

# JNUEE MCA Master of Computer Applications

Topic:- MCAM224 JNUS21

1)  $\int \frac{\sin 4x}{\sin x} dx =$

[Question ID = 15685][Question Description = M.C.A.\_MCAM\_Q001]

1.  $2 \left\{ \frac{\sin 3x}{3} + \cos x \right\} + C$

[Option ID = 127907]

2.  $2 \left\{ \frac{\sin 3x}{3} + \sin x \right\} + C$

[Option ID = 127908]

3.  $2 \left\{ \frac{\sin 3x}{3} - \sin x \right\} + C$

[Option ID = 127909]

4.  $2 \left\{ \frac{\sin x}{3} + \cos x \right\} + C$

[Option ID = 127910]

2)  $\int 3^{3^{3^x}} 3^{3^x} 3^x dx$  is equal to

[Question ID = 15686][Question Description = M.C.A.\_MCAM\_Q002]

1.  $\frac{1}{(\log 3)^3} x + C$

[Option ID = 127911]

2.  $\frac{1}{(\log 3)^3} 3^x + C$

[Option ID = 127912]

3.  $\frac{1}{(\log 3)^3} 3^{3^x} + C$

[Option ID = 127913]

4.  $\frac{1}{(\log 3)^3} 3^{3^{3^x}} + C$

[Option ID = 127914]

3)  $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} |\sin x| dx$  is equal to

[Question ID = 15779][Question Description = M.C.A.\_MCAM\_Q003]

1. 0 [Option ID = 128287]

2. 2 [Option ID = 128288]

3.  $\frac{\pi}{2}$

[Option ID = 128289]

4.  $\pi$

[Option ID = 128290]

4) The solution of differential equation  $\frac{dy}{dx} = e^{x+y}$  is

[Question ID = 15687][Question Description = M.C.A.\_MCAM\_Q004]

1.  $-e^{-y} = e^x + C$

[Option ID = 127915]

2.  $-e^y = e^x + C$

[Option ID = 127916]

3.  $e^{-y} = e^x + C$

[Option ID = 127917]

4.  $e^y = -e^{-x} + C$

[Option ID = 127918]

5) Integration of function is same as the \_\_\_\_\_[Question ID = 15688][Question Description = M.C.A.\_MCAM\_Q005]

1. Joining many small entities to create a large entity [Option ID = 127919]
2. Indefinitely small difference of a function [Option ID = 127920]
3. Multiplication of two function with very small change in value [Option ID = 127921]
4. Point where function neither have maximum value nor minimum value [Option ID = 127922]

6) Let  $f(x) = 1 + x$  if  $x \leq 2$ ,  $f(x) = 5 - x$  if  $x \geq 2$ , then

[Question ID = 15689][Question Description = M.C.A.\_MCAM\_Q006]

1.  $f(x)$  is continuous but not differential at  $x = 2$   
[Option ID = 127923]
2.  $f(x)$  is continuous and differential at  $x = 2$   
[Option ID = 127924]
3.  $f(x)$  is neither continuous nor differential at  $x = 2$   
[Option ID = 127925]
4.  $f(x)$  is not continuous but differential at  $x = 2$   
[Option ID = 127926]

7) Let  $f(x) = [x]$ ,  $\forall x \in R$ , be the greatest integer function, then  $\lim_{x \rightarrow \frac{1}{2}} f(x)$

[Question ID = 15780][Question Description = M.C.A.\_MCAM\_Q007]

1. exists and is equal to 0  
[Option ID = 128291]
2. exists and is equal to 1  
[Option ID = 128292]
3.  $\frac{1}{2}$   
exists and is equal to  $\frac{1}{2}$   
[Option ID = 128293]
4. does not exist.  
[Option ID = 128294]

8) If  $y = x^{x^{\infty}}$ , then  $\frac{dy}{dx}$  is equal to

[Question ID = 15690][Question Description = M.C.A.\_MCAM\_Q008]

1.  $y \left( \frac{x^2}{1-x \log y} \right)$   
[Option ID = 127927]
2.  $\frac{1}{y} \left( \frac{x^2}{1-y \log y} \right)$   
[Option ID = 127928]
3.  $x \left( \frac{y^2}{1-y \log x} \right)$   
[Option ID = 127929]
4.  $\frac{1}{x} \left( \frac{y^2}{1-y \log x} \right)$   
[Option ID = 127930]

9) If  $y = x^{n-1} \log x$ , then  $\frac{d^n y}{dx^n}$  is equal to

[Question ID = 15691][Question Description = M.C.A.\_MCAM\_Q009]

1.  $\frac{(n-1)!}{x}$   
[Option ID = 127931]
2.  $\frac{n!}{x}$   
[Option ID = 127932]
3.  $\frac{(n+1)!}{x}$

[Option ID = 127933]

4. 
$$\frac{(n+2)!}{x}$$

[Option ID = 127934]

10)

If  $u = e^{xyz}$ , then  $\frac{\partial^3 u}{\partial x \partial y \partial z}$  is equal to

[Question ID = 15692][Question Description = M.C.A.\_MCAM\_Q010]

1.  $(1 + 3xyz + x^3 y^3 z^3) e^{xyz}$

[Option ID = 127935]

2.  $(1 + 3xyz + x^2 y^2 z^2) e^{xyz}$

[Option ID = 127936]

3.  $(1 + 2xyz + x^2 y^2 z^2) e^{xyz}$

[Option ID = 127937]

4.  $(1 + 2xyz + x^3 y^3 z^3) e^{xyz}$

[Option ID = 127938]

11)

The maximum value of  $\cos^2\left(\frac{\pi}{3} - x\right) - \cos^2\left(\frac{\pi}{3} + x\right)$ , is

