

2022-25**Full Marks : 60****Time : 3 Hours**

Candidates are required to give their answer in their own words as far as practicable. Their figures in the margin indicate full marks.

Answer from both the Groups as directed.

Group - A**(Compulsory)**

Very short answer type question.

$1 \times 10 = 10$

1. Solve all questions :

- (i) What are the basic data types in C/C++ ?**
- (ii) How do you declare an integer variable in C/C++ ?**
- (iii) What is break statement ?**

- (iv) What is `<stdio.h>` Header File ?
- (v) What is the extension of saving file in C++ ?
- (vi) What is keyword ?
- (vii) Write the syntax of array in C/C++.
- (viii) What is pointer ?
- (ix) What is function ?
- (x) What is difference between comma and semi colon operator ?
2. What is Operator ? Explain any **five** types of operator. 5

Group - B

Solve any **three** questions from the following :

$$15 \times 3 = 45$$

3. (a) Differentiate between `<iostream.h>` and `<conio.h>`. 5

- (b) Differentiate between `gets()` and `puts()`. 5
- (c) Differentiate between `clrscr()` and `getch()`. 5
4. (a) Write the syntax of (a) if -else (b) nested if-else. 5
- (b) WAP in C/C++ to find greater between two numbers. 5
- (c) WAP in C/C++ to find input year is leap or not ? 5
5. (a) What is the difference between call by value and call by reference function ? Explain with examples. 10
- (b) WAP in C/C++ to find factorial of any digit. 5
6. What is the purpose of a constructor in C++ ? How many its types. Explain with the help of suitable programming examples. 15

7. What is Inheritance ? Explain its types with the help of suitable programming examples.

15

(a) What is pointer to member function ?

(b) What is pointer to member function in C++?

(c) What is friend function in C++?

(d) What is友函数 in C++?

(e) What is friend class in C++?

(f) What is友类 in C++?

(g) What is the difference between const and volatile in C++?

(h) What is left side function in C++?

(i) Explain with example.

(j) What is friend function in C++?

(k) What is友函数 in C++?

(l) What is友类 in C++?

(m) Explain with example.

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CGP 1600

2022-25

Full Marks : 60

Time : 3 Hours

Candidates are required to give their answer in their own words as far as practicable. Their figures in the margin indicate full marks.

**Group - A
(Compulsory)**

1. Choose the correct answer for the following :
 $1 \times 10 = 10$

- (i) A decimal counter has states.
 - (a) 5
 - (b) 10
 - (c) 15
 - (d) 20
- (ii) The primary memory (also called main memory) of a personal computer consists of :
 - (a) RAM only
 - (b) ROM only
 - (c) Both RAM and ROM
 - (d) Cache memory

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P.T.O.

- (iii) Cache memory acts between :
- (a) CPU and RAM
 - (b) RAM and ROM
 - (c) ROM and Hard Disk
 - (d) None
- (iv) Von Neumann architecture is
- (a) SISD
 - (b) SIMD
 - (c) MIMD
 - (d) MISD
- (v) Which of the following Logical operations is represented by the + sign in Boolean algebra ?
- (a) AND
 - (b) OR
 - (c) NOT
 - (d) None
- (vi) Which of the following is **not** a pointing device ?
- (a) Mouse
 - (b) Joystick
 - (c) Light Pen
 - (d) Digitizer
- (vii) Which of the following is **not** an output device ?
- (a) Monitor
 - (b) Printer
 - (c) Headphone
 - (d) Scanner
- (viii) How many select lines would be required for an 8-Line -to -1-line multiplexer ?
- (a) 2
 - (b) 4
 - (c) 8
 - (d) 3
- (ix) The CISC stands for :
- (a) Computer Instruction Set Compliment
 - (b) Complete Instruction Set Compliment
 - (c) Computer Indexed Set Components
 - (d) Complex Instruction Set Computer
- (x) A decoder converts n inputs to outputs.
- (a) n
 - (b) n^2
 - (c) 2^n
 - (d) n^n
2. What is difference between RAM and ROM ?
- 5

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P.T.O.

Group - B

Answer any **three** questions of the following :
 $15 \times 3 = 45$

3. Convert the following numbers :

(a) $(234)_{10} = ()_{16}$

(b) $(1001110)_2 = ()_{16}$

(c) $(254)_8 = ()_2$

(d) $(BCD)_{16} = ()_{10}$

(e) Find 2's complement of $(101110011)_2$

4. (a) Simplify by using the Karnaugh map.

$$F(a, b, c, d) = \Sigma (0, 1, 4, 5, 7, 8, 11, 14, 15)$$

(b) Explain J Flip- Flop with a truth table and diagram.

5. (a) What is difference between RISC and CISC ?

(b) Explain instruction set and addressing modes of 8086 architecture ?

6. Explain Cache memory and Associative memory in a computer system ?

7. Write short notes on :

(a) Direct Memory Access

(b) Interrupt-Driven I/O

2022-25

Full Marks : 100

Pass marks : 40

Time : 3 Hours

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परीक्षार्थी यथासम्भव अपने शब्दों में ही उत्तर दें। उपांत के अंक पूर्णांक के बोतक हैं।

Answer from both the Groups as directed.

