best practice for ensuring browser security?
(i) Disabling firewalls (ii) Using strong and unique passwords
(iii) Installing multiple browsers (iv) Regularly deleting all cookies and cache

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Discuss the importance of cyber security laws
OR
b Explain the role of cyber insurance in digital security.
- 7 a Describe the working process of blockchain technology.
OR
b Explain how SQL Injection can be prevented.
- 8 a Discuss the privacy concerns with social media platforms.
OR
b What is the role of flagging and reporting content on social networks?

Cont...

- 9 a What are the main components of e-commerce security?
OR
b Discuss the security challenges in digital payments.
- 10 a How can users configure Wi-Fi for security?
OR
b Explain the risks associated with downloading software from untrusted sources.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Discuss the impact of cyber security policies on businesses.
OR
b Explain the significance of digital citizenship and its relevance to cyber security.
- 12 a Analyze the challenges and future trends of blockchain technology.
OR
b Explore the various types of distributed computing security issues.
- 13 a Evaluate the best practices for online social media privacy.
OR
b Provide an in-depth discussion on Ransomware attacks using the case study of Cosmos Bank.
- 14 a Describe e-commerce security threats and possible solutions.
OR
b Discuss Unified Payment Interface (UPI) security in digital transactions.
- 15 a Explain the best practices for browser privacy.
OR
b What measures can be taken for cloud security?

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – COMPUTER SCIENCE

MAJOR ELECTIVE COURSE – I : INTERNET OF THINGS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- 1 What does **PaaS** stand for in the context of IoT platforms?
(i) Platform as a Service (ii) Process as a Service
(iii) Protocol as a Service (iv) Product as a Service
- 2 Which protocol is commonly used for low-power, low-data-rate IoT communications and is part of the IEEE 802.15.4 standard?
(i) Bluetooth (ii) IPv6
(iii) Wi-Fi (iv) ZigBee
- 3 Which term describes a small computer system integrated onto a single chip used in embedded systems?
(i) Transducer (ii) Microcontroller
(iii) Sensor (iv) Actuator
- 4 Which approach involves connecting various types of devices to the internet and integrating them into a single network?
(i) Networking (ii) Connectivity
(iii) Integration (iv) Interoperability
- 5 Which type of analytics focuses on processing and analyzing data as it is generated in real-time?
(i) Batch (ii) Predictive
(iii) Streaming (iv) Historical

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a Explain the concept of Sensor to Cloud Management in the context of IoT.
OR
b Write the role of Azure IoT Hub in IoT device management.
- 7 a Explain the role of IEEE 802.15.4 in the IoT ecosystem.
OR
b Explain the significance of Service Discovery Protocols in IoT.
- 8 a Explain the role of Microcontrollers in IoT systems.
OR
b Evaluate the significance of Design Methodology in developing IoT systems.

Cont...

- 9 a Analyze the role of 5G technology in enhancing the IoT ecosystem.
OR
b Explain the significance of Low Power Wide Area Networking (LPWAN) technologies in IoT applications.
- 10 a Evaluate the principal steps involved in knowledge discovery and dissemination in IoT data analytics.
OR
b Explain the concept of real-time analytics and its significance in managing IoT data.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Compare M2M (Machine to Machine) and D2C (Device to Cloud) communication in the context of IoT.
OR
b Explain the concept of IoT Platform as a Service (PaaS).
- 12 a Examine the layered architecture of IoT and its significance.
OR
b Evaluate the role of Infrastructure Protocols in IoT.
- 13 a Evaluate the impact of System on Chips in the design and development of IoT systems.
OR
b Explain the concept of parametric characterization in sensors.
- 14 a Analyze the role of Software Defined Networking (SDN) and Network Functions Virtualization (NFV) in improving the management and efficiency of IoT networks.
OR
b Explain the role of cloud computing in IoT analytics.
- 15 a Explain how big data analytics can leverage this data to enhance IoT applications.
OR
b Elaborate the challenges and future trends of IoT in healthcare.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – COMPUTER SCIENCE
MOBILE APPLICATION DEVELOPMENT