[Question ID = 15693][Question Description = M.C.A.\_MCAM\_Q011]

1.  $\frac{\sqrt{3}}{2}$

[Option ID = 127939]

2.  $\frac{1}{2}$

[Option ID = 127940]

3.  $-\frac{\sqrt{3}}{2}$

[Option ID = 127941]

4.  $\frac{3}{2}$

[Option ID = 127942]

12)

If  $\cos(\theta - \alpha) = a$ ,  $\cos(\theta - \beta) = b$ , then  $\sin^2(\alpha - \beta) + 2ab \cos(\alpha - \beta)$  is equal to

[Question ID = 15694][Question Description = M.C.A.\_MCAM\_Q012]

1.  $a^2 + b^2$

[Option ID = 127943]

2.  $a^2 - b^2$

[Option ID = 127944]

3.  $(a + b)^2$

[Option ID = 127945]

4.  $(a - b)^2$

[Option ID = 127946]

13)

If  $\tan \theta = x - \frac{1}{4x}$ , then  $\sec \theta - \tan \theta$  is equal to

[Question ID = 15695][Question Description = M.C.A.\_MCAM\_Q013]

1.  $-2x, \frac{1}{2x}$

[Option ID = 127947]

2.  $2x, \frac{1}{-2x}$

[Option ID = 127948]

3.  $2x$

[Option ID = 127949]

4.  $2x, \frac{1}{2x}$

[Option ID = 127950]

14) if the measures of the angles of a triangle are in the ratio 1:2:3, then the corresponding sides are in the ratio[Question ID = 15696][Question Description = M.C.A.\_MCAM\_Q014]

1. 2:03:01 [Option ID = 127951]

2.  $\sqrt{3} : 2:1$

[Option ID = 127952]

3.  $2: \sqrt{3} : 1$

[Option ID = 127953]

4.  $1: \sqrt{3} : 2$

[Option ID = 127954]

15) A house of height 100m subtends a right angle at the window of an opposite house. If the height of the window be 64m, then the distance between two houses is[Question ID = 15697][Question Description = M.C.A.\_MCAM\_Q015]

1. 36m [Option ID = 127955]

2. 48m [Option ID = 127956]

3. 54m [Option ID = 127957]

4. 72m [Option ID = 127958]

16) If  $\vec{a}$  and  $\vec{b}$  are non-collinear vectors, what the value of  $x$  for which vectors  $\vec{a} = (2x + 1)\vec{a} - \vec{b}$  and  $\vec{\beta} = (x - 2)\vec{a} + \vec{b}$  are collinear

[Question ID = 15698][Question Description = M.C.A.\_MCAM\_Q016]

1.  $x = \frac{1}{2}$

[Option ID = 127959]

2.  $x = -\frac{1}{2}$

[Option ID = 127960]

3.  $x = \frac{1}{3}$

[Option ID = 127961]

4.  $x = -\frac{1}{3}$

[Option ID = 127962]

17) If the vectors  $\vec{a} = 3 + 2\hat{j} + 9\hat{k}$  and  $\vec{b} = \hat{i} + \lambda\hat{j} + 3\hat{k}$  are perpendicular, then  $\lambda$  is equal to

[Question ID = 15718][Question Description = M.C.A.\_MCAM\_Q017]

1. 20 [Option ID = 127963]

2. 3 [Option ID = 127964]

3. -15 [Option ID = 127965]

4. -7 [Option ID = 127966]

18) If for a unit vector  $\vec{a}$ ,  $(\vec{x} - \vec{a}) \cdot (\vec{x} + \vec{a}) = 8$ , then  $|\vec{x}|$  is equal to

[Question ID = 15719][Question Description = M.C.A.\_MCAM\_Q018]

1. 2 [Option ID = 127967]

2. 3 [Option ID = 127968]

3. 8 [Option ID = 127969]

4. 9 [Option ID = 127970]

19) Given  $|\vec{a}| = 10$ ,  $|\vec{b}| = 10$  and  $\vec{a} \cdot \vec{b} = 12$ , then  $|\vec{a} \times \vec{b}|$  is equal to

[Question ID = 15720][Question Description = M.C.A.\_MCAM\_Q019]

1. 15 [Option ID = 127971]

2. 16 [Option ID = 127972]

3. 22 [Option ID = 127973]

4. 25 [Option ID = 127974]

20) Let vectors  $\vec{a} = \hat{i} - 2\hat{j} + 3\hat{k}$  and  $\vec{b} = \hat{i} + 2\hat{j} - \hat{k}$ , then  $\vec{a} \times \vec{b}$  is equal to

[Question ID = 15721][Question Description = M.C.A.\_MCAM\_Q020]

1.  $2\hat{i} - 2\hat{j} + \hat{k}$

[Option ID = 127975]

2.  $-4\hat{i} + 4\hat{j} + 4\hat{k}$

[Option ID = 127976]

3.  $\hat{i} - 2\hat{j} - 2\hat{k}$

[Option ID = 127977]

4.  $2\hat{i} - 3\hat{j} - 5\hat{k}$

[Option ID = 127978]

21) If  $\log_4 5 = x$  and  $\log_5 6 = y$ , then  $\log_2 3$  is equal to

[Question ID = 15722][Question Description = M.C.A.\_MCAM\_Q021]

1.  $2xy + 1$

[Option ID = 127979]

2.  $2xy - 1$

[Option ID = 127980]

3.  $2x + 1$

[Option ID = 127981]

4.  $2y + 1$

[Option ID = 127982]

22) The number of real solutions of the equation  $e^x + x = 0$ , is

[Question ID = 15723][Question Description = M.C.A.\_MCAM\_Q022]

