PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc(SS) DEGREE EXAMINATION MAY 2025
(First Semester)

Branch – SOFTWARE SYSTEMS (Five Years Integrated)

PROBLEM SOLVING AND 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	The format specifier that is used to read or write a character is ___ a) %f b) %d c)%c d) %s	K1	CO1
	2	If a=3, b=5 the value of the expression ++a+b++ is____ a) 10 b) 9 c)8 d)7	K2	CO1
2	3	Name the loop that executes at least once. a) For b) If c) do … while d) while .. do	K1	CO2
	4	Choose a syntax for C Ternary Operator from the list. a) condition ? expression1 : expression2; b) condition : expression1 ? expression2; c) condition ? expression1 < expression2; d) condition < expression1 ? expression2;	K2	CO2
3	5	int a[10] will reserve how many locations in the memory? a) 11 b) 10 c) 9 d)40	K1	CO3
	6	Which of the following is not a pointer declaration? a) char a[10]; b) char a[] = {'1', '2', '3', '4'}; c) char *str; d) char a;	K2	CO3
4	7	If a variable is a pointer to a structure, then which of the following operator is used to access data members of the structure through the pointer variable? a) . b) & c) * d) (->)	K1	CO4
	8	What is the size of a C structure.? a) C structure is always 128 bytes. b) Size of C structure is the total bytes of all elements of structure. c) Size of C structure is the size of largest element. d) 16KB	K2	CO4
5	9	Which function will return the current file position for stream? a) fgetpos() b) fseek() c) ftell() d) fsetpos()	K1	CO5
	10	EOF is an integer type defined in stdio.h and has a value _____ a) 1 b) 0 c) Null d) -1	K2	CO5

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.	What are the commonly used flowchart symbols? Draw the symbols and mention their purposes.	K1	CO1
		(OR)		
	11.b.	Explain various types of operators available in C.		
2	12.a.	Write a note on modular programming and its advantages. Write a function to find the length of the third side of the triangle, if the values for the 2 sides are given. Use the formula a2 = b2 + c2 - 2bc cos(Θ), To use the math library cosine function (cos), since, its argument angle in radians instead of degrees. To convert an angle from degrees to radians, usePI/180 * angle.	K3	CO2
		(OR)		

2.	12.b.	What are looping statements? Explain while, for, do while statements with an example	K3	CO2
3	13.a.	Write a function called letter_grade that has a type int input parameter called points and returns through an output parameter gradep the appropriate letter grade using a straight scale (90–100 is an A, 80–89 is a B, and so on). Return through a second output parameter (just_missed) an indication of whether the student just missed the next higher grade (true for 89, 79, and so on)	K3	CO3
		(OR)		
	13.b.	Write an indexed for loop to fill an array prime such that element prime[0] contains the first prime number, prime[1] the second prime number, and so on. The prime numbers will be provided as data. Also, write a loop that calculates the sum of all the prime numbers stored		
4	14.a.	What are self referential structures? Create a stack using Linked list, write functions for Push and Pop.	K4	CO4
		(OR)		
	14.b.	Numeric addresses for computers on the international network Internet are composed of four parts, separated by periods, of the form xx.yy.zz.mm where xx , yy , zz , and mm are positive integers. Locally, computers are usually known by a nickname as well. You are designing a program to process a list of Internet addresses, identifying all pairs of computers from the same locality. Create a structure type called address_t with components for the four integers of an Internet address and a fifth component in which to store an associated nickname of ten characters. Your program should read a list of up to 100 addresses and nicknames and sort them based on nicknames.		
5	15.a.	What is a file pointer? What are the various types of files available? List the methods available for binary file processing.	K1	CO5
		(OR)		
	15.b.	Describe in detail about storage classes.		

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	List and explain the C language elements.	K1	CO1
2	17	Explain about all types of looping structures. Write a program with nested loops and explain the scope of variables defined in different loops.	K3	CO2
3	18	Write a C program to find the length of the string without using library function. Explain the logic.	K3	CO3
4	19	What are array of structures? Consider A catalog listing for a textbook consists of the authors' names, the title, the publisher, and the year of publication. Declare a structure type catalog_entry_t and a variable book, and write a program to list all the books in that catalog.	K4	CO4
5	20	Write a note on various file opening modes. Write a program that reads a collection of numbers from a file indata.txt and writes each number rounded to 2 decimal places on a separate line of file outdata.txt	K4	CO5

Z-Z-Z   END