Centre of Computer Education
Bachelor of Computer Applications (BCA)

Guidelines for the Entrance Test

a) BCA Admissions will be done on the basis of Entrance Test and subsequent interview.

b) The entrance examination for admission to the BCA Course will consists of a written test of 200 Marks.

c) The interview shall carry 100 marks.

d) The final result shall be prepared out of total 300 marks.

e) There shall be one paper of three hours, comprising of 150 objective/short answer type questions. The paper shall have 70 questions from Mathematics, 40 questions from Analytical Ability and Logical Reasoning, General Knowledge and General Science, 20 questions from Computer Awareness and 20 questions from General English.

Syllabus for the Entrance Test

The questions in this paper will cover: Logical Reasoning, Quantitative Reasoning, Intermediate level Mathematics, Vocabulary, Intermediate level Computer Awareness, English Comprehension and Verbal Ability.

Mathematics:

Algebra: Fundamental Operations in Algebra, Expansion, Factorization, Quadratic Equations, Indices, Logarithms, Arithmetic, Geometric and Harmonic Progressions, Binomial Theorem, Permutations and Combinations;

Probability and Statistics : Basic concepts of Probability Theory, Averages, Frequency Distributions, and Measures of Dispersions and Skewness Binomial, Poisson, Normal Distributions, Curve Fitting, and Principle of Least Squares, Correlation and Regression.

Arithmetic: Ratios and Proportions, Problems on Time-Work, Distance-Speed, Percentage.

Basic Set Theory and Functions: Set, Relations and Mappings.

Mensuration: Areas, Triangles and Quadrilaterals, Area and Circumference of Circles, Volumes and Surface Areas of Simple Solids such as Cubes, Spheres, Cylinders and Cones.

Limits, Continuity and Differentiability, Differentiation, Application of Derivatives, Indefinite and Definite Integration, Differential Equations, Co-ordinates and Straight Lines, Circles, Conic Sections, Complex Numbers, Sequences and Series, Exponential and Log Series, Determinants and Matrices.

Analytical Ability, Logical Reasoning, General Knowledge and General Science

General Aptitude: The main objective of this section is to assess the General Aptitude of the candidate to pursue Computer Application and Software Profession.

Computer Awareness:

Computer Basics: Organization of a Computer, Central Processing Unit (CPU), Structure of Instructions in CPU, Input / Output Devices, Computer Memory, Memory Organization, Back-up Devices. Operating System.

Data Representation: Representation of Characters, Integers and Fractions, Binary and Hexadecimal representations, Binary Arithmetic: Addition, Subtraction, Division, Multiplication.

Logic Algebra: Boolean Algebra, Theorems, Switching Functions, Disjunctive and Conjunctive, Canonical forms of switching functions, Combinational and Sequential Circuits.

Computer Architecture: Block Structure of Computers, Communication between Processor and I/O Devices, Interrupts.

Computer Language: Algorithms, Flow Chart, Control Structures, Design of Algorithm, Concepts of Low Level, Intermediate Level and High Level Language Programming in 'C'.

General English:

Questions in this section will be designed to test the candidates' general understanding of the English language. There will be questions on the following topics: Comprehension, Vocabulary, Basic English Grammar (like usage of correct forms of verbs, prepositions and articles), Word power, Synonyms and Antonyms, Meanings of words and phrases, Technical writing.

BCA
Sample Questions

1. PLACID means
   a) Clear   b) Calm   c) Enjoyable   d) Dull

2. Food subsidy leads to which of the following?
   a) Sense of insecurity   b) Increased dependence
   c) Shortage of food grains   d) Decrease in food grains production

3. Choose the one which can be substituted for the given sentence.
   'An entertainer who performs difficult physical actions'.
   a) Clown   b) Gymnast   c) Magician   d) Acrobat

4. If $\left| z^3 + \dfrac{1}{z^3} \right| \le 2$, then $\left| z + \dfrac{1}{2} \right|$ can not exceed

   a) 2   b) 1   c) $\sqrt{2}$ d) $\sqrt{2} - 1$

5. An eight digit number divisible by 9 is to be formed by using 8 digits out of the digits 0,1,2,3,4,5,6,7,8,9 without replacement. The number of ways in which this can be done is
   a) $9!$ b) $2(7!)$ c) $4(7!)$ d) $36(7!)$

6. If α, β, γ are the roots of $x^3 + ax^2 + b = 0$ then the determinant $\Delta = \begin{vmatrix} \alpha & \beta & \gamma \\ \beta & \gamma & \alpha \\ \gamma & \alpha & \beta \end{vmatrix}$ equals

   a) $-c^3$ b) $a^3 - 3b$ c) $a^2 - 3b$ d) a^3

7. If $\sin x + \sin^2 x = 1$, then the value of $\cos^{12} x + 3\cos^{10} x + 3\cos^8 x + \cos^6 x - 1$ is equal to
   a) 0 b) 1 c) -1 d) 2

8. Equation of the normal at a point on the parabola $y^2 = 36x$ where ordinate is three times its abscissa is
   a) $2x + 3y + 44 = 0$ b) $2x - 3y + 44 = 0$ c) $2x + 3y - 44 = 0$ d) $2x - 3y = 0$

9. The slope of the tangent to the curve represented by $x = t^2 + 3t - 8$ and $y = 2t^2 - 2t - 5$ at the point $M(2,-1)$ is

   a) $\dfrac{7}{6}$ b) $\dfrac{2}{3}$ c) $\dfrac{3}{2}$ d) $\dfrac{6}{7}$

10. The focal distance of a point on a parabola $y^2 = 8x$ is 4. Its coordinates are
    a) $2,4$ b) $2,-4$ c) $-2,4$ d) a & b both

11. Select the number group similar to the given group from the following four alternatives. Given group (84, 92, 109)
    a) 9, 17, 36   b) 34, 42, 59   c) 7, 16, 32   d) 63, 71, 89

12. The dielectric constant of the material is a measure of
    a) The amount of voltage it can withstand before breaking down
    b) How well the material concentrates electrostatic lines of force
    c) The amount of opposition to the current flow
    d) How well the material concentrates magnetic lines of force

13. Which one of the following statements regarding ac circuits is correct
    a) Current & voltages are in phase through a resistor b)Current leads the voltage through a resistor
    c) Current lacks the voltage through a resistor   d) None of these

14. The law of idempotence says
    a) $A \cdot \overline{A} = 0$ b) A.A=A   c) A+A=A   d) Both b & c

15. If 40 character records are being written on a tape at 400 bpi, what is the blocking factor that will reduce the proportion of blank tape area to one third?
    a) 1   b) 4   c) 10   d) 15