1. 0 [Option ID = 127983]

2. 1 [Option ID = 127984]

3. 2 [Option ID = 127985]

4. infinite [Option ID = 127986]

23) If  $A$  is a finite set having  $n$  elements, then power set  $P(A)$  has

[Question ID = 15724][Question Description = M.C.A.\_MCAM\_Q023]

1.  $n$  elements

[Option ID = 127987]

2.  $2n$  elements

[Option ID = 127988]

3.  $2^n$  elements

[Option ID = 127989]

4. none of these

[Option ID = 127990]

24) Let  $A = \{1, 2, 3\}$ ,  $B = \{3, 4\}$ ,  $C = \{4, 5, 6\}$ , then  $A \cup (B \cap C)$  is

[Question ID = 15783][Question Description = M.C.A.\_MCAM\_Q024]

1.  $\{3\}$

[Option ID = 128303]

2.  $\{1, 2, 3, 4\}$

[Option ID = 128304]

3.  $\{1, 2, 5, 6\}$

[Option ID = 128305]

4.  $\{1, 2, 3, 4, 5, 6\}$

[Option ID = 128306]

25) Let  $A$  and  $B$  have 3 and 6 elements respectively. What is the minimum number of elements in  $A \cup B$ ?

[Question ID = 15725][Question Description = M.C.A.\_MCAM\_Q025]

1. 3 [Option ID = 127991]
2. 6 [Option ID = 127992]
3. 9 [Option ID = 127993]
4. 18 [Option ID = 127994]

26) Let  $A = \{1, 2, 3\}$  and  $B = \{2, 3, 4\}$  be two sets. Which one of the following relations defines a function from  $A$  to  $B$ ?

[Question ID = 15726][Question Description = M.C.A.\_MCAM\_Q026]

1.  $f_1 = \{(1, 3), (2, 3), (3, 3)\}$   
[Option ID = 127995]
2.  $f_2 = \{(1, 2), (1, 3), (2, 3), (3, 4)\}$   
[Option ID = 127996]
3.  $f_3 = \{(1, 3), (2, 4)\}$   
[Option ID = 127997]
4.  $f_4 = \{(1, 4), (2, 4), (3, 4), (2, 3)\}$   
[Option ID = 127998]

27) If the function  $f: R \rightarrow R$  defined by  $f(x) = (x - 1)(x - 2)(x - 3)$ , is

[Question ID = 15727][Question Description = M.C.A.\_MCAM\_Q027]

1. One-one but not onto [Option ID = 127999]
2. Onto but not one-one [Option ID = 128000]
3. Both one-one and onto [Option ID = 128001]
4. Neither one-one nor onto [Option ID = 128002]

28) The smallest positive integer  $n$  for which  $\left(\frac{1+i}{1-i}\right)^n = 1$  is

[Question ID = 15728][Question Description = M.C.A.\_MCAM\_Q028]

1. 1 [Option ID = 128003]
2. 2 [Option ID = 128004]
3. 3 [Option ID = 128005]
4. 4 [Option ID = 128006]

29) The equation  $Z\bar{Z} = 3$  where  $Z = x + iy$  and  $\bar{Z}$  is the conjugate complex represents

[Question ID = 15729][Question Description = M.C.A.\_MCAM\_Q029]

1. A parabola [Option ID = 128007]
2. An ellipse [Option ID = 128008]
3. a circle [Option ID = 128009]
4. a hyperbola [Option ID = 128010]

30) If  $T: R^3 \rightarrow R^2$  is a linear transformation and is defined as  $T(x, y, z) = (x + y, y + z)$ , then nullity of  $T$  is

[Question ID = 15730][Question Description = M.C.A.\_MCAM\_Q030]

1. 0 [Option ID = 128011]
2. 1 [Option ID = 128012]
3. 2 [Option ID = 128013]
4. 3 [Option ID = 128014]

31) If  $S = \{(1, 1, 0), (2, 1, 3)\}$  is a subset of  $R^3$  then which one of the following vectors  $R^3$  is not in the linear span of  $S$  ?

[Question ID = 15731][Question Description = M.C.A.\_MCAM\_Q031]

1.  $(0, 0, 0)$   
[Option ID = 128015]
2.  $(3, 2, 3)$

[Option ID = 128016]

3.  $(1, 2, 3)$

[Option ID = 128017]

4.  $(4/3, 1, 1)$

[Option ID = 128018]

32) Let  $G$  be a group with binary operation  $*$  defined by  $a * b = a + b + 1, \forall a, b \in G$ , Inverse of element  $C$  of  $G$  is

[Question ID = 15732][Question Description = M.C.A.\_MCAM\_Q032]

1.  $2 + C$

[Option ID = 128019]

2.  $2 - C$

[Option ID = 128020]

3.  $-2 + C$

[Option ID = 128021]

4.  $-2 - C$

[Option ID = 128022]

33) If every element of a group  $G$  is its own inverse, then  $G$  is [Question ID = 15733][Question Description = M.C.A.\_MCAM\_Q033]

1. of even order [Option ID = 128023]

2. of odd order [Option ID = 128024]

3. abelian [Option ID = 128025]

4. non-abelian [Option ID = 128026]

34) Which of the following sets with given operation is not a group [Question ID = 15734][Question Description = M.C.A.\_MCAM\_Q034]

1. The sets of all integers with respect to addition [Option ID = 128027]

2. The sets of all even integers with respect to addition [Option ID = 128028]

3. The set of all cube roots of unity with respect to multiplication [Option ID = 128029]

4. The sets of all odd integers with respect to addition [Option ID = 128030]

35) The co-ordinates of the mid points of sides of a triangle are  $(5, 2)$ ,  $(3, 3)$  and  $(2, 2)$ . The co-ordinate of its centre is [Question ID = 15782][Question Description = M.C.A.\_MCAM\_Q035]

