NEW

2016

BCA

1st Semester Examination

PROGRAMMING IN C

PAPER—1102

Full Marks : 70

Time : 3 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Attempt *Q. No. 1* and any *four* from the rest.

1. Attempt any *five* questions : 5×2

(a) How a static variable works in a C functions ?

(b) How command line arguments are passed through a C program ?

(c) Distinguish betweeen source code and object code.

(d) What is the difference between 'I' and 'II'?

(e) What are the limitations of Array?

(f) What is the difference between a 'Struct' and an 'Union' in C?

(g) Distinguish between entry controlled loop and exit controlled loop.

2. (a) How comments in C program are given? Explain with an example. What is the purpose of comments? 1+1+1

(b) How will you convert the value of a character into ASCII? 1

(c) What happens if an integer number is subtracted and added to a pointer? 2

(d) What is a conditional operator? Give its syntex and application with an example. Why the expressions in the conditional operator are called ternary? 1+2+1

(e) Write a function using recurssion to calculate the nth fibonacci number. 5

3. (a) Discuss different types of loops used in C with an example of each loop. 6

(b) What is the purpose of 'break' and 'continue' statement in a loop? 2

(c) What is the difference between an array of pointers and a pointer to an array. Explain with an example. 2

(d) Write a program in C to calculate the sum of the diagonal elements of a given square matrix. 5

4. (a) Explain different storage classes used in C. 4

(b) What is an escape sequence in C ? What is the significance of '\v' and '\b' escape sequences ? 1+2

(c) What are the advantages and disadvantages of recurssion ? 3

(d) Write a C program to calculate the GCD of any two given numbers. 5

5. (a) Discuss function prototype, function definition and function call. 4

(b) What is pointer to a function ? How it declared ? Give an example. 1+1+1

(c) Explain 'call by value' and 'call by reference' with a suitable example. 3

(d) Write a function in C that returns the reverse of an integer number given as an input. 5

6. (a) Explain briefly any 4 string operations which can be performed using built-in function in C. 4

(b) What is dynamic memory allocation ? What is the use off malloc function in C ? What a malloc function returns ? 2+1+1

(c) What is the use of a null character in context of string ? 1

(d) Write a program in C to multiply two given matrices. 6

7. (a) What is FILE pointer in C ? How it is used in handling file in C ? 1+2

(b) Explain different file opening modes in C. 3

(c) What is the use of seekg, tellg, seekp and tellp functions in file handling in C ? 3

(d) Write a program in C to copy the contents of one file to another file. (Take the file names as an input) 6

———

12. Design a Buffer register and show the following result :

Input = 1010

Output = 1010

13. Design a ripple counter using J-K flip-flop. 30

14. Design a J-K master slave flip-flop and verify its result. 30

15. Design a 4 bit bidirectional shift register. 30

16. Design asynchronous up counter of the following MOD using IC-7476. 30

(i) MOD 10 (ii) MOD 5

17. Design a clocked SR and J-K flip-flop with preset and clear using NAND gates only. 30

18. Design a 4 bit bidirectional shift register. 30

19. Design AND and OR operation using DTL and establish its truth table. 30

20. Construct astable multivibrator using IC 555 timer. Measure its frequency and duty cycle by CRO.