

CP-9880

Sub. Code

96413

B.Sc. DEGREE EXAMINATION, NOVEMBER 2018

First Semester

Computer Science

PROGRAMMING IN C

(2016 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What are identifiers? Give example.
2. How will you define symbolic constants?
3. Define Array.
4. How will you terminate a loop?
5. Illustrate declaring and initializing string variable.
6. List any two string handling functions.
7. How will you access the member of structure?
8. Define pointer.
9. What are the different modes of opening a file in C?
10. Write short note on: Macro substitution.

Part B

(5 × 5 = 25)

Answer **all** questions.

11. (a) Tabulate the arithmetic operators and their precedence.

Or

- (b) Write a C program to read and write characters.

12. (a) Differentiate between '*while*' and '*do-while*' statement with example.

Or

- (b) Write a C program to find the transpose of a matrix.

13. (a) Define function. How will you declare and call user defined function? Give example.

Or

- (b) Write a C program to display month names using strings.

14. (a) What is structure? Illustrate the use of array of structures.

Or

- (b) How will you access the address of integer, char, float and double variable? Give example.

15. (a) Write short note on: Random Access File.

Or

- (b) Write short note on: Macro substitution.

Part C

(3 × 10 = 30)

Answer **all** questions.

16. (a) (i) Explain about type conversion in expressions. (6)
- (ii) List the shift operators and their purpose. (4)

Or

- (b) Explain the 'switch' statement with example C program to count the number of vowels in a given string.
17. (a) (i) How will you pass 'hello world' string as argument to a function? Explain. (6)
- (ii) Illustrate the use of function returning values. (4)

Or

- (b) Write a C program to display your date of birth using union.
18. (a) Write a C program to open, write 'Good Day' and close text file.

Or

- (b) Explain about the Nested 'if' structure with suitable example.
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CP-9881

Sub. Code

96415

B.Sc. DEGREE EXAMINATION, NOVEMBER 2018

First Semester

Computer Science

MATHEMATICS ALGEBRA AND CALCULUS (ALLIED)

(2016 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Find the roots $(x + 2)(x - 3) = 0$.
2. State Descarte's rule of sign.
3. Define singular matrix.
4. Find the eigen values of the matrix $A = \begin{bmatrix} 4 & 1 \\ 3 & 2 \end{bmatrix}$.
5. Define minimum value of a function.
6. Find $\frac{dy}{dx}$ if $y = e^x \sin^2 x$.
7. Evaluate $\int \sin^4 x dx$.

8. Find the Fourier constant for $f(x) = k$, a constant, in the interval $(0, 2\pi)$.
9. Solve : $\tan y \sec^2 x dx + \tan x \sec^2 y dy = 0$.
10. Solve : $(D^2 - 4D + 3)y = 0$.

Part B**(5 × 5 = 25)**Answer **all** questions.

11. (a) Solve the equation $x^5 - x^4 + 8x^2 - 9x - 15 = 0$ if $\sqrt{3}$ and $1 - 2i$ are two of its roots.

Or

- (b) If α, β, γ are the roots $x^3 + px^2 + qx + r = 0$ find the value of $\Sigma\left(\frac{1}{\alpha}\right)$, $\Sigma\left(\frac{1}{\alpha\beta}\right)$ and $\Sigma\alpha^3$.

12. (a) Find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & 2 \\ 0 & 2 & 1 \\ -1 & 2 & 2 \end{bmatrix}$.

Or

- (b) Verify Cayley-Hamilton theorem for $A = \begin{bmatrix} 1 & 3 & 7 \\ 4 & 2 & 3 \\ 1 & 2 & 1 \end{bmatrix}$.

13. (a) Show that the maximum value of $\left(\frac{1}{x}\right)^x$ is $e^{1/e}$.

Or

- (b) Verify Euler theorem for the function $f(x) = x^3 - 2x^2y + 3xy^2 + y^3$.

14. (a) Evaluate $\int \frac{dx}{4x^2 - 4x + 2}$.

Or

- (b) Find the half-range Fourier sine series for $f(x) = x$ in $(0, \pi)$.

15. (a) Solve $x \frac{dy}{dx} + y \log_x = e^x x^{1 - \frac{\log x}{2}}$.

Or

- (b) Solve : $(D^3 - 3D^2 + 4D - 2)y = e^x$.

Part C

(3 × 10 = 30)

Answer **all** questions.

16. (a) Transform the equation $x^4 - 4x^3 - 18x^2 - 3x + 2 = 0$ into one which does not contain the third term.

Or

- (b) Find the eigen values and eigen vectors of

$$A = \begin{bmatrix} 2 & -1 & 2 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}.$$

17. (a) Find the condition satisfied by a, b, c , so that the following system of equations may have a solution :

$$x + 2y - 3z = a$$

$$3x - y + 2z = b$$

$$x - 5y + 8z = c$$

Or

- (b) Prove that the maximum rectangle inscribed in a circle is a square.
18. (a) Find the Fourier series for the function $f(x) = \frac{\pi - x}{2}$ in $0 \leq x \leq 2\pi$.

Or

- (b) Solve : $(D^2 + 1)y = x^2 e^{2x} + x \cos x$.
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