1.  $\left(\frac{7}{3}, \frac{10}{3}\right)$

[Option ID = 128299]

2.  $\left(\frac{10}{3}, \frac{7}{3}\right)$

[Option ID = 128300]

3.  $\left(\frac{7}{3}, \frac{2}{3}\right)$

[Option ID = 128301]

4.  $\left(\frac{2}{3}, \frac{7}{3}\right)$

[Option ID = 128302]

36) Two tangents are drawn from the point  $(-2, -1)$  to the parabola  $y^2 = 4x$ , if  $\alpha$  is the angle between them, then  $\tan \alpha =$

[Question ID = 15735][Question Description = M.C.A.\_MCAM\_Q036]

1. 3 [Option ID = 128031]

2.  $4\sqrt{\frac{2}{5}}$

[Option ID = 128032]

3. 2 [Option ID = 128033]

4.  $1/2$  [Option ID = 128034]

37) If  $\alpha, \beta, \gamma$  are the angles that make with the positive direction of  $x, y, z$  axes respectively, then the direction cosines of the line are

[Question ID = 15736][Question Description = M.C.A.\_MCAM\_Q037]

1.  $\sin \alpha, \sin \beta, \sin \gamma$

[Option ID = 128035]

2.  $\cos \alpha, \cos \beta, \cos \gamma$

[Option ID = 128036]

3.  $\tan \alpha, \tan \beta, \tan \gamma$

[Option ID = 128037]

4.  $\cos^2 \alpha, \cos^2 \beta, \cos^2 \gamma$

[Option ID = 128038]

**38) The equation of the plane perpendicular to the yz- plane and passing through the points (1, -2, 4) and (3, -4, 5) is**[Question ID = 15737][Question Description = M.C.A.\_MCAM\_Q038]

1.  $2x+y-5z-1=0$  [Option ID = 128039]

2.  $y+2z-6=0$  [Option ID = 128040]

3.  $3x+y-4z+15=0$  [Option ID = 128041]

4.  $x-2y+7=0$  [Option ID = 128042]

**39) The radius of a sphere whose centre is (4, 4, -2) and which passes through the origin is**[Question ID = 15738][Question Description = M.C.A.\_MCAM\_Q039]

1. 4 [Option ID = 128043]

2. 1 [Option ID = 128044]

3. 6 [Option ID = 128045]

4. 5 [Option ID = 128046]

**40) Every square matrix can be expressed as**[Question ID = 15739][Question Description = M.C.A.\_MCAM\_Q040]

1. A Hermitian matrix [Option ID = 128047]

2. A skew-symmetric matrix [Option ID = 128048]

3. Sum of symmetric and skew-symmetric matrices [Option ID = 128049]

4. None of the above [Option ID = 128050]

**41) Given below are two statements:**

**Statement I:** If A is skew-symmetric matrix, then  $A^2$  is symmetric

**Statement II:** Trace of a skew-symmetric matrix of an odd order is always zero.

In light of the above statements, choose the *correct* answer from the options given below:

**[Question ID = 15740][Question Description = M.C.A.\_MCAM\_Q041]**

1. Both Statement I and Statement II are true

[Option ID = 128051]

2. Both Statement I and Statement II are false

[Option ID = 128052]

3. Statement I is true but Statement II is false

[Option ID = 128053]

4. Statement I is false but Statement II is true

[Option ID = 128054]

**42) If A is a square matrix such that  $A^2 = I$ , then  $(A - I)^3 + (A + I)^3 - 7A$  is**

**[Question ID = 15741][Question Description = M.C.A.\_MCAM\_Q042]**

1. A [Option ID = 128055]

2. I-A [Option ID = 128056]

3. I+A [Option ID = 128057]

4. 3A [Option ID = 128058]

**43)**

If  $A = \begin{bmatrix} \alpha & 2 \\ 2 & \alpha \end{bmatrix}$  and  $|A^3| = 125$ , then the value of  $\alpha$  is

**[Question ID = 15742][Question Description = M.C.A.\_MCAM\_Q043]**

1.  $\pm 1$

[Option ID = 128059]

2.  $\pm 2$

[Option ID = 128060]

3.  $\pm 3$

[Option ID = 128061]

4.  $\pm 5$

[Option ID = 128062]

44)

If  $A = \begin{bmatrix} 2 & 3 \\ 5 & -2 \end{bmatrix}$  then  $19A^{-1}$  is

[Question ID = 15743][Question Description = M.C.A.\_MCAM\_Q044]

1.  $\frac{1}{2A}$

[Option ID = 128063]

2. A [Option ID = 128064]

3. 2A [Option ID = 128065]

4. 3A [Option ID = 128066]

45) A die is rolled thrice, the probability of getting a larger number each time than the previous number is [Question ID = 15744][Question Description = M.C.A.\_MCAM\_Q045]

1.  $1/12$  [Option ID = 128067]

2.  $5/54$  [Option ID = 128068]

3.  $3/70$  [Option ID = 128069]

4.  $5/216$  [Option ID = 128070]

46) A couple has 2 children, the probability that both are boys, if it is known that the older child is a boy, is [Question ID = 15745][Question Description = M.C.A.\_MCAM\_Q046]

1.  $1/4$  [Option ID = 128071]

2.  $1/2$  [Option ID = 128072]

3. 0 [Option ID = 128073]

4. 1 [Option ID = 128074]

47) In how many different ways can six tosses of a coin yield two heads and four tails? [Question ID = 15746][Question Description = M.C.A.\_MCAM\_Q047]

1. 6 [Option ID = 128075]