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- 1 What is Android?
(i) A web browser (ii) An operating system for mobile devices
(iii) A DBMS (iv) A programming language
- 2 How can you create a new Button programmatically in Android?
(i) Button button = new Button();
(ii) Button button = new Button(this);
(iii) Button button = findViewById(R.id.button);
(iv) Button button = new Button(context);
- 3 Which of the following is used to display a user input field in Android?
(i) TextView (ii) Button
(iii) ImageView (iv) EditText
- 4 Choose the URI format commonly used for sharing data using ContentProvider.
(i) http:// (ii) file://
(iii) content:// (iv) ftp://
- 5 _____ programming language is primarily used for developing Flutter applications.
(i) Java (ii) JavaScript
(iii) Python (iv) Dart

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a Write down the steps for Installing Android SDK Tools.
OR
b Explain the various phases of Mobile Application Development Life Cycle.
- 7 a How to create and display notifications in Android?
OR
b Discuss about adding action items to the action bar.
- 8 a Difference between basic views and picker views.
OR
b List the features of firebase.

Cont...

- 9 a Show how to access SMS Messages using a Content Provider?
OR
b Explain the different methods to send Email in Android.
- 10 a Summarize the different types of animations available in Flutter.
OR
b Show how to transfer data between screens in Flutter.

SECTION -C (30 Marks)

Answer ALL questions
ALL questions carry EQUAL Marks (5 x 6 = 30)

- 11 a What are the alternatives for building Mobile Apps? Explain any two of them.
OR
b List out the Mobile Application Services and discuss it.
- 12 a Discuss about linking activities using Intents.
OR
b Write down the steps to create and use Fragments.
- 13 a How to populate a ListView with Data? Explain it with relevant examples.
OR
b Illustrate the concept of saving and loading user preferences.
- 14 a Explain the different ways to share data between Android applications.
OR
b Show how to integrate location data with Google Maps.
- 15 a Distinguish between StatefulWidget and StatelessWidget in Flutter.
OR
b Implement the common layout patterns in Flutter.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – COMPUTER SCIENCE

ADVANCED JAVA PROGRAMMING

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Which way the constructor can be used for a Servlet?
(i) Initialization (ii) Constructor function
(iii) Initialization and Constructor function (iv) Setup() method
- 2 Which method is used to initialize a Servlet?
(i) init() (ii) start()
(iii) initialize() (iv) setup()
- 3 State that the JSP includes a mechanism for defining _____ or custom tags.
(i) static attributes (ii) global attributes
(iii) local attributes (iv) dynamic attributes
- 4 Name the java web applications packages.
(i) jar (ii) war
(iii) zip (iv) both jar and war
- 5 Mention the term JPA stands for _____.
(i) Java persistence API (ii) Java programming API
(iii) Java persistence Arguments (iv) Java platform Applications

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Analyze about JEE Technologies.
OR
b Describe about the architecture of JAVA.
- 7 a State about cookies and its types.
OR
b Define a Java program to dynamically change the color of a page.
- 8 a Bring out a Java program with a non-blocking read application.
OR
b Compare JSP vs Servlet.
- 9 a Explain about implicit objects with example in JAVA Programming.
OR
b State about JSTL and its Libraries in JAVA.
- 10 a Sketch about current persistence standards in JAVA.
OR
b Point out the concepts JPA specifications.

Cont...

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Describe about JEE server and JEE Container in detail using JAVA.
OR
b How JAVA is used for Enterprise Applications and explain it in detail?
- 12 a What do you mean by request dispatcher interface in JAVA explain it.
OR
b State the creation of cookies with Servlet.
- 13 a Develop a web application using JAVA Programming.
OR
b Describe in detail about the creation of index.jsp.
- 14 a Summarize about Spring MVC and Spring Architecture used in Java Web Framework.
OR
b Explain in detail about Expression Language in JAVA.
- 15 a Infer about the Architecture of JPA and how JPA works.
OR
b Identify the databases and its applications by using JAVA Language.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – COMPUTER SCIENCE

WEB TECHNOLOGIES

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- 1 Which of the following is the correct syntax of creating a standard navigation tab?
(i) `<ul class="navigation nav-tabs">` (ii) `<ul class="nav tab">`
(iii) `<ul class="nav nav-tabs">` (iv) `<ul class="navigation tabs">`
- 2 The plugin used to create a cycle through elements as a slidesho
(i) slideshow (ii) scrollspy (iii) carousel (iv) None of the above
- 3 Which of the following function in PHP can be used to test the type of any variable?
(i) showtype() (ii) gettype() (iii) settype() (iv) None of the above
- 4 Which of the following function in PHP returns a text in title case from a variable?
(i) toUpper(\$var) (ii) ucwords(\$var)
(iii) ucword(\$var) (iv) All of the above
- 5 What will be the output of the following program?

```
<?php
$a = 15;
function show()
{
    $a = 20;
    echo "$a";
}
show();
echo "$a";
```


