GENERAL INFORMATION REGARDING MCA ENTRANCE TEST INCLUDING ENTRANCE TEST SYLLABUS

Duration of Test: 3 Hrs

No. of Questions : 150

There will be objective type questions. 1/4th marks shall be deducted for wrong answer.

Section-I: Mathematics (60 Questions)

1. **Geometry:** Two-Dimensional; straight lines, circles and conic sections, Three-Dimensional; straight lines and spheres.

2. **Algebra**: Set theory, Relations, Mappings and its applications, Permutations and Combinations.

3. **Calculus**: Limits, Continuity and Differentiability, Rolle's and Mean value theorems, Differentiation, Partial Differentiation, Maxima and Minima of functions of one and two variable. Successive differentiation. Integration by using substitution, partial fraction and by parts, Definite integral and its properties, Applications of definite integral to evaluate length and area of simple plane curves.

4. **Vector Analysis:** Scalar and vector products of two, three and four vectors and their applications.

5. **Statistics, Probability and Linear programming**: Measures of Central tendency, Dispersion, Skewness and Kurtosis. Correlation and Regression. Basic concepts of probability, Conditional probability, Baye's theorem, Discrete and continuous distributions (Binomial, Poisson, and Normal distributions), Fundamentals of linear programming problems, Graphical solution, Simplex method and its variants.

6. **Matrices:** Types of matrices rank of a matrix, solution of system of linear equations, Cayley Hamilton theorem, Inverse of a matrix, Determinant and its properties.

7. **Numerical Analysis:** Solution of non-linear equations using iterative methods, Interpolation (Newton's, Lagrange's and Forward formulae), Numerical Integration (Trapezoidal and Simpson Rule).

Section-II: Computer Awareness (50 Questions)

o **Computer Basics** : Organization of a computer, Central Processing Unit (CPU), input/output devices, computer memory, memory organization, back-up devices, Categories of Computers.

o **Data Representation** : Representation of characters, integers, and fractions, binary and hexadecimal representations, Binary Arithmetic: Addition, subtraction, division, multiplication, floating point representation of numbers, normalized floating point representation, Boolean algebra: truth tables, Venn diagrams.

o **Basics of C Programming and Operating Systems :** Computer programming in C : data types, loop and control statements, functions. Fundamentals of operating systems: multiprogramming, multitasking, Multiprocessing and time sharing systems.

o **Networking and Internet :** Categories of Computer Network, Network topologies, Network media, Concepts of LAN, MAN and WAN, Search Engines, Basic internet applications.

Section-III: Analytical Ability, Communication Skills and General Knowledge: (40 Questions)

The questions in this section will cover logical reasoning, quantitative reasoning, visual-spatial reasoning and Communication skills. This section shall also contain questions to test the general knowledge about business, finance, industry, transportation, scientific inventions, information technology, governance, healthcare, cultural

dimensions etc.

Model Questions

Section –I (Mathematics)

1. The mean and standard deviation of a Binomial distribution are 10 and 2 respectively, then the value of p (the probability of success) is

   (A) 0.3   (B) 0.6   (C) 0.2   (D) 0.4

2. If $\Delta^3 (1 - a x)(1 - 3x)(1 - 4x) = 72$ and unity as the interval of differencing, then a is equal to

   (A) -1 (B) 1

   (C) 2   (D) None of these

3. The vectors $2\vec{i} - \vec{j} + \vec{k}$, $\vec{i} + 2\vec{j} - 3\vec{k}$, and $3\vec{i} + \lambda\vec{j} + 5\vec{k}$ are coplanar if

   (A) $\lambda = 2$ (B) $\lambda = 4$

   (C) $\lambda = -5$ (D) $\lambda = -4$

4. The area enclosed within the curve $|x| + |y| = 1$ is

   (A) $\sqrt{2}$ (B) 2

   (C) $2\sqrt{2}$ (D) None of these

5. In an LPP, Let k variables out of n variables be unrestricted in sign. The number of non-negative variables in standard form of this LPP, are

   (A) $2k$ **(B)** $k + 1$

   (C) either k or $k + 1$ **(D) None of these**

Section – II (Computer Awareness)

1. The fastest and most expensive type of storage device is a

   (A) electronic disk   (B) register

   (C) cache   (D) magnetic tape

2. Which is not a Keyword in C?

   (A) auto   (B) else

   (C) for   (D) pointer

3. How many main functions can be used in a C program?

   (A) 0   (B) 1

   (C) 2   (D) Any Number

4. A half-adder is also known as

   (A) AND circuit   (B) NAND circuit

   (C) NOR circuit   (D) EX-OR circuit

5. What is the output of the following?

```
void main()
{
  int a=10,b=20;
  char x=1,y=0;
  if(a,b,x,y)
  {
    printf("EXAM");
  }
}
```

   (A) XAM is printed   (B) exam is printed

(C) Compiler Error   (D) Nothing is printed

Section –III (Analytical Ability, Communication Skills and General Knowledge)

1... A is the father of X. B is the mother of Y. The sister of X and Z is Y. Which of the following statements is definitely not true?
   (A) B is the wife of A   (B) B has one daughter
   (C) Y is the son of A   (D) None of these

2... The radius of a circle has been reduced from 9 cm to 7 cm. The approximate percentage decrease in area is
   (A) 31.5%   (B) 39.5%
   (C) 34.5%   (D) None of these

3... When we are talking to ourselves we are practicing _____ communication
   (A) Interpersonal   (B) Intrapersonal
   (C) Meditative   (D) None of the above

4. India's first surface missile was named
   (A) Akash   (B) Nag
   (C) Prithvi   (D) Agni