2. 12 [Option ID = 128076]

3. 15 [Option ID = 128077]

4. 17 [Option ID = 128078]

48) The probability of randomly drawing two aces in succession from an ordinary deck of 52 cards, if we sample without replacement, is [Question ID = 15747][Question Description = M.C.A.\_MCAM\_Q048]

1.  $1/110$  [Option ID = 128079]

2.  $1/169$  [Option ID = 128080]

3.  $1/221$  [Option ID = 128081]

4.  $1/251$  [Option ID = 128082]

49)

If  $X$  has the probability density function  $f(x) = \begin{cases} k \cdot e^{-3x} & \text{for } x > 0 \\ 0 & \text{otherwise} \end{cases}$

Then the value  $k$  is

[Question ID = 15748][Question Description = M.C.A.\_MCAM\_Q049]

1. 2

[Option ID = 128083]

2. 3

[Option ID = 128084]

3. 4

[Option ID = 128085]

4. 5

[Option ID = 128086]

50)

If  $X$  has the probability density function  $f(x) = \begin{cases} e^x & \text{for } x > 0 \\ 0 & \text{otherwise} \end{cases}$

Then the expected value of  $g(X) = e^{3X/4}$  is

[Question ID = 15749][Question Description = M.C.A.\_MCAM\_Q050]

1. 2 [Option ID = 128087]

2. 3 [Option ID = 128088]

3. 4 [Option ID = 128089]

4. 5 [Option ID = 128090]

51) The relation  $R = \{(1, 1), (2, 2), (3, 3)\}, (1, 2), (2, 3), (1, 3)$  on a set  $A = \{1, 2, 3\}$  is

[Question ID = 15750][Question Description = M.C.A.\_MCAM\_Q051]

1. Reflexive but not symmetric [Option ID = 128091]
2. Reflexive but not transitive [Option ID = 128092]
3. Symmetric and transitive [Option ID = 128093]
4. Neither symmetric nor transitive [Option ID = 128094]

52) The simplest possible form of the statement  $(\neg(p \vee q)) \vee ((\neg p) \wedge q)$  is

[Question ID = 15751][Question Description = M.C.A.\_MCAM\_Q052]

1.  $p$   
[Option ID = 128095]
2.  $q$   
[Option ID = 128096]
3.  $\neg p$   
[Option ID = 128097]
4.  $\neg q$   
[Option ID = 128098]

53) Which of the following is not a statement

[Question ID = 15752][Question Description = M.C.A.\_MCAM\_Q053]

1. Is 2 an even number?  
[Option ID = 128099]
2. Tomorrow is a holiday.  
[Option ID = 128100]
3. Fifteen is an even number.  
[Option ID = 128101]
4. In 1983 Indra Gandhi was Prime Minister of India.  
[Option ID = 128102]

54) The solution of the recurrence relation  $a_r - 5a_{r-1} + 6a_{r-2} = 0$ , where  $a_0 = 2$  and  $a_1 = 5$ , is

[Question ID = 15753][Question Description = M.C.A.\_MCAM\_Q054]

1.  $a_r = 2^r + 3^r$  for all integers  $r \geq 0$   
[Option ID = 128103]
2.  $a_r = 2^r + 5^r$  for all integers  $r \geq 0$   
[Option ID = 128104]
3.  $a_r = 6^r + 3^r$  for all integers  $r \geq 0$   
[Option ID = 128105]
4.  $a_r = 5^r + 6^r$  for all integers  $r \geq 0$   
[Option ID = 128106]

55) A poset in which every pair of elements has both a least upper bound and a greatest lower bound is termed as [Question ID = 15754][Question Description = M.C.A.\_MCAM\_Q055]

1. sublattice [Option ID = 128107]
2. lattice [Option ID = 128108]
3. trail [Option ID = 128109]
4. walk [Option ID = 128110]

56) There is some relationship between two terms to the left of:: and the same relationship holds between the two terms to its right. One term either to the right of:: or the left of it is missing. Find out this term: KMF : LLH : : RMS : ? [Question ID = 15755][Question Description = M.C.A.\_MCAM\_Q056]

1. SLR [Option ID = 128111]
2. SLU [Option ID = 128112]
3. SSU [Option ID = 128113]
4. SUS [Option ID = 128114]

57) If PALE is coded as 2134, EARTH is coded as 41590, how is PEARL coded in that code ? [Question ID = 15756][Question Description = M.C.A.\_MCAM\_Q057]

1. 29530 [Option ID = 128115]
2. 24153 [Option ID = 128116]
3. 25413 [Option ID = 128117]
4. 25430 [Option ID = 128118]

58) X - Z means X is the mother of Z ; X x Z means X is the father of Z and X + Z means X is the daughter of Z. Now , if M- N x T + Q , then which of the following is not true ?

[Question ID = 15757][Question Description = M.C.A.\_MCAM\_Q058]

1. T is N 's daughter  
[Option ID = 128119]
2. N is wife of Q  
[Option ID = 128120]
3. M is mother-in-law of Q  
[Option ID = 128121]
4. Q is wife of N  
[Option ID = 128122]

59) Starting from a point P, Sachin walked 20 meters towards south. He turned left and walked 30 meters. He then turned left and walked 20 meters. He again turned left and walked 40 meters and reached a point Q. How far and in which direction is the point Q from the point P ?[Question ID = 15758][Question Description = M.C.A.\_MCAM\_Q059]

1. 20 meters West [Option ID = 128123]
2. 10 meters East [Option ID = 128124]
3. 10 meters West [Option ID = 128125]
4. 10 meters North [Option ID = 128126]