(i) 2015 (ii) 2020 (iii) 1515 (iv) 0

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a Explain the concept of working with tooltip javascript plugin.
OR
b Discuss how to connect with popover javascript plugin.
- 7 a Describe the usage of buttons using bootstrap.
OR
b Enumerate the dropdown menus using bootstrap.
- 8 a Elucidate the navigation elements using bootstrap with example.
OR
b Explain the concept of pagination using bootstrap with example.
- 9 a Write a Credit Card Form using Bootstrap Layout Components.
OR
b Propose an E-commerce website using Bootstrap JavaScript Plugin.
- 10 a Design a student application form using Bootstrap.
OR
b Explain jquery class with coding.

Cont...

SECTION -C (30 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 x 6 = 30)

- 11 a With coding, explain database connectivity in php.

OR

- b Write a separate PHP file named echo.php that will process whatever elements it finds in the \$_REQUEST array, displaying the keys and values in a nicely formatted HTML table, with one row containing each key-value pair (with the key in the first column and the value in the second).

- 12 a Write two HTML files

named echopost.html and echoget.html containing substantially different HTML forms that submit their contents to the single PHP file described above for processing. The form in echopost.html should submit its contents using the POST method, and the form in echoget.html should submit using the GET method. Each page should have its own separate link on your home page, labeled appropriately. You should validate any files used to produce your forms, but you do not need to validate the output of the PHP file .

OR

- b For rotary club, the required components are as follows

- Every page should have:
 - Web site title and graphic. Put in its own <header> tag
 - Web site footer. Put in its own <footer> tag. For example, the footer might have copyright information or contact information.
 - Unordered list of all pages in the web site, that link to the web pages. The link will be the page name. For example: About Links must be relative.

Two Required pages

Main index page. The file name must be index.html

- About page. This might have things like who created the website, or info about your band, or your city, or company.

Optional pages. Must have at least four.

News page

- 13 a Create a web page for mobile sale , using the following componenets

- Page with video.
- Pages with info on a subject

Required HTML elements

- HEAD section on all pages
- At least one table. You don't need a table in all the pages, but you need a table on at least one page.
- Linked in images.
- HTML entities.
- Headings. Those <h1...6> tags.
- Paragraphs

"Style buttons with Bootstrap" Style all the buttons (there has to be at least one) with Bootstrap. Leave no button unstyled.

"Use 12 column layout" Pick at least page, and make it into a responsive multi-column layout using Bootstrap. Don't simply make a container with just one column, it is hard to get a sense of using the layout functions with such a simple example.

"Use Bootstrap menu bar" Put a Bootstrap menu bar on all your pages.

"Use a Bootstrap alert" Put at least one Bootstrap alert somewhere on your page.

"Use a Bootstrap Jumbotron" Properly use a Jumbotron at least once.

OR

- b Prepare an application to implement Electricity Bill.

- 14 a Create an application to Book Tickets.

OR

- b Create an application to implement Inventory System.

- 15 a With coding, explain jquery animations.

OR

- b With coding, explain jquery built in functions.

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Second Semester)