Group - A

- 1. (a) Answer these questions in either one word or one sentence.** $1 \times 5 = 5$
- (i) Define communication.
 - (ii) What are the types of communication ?
 - (iii) Give an example of non-verbal communication.

- (iv) Is listening an active skill ?
- (v) What is the full form of C.V. ?
- (b) Write True/False : 1×5=5
- (i) Writing is an active skill.
 - (ii) Verbal communication takes place without the help of words.
 - (iii) An advertisement is usually a short form of writing.
 - (iv) Noise is a barrier to effective communication.
 - (v) A rich vocabulary is a condition for effective communication.
2. Write a short note on any **one** of the following : 5
- (a) Advertisement writing
 - (b) Essay writing
3. How is an application different from a letter ? 5

OR

Write an advertisement to promote the use of solar energy in India.

- Group - B**
- Answer any **four** of the following : $20 \times 4 = 80$
4. Define Listening. Discuss the principles of good listening.
5. Write a note on 'Writing' as a language skill.
6. Write an essay on any **one** of the following topics :
- (a) Corruption
 - (b) Population
 - (c) Cleanliness
7. (a) Write an application to the Registrar of your university requesting him for the grant of scholarship to study abroad.
- (b) Write a letter to your father describing the visit of the Hon'ble Chancellor to your college.
8. (a) You are an MBA degree holder from a recognized institution. Write a Resume to be sent to the CEO of Amazon seeking a job befitting your qualification.
- (b) Expand the ideas contained in any **one** of the following is about **100** words.
- (i) Penny wise pound foolish.
 - (ii) Honesty is the best policy.
 - (iii) Time is money.

9. (a) Write down the **synonyms** of the following words : $1 \times 5 = 5$

- (i) Effective
- (ii) Relevant
- (iii) Proper
- (iv) Competent
- (v) Generous

(b) Write down the **antonyms** of the following words : $1 \times 5 = 5$

- (i) Moral
- (ii) Mobile
- (iii) Agile
- (iv) Polyglot
- (v) Conservative

(c) Make sentences with the following :

$2 \times 5 = 10$

- (i) Get through
- (ii) Call off
- (iii) Get down
- (iv) in tune with
- (v) in the guise of

2022-25

Full Marks : 100

Time : 3 Hours

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Group-A is compulsory. Answer any **four** from **Group-B**.

**Group - A
(Compulsory)**

1. Answer the following questions :
 $1 \times 10 = 10$

- (i) The equation of circle whose centre is (o, h) and radius a is
(ii) the polar equation of an ellipse

$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ with the centre as pole
is

- (iii) The equation of the directrix of the parabola $y^2 = 4ax$ is
- (iv) The parametric equation of the hyperbola $xy = c^2$ is
- (v) $\frac{d^n}{dx^n}(x^n) = \dots$
- (vi) If $y = \log(\sin x)$, then $y_3 = \dots$
- (vii) The asymptote parallel to y axis for the curve $xy - 4y - 3x = 0$ is
- (viii) State Taylor's theorem.
- (ix) The curvature of $y = 3x + 2$ is
- (x) State Leibnitz theorem

2. Find the foci and eccentricity of $3x^2 + 4y^2 = 12$.

5

3. If $y = x^2 \log x$, find y_3 .

5

Group - B

Answer any four questions :

$20 \times 4 = 80$

4. (a) Prove that : $r^2 = p^2 + \left(\frac{dp}{d\Psi} \right)^2$
- (b) Find the asymptote of the curve $2y^3 + 3y^2x + 3yx^2 + x^3 - y^2 - x^2 - x = 0$.

10

10

5. (a) Find the maximum and minimum of $2x^3 - 21x^2 + 36x - 20$.

10

(b) Find the condition that

$x \cos \alpha + y \sin \alpha = p$ may be a tangent to the curve $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.

10

6. (a) Verify Euler's theorem when $u = \frac{x(x^3 - y^3)}{x^3 + y^3}$

10

(b) Obtain the Maclaurin's expansion of $e^x \cos x$.

10

7. (a) If $y = \operatorname{Cos} h(\sin^{-1} x)$, prove that

$$(1-x^2)y_{n+2} - x(2n+1)y_{n+1} = (n^2+1)y_n. \quad 10$$

(b) If e_1 and e_2 be the eccentricities of the

hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ and $\frac{x^2}{a^2} - \frac{y^2}{b^2} = -1$; show

that $\frac{1}{e_1^2} + \frac{1}{e_2^2} = 1$

10

8. (a) Transform the equation

$x^2 - 3y^2 + 4x + 6y = 0$ to parallel axes through
the point $(-2, 1)$. 10

(b) Find the polar equation of the conic whose
latus rectum is $2l$, eccentricity e and focus
being the pole. 10

9. (a) The normal at the point $(at_1^2, 2at_1)$ meets
the parabola $y^2 = 4ax$ again at the point

$(at_2^2, 2at_2)$. Prove that $t_2 = -t_1 - \frac{2}{t_1}$. 10

(b) Reduce the equation

$9x^2 - 24xy + 16y^2 - 18x - 10y + 19 = 0$ to the
standard form. 10