60) Which one of the following Venn diagrams correctly illustrates the relationship among the classes : Carrot, Food, Vegetable ?[Question ID = 15781][Question Description = M.C.A.\_MCAM\_Q060]

1.   
[Option ID = 128295]
2.   
[Option ID = 128296]
3.   
[Option ID = 128297]
4.   
[Option ID = 128298]

61) If + means / , x means -, / means x and - means +, then evaluate  $8 + 6 \times 4 / 3 - 4 = ?$ [Question ID = 15759][Question Description = M.C.A.\_MCAM\_Q061]

1. - 12 [Option ID = 128127]
2. - 20 / 3 [Option ID = 128128]
3. 12 [Option ID = 128129]
4. 20/3 [Option ID = 128130]

62) Arrange the following in a meaningful order, from particular to general :

1. Family
2. Community
3. Member
4. Locality
5. Country

[Question ID = 15760][Question Description = M.C.A.\_MCAM\_Q062]

1. 3,1,2,4,5  
[Option ID = 128131]
2. 3,1,2,5,4  
[Option ID = 128132]

3. 3,1,4,2,5

[Option ID = 128133]

4. 3,1,4,5,2

[Option ID = 128134]

63) A father tells his son, “ I was of your present age when you were born.” If the father is 36 now, how old was the boy 5 years back ?[Question ID = 15761][Question Description = M.C.A.\_MCAM\_Q063]

1. 13 [Option ID = 128135]

2. 15 [Option ID = 128136]

3. 17 [Option ID = 128137]

4. 20 [Option ID = 128138]

64) Find out this trend and choose the missing character accordingly:

|    |    |    |
|----|----|----|
| 6  | 11 | 25 |
| 8  | 6  | 16 |
| 12 | 5  | ?  |

[Question ID = 15762][Question Description = M.C.A.\_MCAM\_Q064]

1. 18 [Option ID = 128139]

2. 16 [Option ID = 128140]

3. 12 [Option ID = 128141]

4. 10 [Option ID = 128142]

65) Choose the best alternative as the answer. A newspaper always has ?[Question ID = 15763][Question Description = M.C.A.\_MCAM\_Q065]

1. Advertisement [Option ID = 128143]

2. News [Option ID = 128144]

3. Paper [Option ID = 128145]

4. Date [Option ID = 128146]

66) The expression  $x = 4 + 2\% - 8$  evaluates to

[Question ID = 15764][Question Description = M.C.A.\_MCAM\_Q066]

1. -6 [Option ID = 128147]

2. 6 [Option ID = 128148]

3. 4 [Option ID = 128149]

4. none of above [Option ID = 128150]

67) What will be output of the following program:

```
void main()
```

```
{
```

```
int a,b;
```

```
a= -3 - -3;
```

```
b= -3 - - (-3);
```

```
printf(“%d”, b);
```

```
}
```

[Question ID = 15765][Question Description = M.C.A.\_MCAM\_Q067]

1. 0

[Option ID = 128151]

2. 6

[Option ID = 128152]

3. -6

[Option ID = 128153]

4. Garbage Value

[Option ID = 128154]

68) An expression contains relational operators, assignment operators, and arithmetic operators. In the absence of parentheses, they will be evaluated in which of the following order:[Question ID = 15766][Question Description = M.C.A.\_MCAM\_Q068]

1. assignment, relational, arithmetic [Option ID = 128155]

2. arithmetic, relational, assignment [Option ID = 128156]

3. relational, arithmetic, assignment [Option ID = 128157]

4. assignment, arithmetic, relational [Option ID = 128158]

**69) Which of the following statement is false?**[Question ID = 15767][Question Description = M.C.A.\_MCAM\_Q069]

1. Each return statement in a function may return a different value [Option ID = 128159]
2. A function may contain more than one return statements [Option ID = 128160]
3. To return the control back to the calling function we must use the keyword return [Option ID = 128161]
4. A function may be called more than once from any other function [Option ID = 128162]

**70) What will be output of the following program (suppose address of a is 100)**

```
void main()
{
Float a=10;

Float *b, *c;

b=&a, c=b;

printf(“%d”, *b);
}
```

**[Question ID = 15768][Question Description = M.C.A.\_MCAM\_Q070]**

1. 10  
[Option ID = 128163]
2. 100  
[Option ID = 128164]
3. 1000  
[Option ID = 128165]
4. 10000  
[Option ID = 128166]

**71) Select the lettered pair that has the same relationship as the original pair of words. Fish : Aquarium** [Question ID = 15769][Question Description = M.C.A.\_MCAM\_Q071]

1. Teacher : Hostel [Option ID = 128167]
2. Bee : Apiary [Option ID = 128168]
3. Bird : Nest [Option ID = 128169]
4. Child : School [Option ID = 128170]

**72) Four words have been given, out of which three are alike in some manner and the fourth one is different. Choose out the odd one.**[Question ID = 15770][Question Description = M.C.A.\_MCAM\_Q072]

1. Pen [Option ID = 128171]
2. Calculator [Option ID = 128172]
3. Pencil [Option ID = 128173]
4. Ink [Option ID = 128174]

**73) One term in the number series is wrong. Find out the wrong term. 3, 2, 8, 9, 13, 22, 18, 32, 23, 42** [Question ID = 15771][Question Description = M.C.A.\_MCAM\_Q073]

1. 8 [Option ID = 128175]
2. 9 [Option ID = 128176]
3. 13 [Option ID = 128177]
4. 22 [Option ID = 128178]

**74) Pointing to a girl in the photograph, Amar said, “Her mother’s brother is the only son of my mother’s father.” How is the girl’s mother related to Amar ?**[Question ID = 15772][Question Description = M.C.A.\_MCAM\_Q074]

1. Mother [Option ID = 128179]
2. Sister [Option ID = 128180]
3. Aunt [Option ID = 128181]
4. Grandmother [Option ID = 128182]

**75) A and B are married couple. X and Y are brothers. X is the brother of A. How is Y related to B ?**[Question ID = 15773] [Question Description = M.C.A.\_MCAM\_Q075]

1. Brother - in - law [Option ID = 128183]
2. Brother [Option ID = 128184]
3. Son - in - law [Option ID = 128185]
4. Cousin [Option ID = 128186]

**76) Read the following information and answer the question given below it :**

A is the father of C. But C is not his son.