Branch - COMPUTER SCIENCE

MATHEMATICS - II

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

1. Which of the following sentence are not logical statement?
 - i) Rate of inflation exceeded 5.5 in January 2002.
 - ii) Mohan is a brave boy
 - iii) Why did you buy XYZ company stock?
 - iv) What is your opinion about students unrest at present?
2. Express the following statement through appropriate symbol: He is practical but not quiet
 - i) $p \wedge \sim q$
 - ii) $\sim q \wedge \sim p$
 - iii) $\sim (p \wedge q)$
 - iv) $\sim (\sim p \vee \sim q)$
3. The necessary and sufficient conditions for a relation R to be _____ is $R = R^{-1}$
 - i) Symmetric
 - ii) not symmetric
 - iii) reflexive
 - iv) not reflexive
4. Let $A = \{2, 4, 6\}$, $B = \{a, b\}$. Then $R = \{(2, a), (2, b), (4, a)\}$ is a relation from A to B .
The inverse relation of R is _____
 - i) $R^{-1} = \{(2, a), (4, a), (2, b)\}$
 - ii) $R^{-1} = \{(a, 2), (b, 2), (4, a)\}$
 - iii) $R^{-1} = \{(2, a), (4, a)\}$
 - iv) $R^{-1} = \{(a, 2), (a, 4), (b, 2)\}$
5. If every student gets a separate chair and no chair is left vacant, then this is a _____ function
 - i) One-to-one
 - ii) One-to-one onto
 - iii) Many-one -into
 - iv) Many-one-onto
6. A function which possesses an inverse is said to be _____
 - i) Inverse function
 - ii) constant function
 - iii) invertible
 - iv) bijection
7. Two vertices are said to be _____ if they are connected by an edge
 - i) Pendant
 - ii) isolated
 - iii) adjacent
 - iv) finite graph
8. A graph in which loop[s and multiple edges are allowed is called a _____
 - i) Pseudo graph
 - ii) simple graph
 - iii) directed graph
 - iv) finite graph
9. The adjacency matrix A is symmetric _____ for all i and j
 - i) $a_{ij} = a_{ji}$
 - ii) $a_{ij} \neq a_{ji}$
 - iii) $a_{ij} = 0$
 - iv) $a_{ij} = 1$
10. A graph with a closed path that includes every vertex exactly once is called a _____
 - i) Euler graph
 - ii) Hamiltonian graph
 - iii) Planar graph
 - iv) directed graph

SECTION - B (25 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 5 = 25)

11 a Demonstrate Conjunction and Disjunction.

OR

b Let p be the statement 'South-West monsoon is very good this year' and q be the statement 'Rivers are rising'. Give the verbal translations of statement a)

- a) i) $p \vee \sim q$
- ii) $\sim (\sim p \vee \sim q)$

12 a Explain properties of relations.

OR

b Let $A = \{1, 2, 3, 4\}$. Given a relation of R on A which is neither symmetric nor antisymmetric

Cont...

- 13 a If N is the set of natural numbers, then show that the function $f: N \rightarrow N$ defined by $f(x) = x^2$ is one-one into function

OR

- b Show that composition of function is associative.

- 14 a Prove that the number of vertices of odd degree in a graph is always even

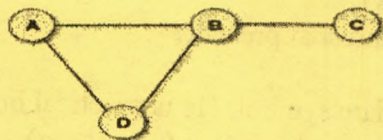
OR

- b Show that if a graph has exactly two vertices of odd degree, there must be a path joining these two vertices

- 15 a Explain representation of multigraph

OR

b



Utilize adjacency and incidence matrix to examine the graph given above.

SECTION -C (40 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 8 = 40)

- 16 a Construct the truth table for the following and write the truth set $p \Rightarrow [(q \vee r) \wedge \sim (p \Leftrightarrow \sim r)]$

OR

- b Examine the validity of following argument using truth table.

$$p \Rightarrow q$$

$$q \Rightarrow p$$

$$\therefore p \vee q$$

- 17 a Let N be the set of all natural numbers. The relation R on the set $N \times N$ of ordered pairs of natural numbers is defined as: $(a, b)R(c, d)$ if and only if $ad = bc$. Prove that R is an equivalence relation.

OR

- b Explain Partial order relations and show that the relation subset $\subseteq$ defined on the power set $P(A)$ of the set A is a partial order relation.

- 18 a If R is the set of real numbers, then show that the function, $f: R \rightarrow R$ defined by $f(x) = 5x^3 - 1$ is one-one onto function

OR

- b If $f: A \rightarrow B$ and $g: B \rightarrow C$ are invertible functions, then prove that $g \circ f: A \rightarrow C$ is also invertible and $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$

- 19 a Demonstrate the following: Simple graph, multigraph and Pseudo graph.

OR

- b Prove that a simple graph G with n vertices and k components cannot have more than $\frac{1}{2}(n - k)(n - k + 1)$ edges

- 20 a Prove that an undirected graph G is Eulerian if and only if it is connected and each vertex has even degree.

OR

- b Explain shortest path in a weighted graph.

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