E is the daughter of C. F is the spouse of A.

B is the brother of C. D is the son of B.

G is the spouse of B. H is the father of G.

Who is the son of F ?

[Question ID = 18486][Question Description = M.C.A.\_MCAM\_Q076]

1. B  
[Option ID = 128187]
2. C  
[Option ID = 128188]
3. D  
[Option ID = 128189]
4. E  
[Option ID = 128190]

77) Read the following information and answer the question based on it :

In a school, there were five teachers. A and B were teaching Hindi and English. C and B were teaching English and Geography. D and A were teaching Mathematics and Hindi. E and B were teaching History and French.

D, B and A were teaching which of the following subjects ?

[Question ID = 18487][Question Description = M.C.A.\_MCAM\_Q077]

1. English only  
[Option ID = 128191]
2. Hindi and English  
[Option ID = 128192]
3. Hindi only  
[Option ID = 128193]
4. Mathematics and Hindi  
[Option ID = 128194]

78) Read the following information and answer the question given below it :

Six students A, B, C, D, E and F are sitting in the field. A and B are from Nehru House while the rest belong to Gandhi House. D and F are tall while the others are short. A, C and D are wearing glasses while the others are not.

Which tall student of Gandhi House is not wearing glasses ?

[Question ID = 18488][Question Description = M.C.A.\_MCAM\_Q078]

1. B  
[Option ID = 128195]
2. C  
[Option ID = 128196]
3. E  
[Option ID = 128197]
4. F  
[Option ID = 128198]

79) Study the given information carefully and answer the question that follow :

I. A, B, C, D, E, F and G are sitting on a wall and all of them are facing east.

II. C is on the immediate right of D.

III. B is at an extreme end and has E as his neighbour.

IV. G is between E and F.

V. D is sitting third from the south end.

Name the person who should change places with C such that he gets the third place from the north end.

[Question ID = 18489][Question Description = M.C.A.\_MCAM\_Q079]

1. D  
[Option ID = 128199]
2. E  
[Option ID = 128200]
3. F  
[Option ID = 128201]
4. G  
[Option ID = 128202]

80) Read the following information carefully and answer the question that follow :

Six lectures A, B, C, D, E and F are to be organised in a span of seven days- from Sunday to Saturday, only one lecture on each day in accordance with the following :

I. A should not be organised on Thursday.

II. C should be organised immediately after F.

III. There should be a gap of two days between E and D.

IV. One day there will be no lecture ( Friday is not that day ),just before that day D will be organised.

V. B should be organised on Tuesday and should not be followed by D.

Which day will the lecture F be organised ?

[Question ID = 18490][Question Description = M.C.A.\_MCAM\_Q080]

1. Thursday

[Option ID = 128203]

2. Friday

[Option ID = 128204]

3. Saturday

[Option ID = 128205]

4. Sunday

[Option ID = 128206]

81) The decimal equivalent of the binary number 101.101 is[Question ID = 18491][Question Description = M.C.A.\_MCAM\_Q081]

1. 5.6249 [Option ID = 128207]

2. 5.625 [Option ID = 128208]

3. 5.5 [Option ID = 128209]

4. 5.25 [Option ID = 128210]

82) How many 2-input multiplexers are required to construct a  $2^{10}$ -input multiplexer ?

[Question ID = 18492][Question Description = M.C.A.\_MCAM\_Q082]

1. 1023

[Option ID = 128211]

2. 31

[Option ID = 128212]

3. 10

[Option ID = 128213]

4. 127

[Option ID = 128214]

83) If negative numbers are stored in 2's complement form, the range of numbers that can be stored in 8 bits is

[Question ID = 18493][Question Description = M.C.A.\_MCAM\_Q083]

1. - 128 to + 128

[Option ID = 128215]

2. - 128 to + 127

[Option ID = 128216]

3. - 127 to + 128

[Option ID = 128217]

4. - 127 to + 127

[Option ID = 128218]

84) Which of the following is the minimum error code ?[Question ID = 18494][Question Description = M.C.A.\_MCAM\_Q084]

1. Octal Code [Option ID = 128219]

2. Binary Code [Option ID = 128220]

3. Gray Code [Option ID = 128221]

4. Excess-3 code [Option ID = 128222]

85) ( 1217 )<sub>8</sub> is equivalent to[Question ID = 18495][Question Description = M.C.A.\_MCAM\_Q085]

1. ( 1217 )<sub>16</sub> [Option ID = 128223]

2. ( 028F )<sub>16</sub> [Option ID = 128224]

3. ( 2297 )<sub>10</sub> [Option ID = 128225]

4. ( 0B17 )<sub>16</sub> [Option ID = 128226]

86) If an integer needs two bytes of storage then maximum value of an unsigned integer is[Question ID = 18496][Question Description = M.C.A.\_MCAM\_Q086]

1.  $2^{16}-1$  [Option ID = 128227]

2.  $2^{15}-1$  [Option ID = 128228]

3.  $2^{16}$  [Option ID = 128229]  
4.  $2^{15}$  [Option ID = 128230]

87) The following program fragment:

```
for( i = 1; i < 5; ++ i );
```

```
if( i == 3) continue;
```

```
else printf (“%d”, i );
```

results in the printing of

[Question ID = 18497][Question Description = M.C.A.\_MCAM\_Q087]

1. 1 2 4 5

[Option ID = 128231]

2. 1 2 4

[Option ID = 128232]

3. 2 4 5

[Option ID = 128233]

4. None of the above

[Option ID = 128234]

88) The program fragment

```
int a = 5, b = 2;
```

```
printf (“%d”, a+++++b );
```

[Question ID = 18498][Question Description = M.C.A.\_MCAM\_Q088]

1. prints 7

[Option ID = 128235]

2. prints 8

[Option ID = 128236]

3. prints 9

[Option ID = 128237]

4. none of the above

[Option ID = 128238]

89) The output of the following segment:

```
for(i=0; i<10; ++i)
```

```
printf(“%d”, i&1)
```

is:

[Question ID = 18499][Question Description = M.C.A.\_MCAM\_Q089]

1. 0101010101

[Option ID = 128239]

2. 0111111111

[Option ID = 128240]

3. 0000000000

[Option ID = 128241]

4. 1111111111

[Option ID = 128242]

90) Which combination of the integer variables x, y and z makes the variable a get the value 4 in the following expression  
 $? a = (x > y) ? ((x > z) ? x : z) : ((y > z) ? y : z)$  [Question ID = 18500][Question Description = M.C.A.\_MCAM\_Q090]

1. x = 3, y = 4, z = 2 [Option ID = 128243]

2. x = 6, y = 5, z = 3 [Option ID = 128244]

3. x = 6, y = 3, z = 5 [Option ID = 128245]

4. x = 5, y = 4, z = 5 [Option ID = 128246]

91) The time complexity of an algorithm T(n), where ‘n’ is the input size, is given by

$$T(n) = T(n-1) + \left(\frac{1}{n}\right), \text{ if } n > 1$$

1, otherwise

The order of this algorithm is

The order of this algorithm is

[Question ID = 18501][Question Description = M.C.A.\_MCAM\_Q091]

1.  $\log n$  [Option ID = 128247]
2.  $n$  [Option ID = 128248]
3.  $n^2$  [Option ID = 128249]
4.  $n^n$  [Option ID = 128250]

92) Which of the following traversal techniques list the nodes of a binary search tree in ascending order?[Question ID = 18502][Question Description = M.C.A.\_MCAM\_Q092]

1. Post-order [Option ID = 128251]
2. In-Order [Option ID = 128252]
3. Pre-order [Option ID = 128253]
4. All of above [Option ID = 128254]

93) Which of the following sorting methods sorts a given set of items that is already in sorted order or in reverse sorted order with equal speed?[Question ID = 18503][Question Description = M.C.A.\_MCAM\_Q093]

1. Heap sort [Option ID = 128255]
2. Quick sort [Option ID = 128256]
3. Insertion sort [Option ID = 128257]
4. Selection sort [Option ID = 128258]

94) The number of possible binary trees with 4 nodes is[Question ID = 18504][Question Description = M.C.A.\_MCAM\_Q094]

1. 12 [Option ID = 128259]
2. 13 [Option ID = 128260]
3. 14 [Option ID = 128261]
4. 15 [Option ID = 128262]

95) The postfix equivalent of the infix expression  $a + b * (c + d) / f + d * e$  is[Question ID = 18505][Question Description = M.C.A.\_MCAM\_Q095]

1.  $a\ b\ +\ c\ d\ +\ * \ f\ /\ d\ +\ e\ *$  [Option ID = 128263]
2.  $a\ b\ c\ d\ +\ * \ f\ /\ +\ d\ e\ * \ +$  [Option ID = 128264]
3.  $a\ * \ b\ +\ c\ d\ /\ f\ * \ d\ e\ +\ +$  [Option ID = 128265]
4.  $a\ +\ * \ b\ c\ d\ /\ f\ * \ d\ e\ +\ +$  [Option ID = 128266]

96) The height of a binary tree is the maximum number of edge in any root to leaf path. The maximum number of nodes in binary tree of height  $h$  is[Question ID = 15774][Question Description = M.C.A.\_MCAM\_Q096]

1.  $2^h - 1$  [Option ID = 128267]
2.  $2^{h-1} - 1$  [Option ID = 128268]
3.  $2^{h+1} - 1$  [Option ID = 128269]
4.  $2^{h+1}$  [Option ID = 128270]

97) The non-linear data structure is[Question ID = 15775][Question Description = M.C.A.\_MCAM\_Q097]

1. Sets [Option ID = 128271]
2. Stack [Option ID = 128272]
3. Graph [Option ID = 128273]
4. Tree [Option ID = 128274]

98) Which of the following statement is not true about the doubly linked list?[Question ID = 15776][Question Description = M.C.A.\_MCAM\_Q098]

1. We can traverse in both the directions. [Option ID = 128275]
2. It requires extra space [Option ID = 128276]
3. Implementation of doubly linked list is easier than the singly linked list [Option ID = 128277]
4. It stores the addresses of the next and the previous node [Option ID = 128278]

99) Stack is also called as[Question ID = 15777][Question Description = M.C.A.\_MCAM\_Q099]

1. Last in first out [Option ID = 128279]
2. First in last out [Option ID = 128280]
3. Last in last out [Option ID = 128281]
4. First in first out [Option ID = 128282]

100) Which of the following traversing algorithm is not used to traverse in a tree?[Question ID = 15778][Question Description = M.C.A.\_MCAM\_Q100]

1. Post order [Option ID = 128283]
2. Pre order [Option ID = 128284]
3. In order [Option ID = 128285]
4. Randomized [Option ID = 128286]