

## DU MCA

Topic:- MCA A

1)

$$\text{If } f(x) = \begin{cases} \frac{1}{|x|}, & |x| > 2 \\ A + B \cdot x^2, & |x| \leq 2 \end{cases}$$

Then  $f(x)$  is differentiable at  $x = -2$  for

[Question ID = 11326]

1.  $A = \frac{3}{4}, B = -\frac{1}{16}$

[Option ID = 45301]

2.  $A = \frac{-3}{4}, B = \frac{1}{16}$

[Option ID = 45302]

3.  $A = -\frac{3}{4}, B = -\frac{1}{16}$

[Option ID = 45303]

4.  $A = \frac{3}{4}, B = \frac{1}{16}$

[Option ID = 45304]

2) The equation  $e^{x-8} + 2x - 17 = 0$  has ... real root(s),

[Question ID = 11327]

1. 8

[Option ID = 45305]

2. 4

[Option ID = 45306]

3. 2

[Option ID = 45307]

4. 1

[Option ID = 45308]

3) Which of the following statements is not true?

[Question ID = 11328]

1.  $f(x) = e^{-|x|}$  is uniformly continuous on  $(-\infty, \infty)$

[Option ID = 45309]

2.  $f(x) = x^2$  is uniformly continuous on  $[0, \infty)$

[Option ID = 45310]

3.  $f(x) = \frac{1}{x^2}$  is uniformly continuous on  $(0, 1)$

[Option ID = 45311]

4.  $f(x) = \frac{\sin x^3}{x} + \sqrt{x}$  is uniformly continuous on  $[1, \infty)$

[Option ID = 45312]

4)

$$\text{If } F(x) = \int \frac{dx}{(1+x^2)\sqrt{1-x^2}} \text{ and } F(1) = 0$$

then for  $x > 0$ ,  $F(x)$  is equal to:

[Question ID = 11329]

1.  $\frac{1}{\sqrt{2}} \tan^{-1}\left\{\frac{\sqrt{2} x}{\sqrt{1+x^2}}\right\} + \frac{\pi}{\sqrt{2}}$

[Option ID = 45313]

2.  $\frac{1}{\sqrt{2}} \tan^{-1}\left\{\frac{\sqrt{2} x}{\sqrt{1+x^2}}\right\} - \frac{\pi}{2\sqrt{2}}$

[Option ID = 45314]

3.  $\frac{1}{\sqrt{2}} \tan^{-1}\left\{\frac{\sqrt{2} x}{\sqrt{1-x^2}}\right\} + \frac{\pi}{2\sqrt{2}}$

[Option ID = 45315]

4.  $\frac{1}{\sqrt{2}} \tan^{-1}\left\{\frac{\sqrt{2} x}{\sqrt{1-x^2}}\right\} - \frac{\pi}{2\sqrt{2}}$

[Option ID = 45316]

5)

The area of the plane figure bounded by

$$y = \sqrt{x}, x \in [0,1];$$

$$y = x^2, x \in [1,2] \text{ and}$$

$$y = -x^2 + 2x + 4, x \in [0,2] \text{ is:}$$

[Question ID = 11330]

1. 19/3 [Option ID = 45317]
2. 10/7 [Option ID = 45318]
3. 3/5 [Option ID = 45319]
4. 4/3 [Option ID = 45320]

6)

Let  $\langle s_n \rangle$  be a sequence such that

$$s_1 = \sqrt{2}; s_{n+1} = \sqrt{2s_n} \text{ for } n \geq 1.$$

Which one of the following is correct?

[Question ID = 11331]

1.  $\langle s_n \rangle$  is divergent sequence
2.  $\langle s_n \rangle$  is convergent sequence and  $\lim_{n \rightarrow \infty} s_n > 2$ .

[Option ID = 45321]

3.  $\langle s_n \rangle$  is bounded above by 2

[Option ID = 45322]

4.  $\langle s_n \rangle$  is decreasing sequence.

[Option ID = 45323]

[Option ID = 45324]

7) Given the sequence  $\langle s_n \rangle$  where

$$s_n = [(n+1)(n+2) \dots (n+n) * \frac{1}{n^n}]^{\frac{1}{n}}$$

The value of  $\lim_{n \rightarrow \infty} s_n$  is equal to

[Question ID = 11332]

1.  $1/e$

[Option ID = 45325]

2.  $2/e$

[Option ID = 45326]

3.  $4/e$

[Option ID = 45327]

4. 1

[Option ID = 45328]

8) The series  $\sum_{n=0}^{\infty} \frac{1}{(2n+1)^2}$  converges to:

[Question ID = 11333]

1.  $\frac{\pi^2}{6}$

[Option ID = 45329]

2.  $\frac{\pi^2}{4}$

[Option ID = 45330]

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

[Option ID = 45331]

4.  $\frac{\pi^2}{8}$

[Option ID = 45332]

9)

Let  $f : \mathbb{R}^2 \rightarrow \mathbb{R}$  be defined as

$$(x, y) = \begin{cases} \frac{x^2 y}{x^2 + y^2}, & (x, y) \neq (0, 0) \\ 0, & (x, y) = (0, 0) \end{cases}$$

Then at the point (0,0) the function  $f$  is

[Question ID = 11334]

1. Continuous and all directional derivatives of  $f$  exist.

[Option ID = 45333]

2. Continuous and not all directional derivatives of  $f$  exist.

[Option ID = 45334]

3. Not Continuous and not all directional derivatives of  $f$  exist.

[Option ID = 45335]

4. Not Continuous and but all directional derivatives of  $f$  exist.

[Option ID = 45336]

10) The following parametric equations represents

$$x = t^2 - t, y = t^2 + t$$

(Here  $t$  is the parameter)

[Question ID = 11335]

1. Pair of lines [Option ID = 45337]

2. Circle [Option ID = 45338]

3. Parabola [Option ID = 45339]

4. Hyperbola [Option ID = 45340]

11) The eccentricity of ellipse  $x^2 + 4y^2 - 4x - 8y + 7 = 0$  is

[Question ID = 11336]

1. 1

[Option ID = 45341]

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

[Option ID = 45342]

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

[Option ID = 45343]

4.  $\sqrt{3}$

[Option ID = 45344]

12) If  $e$  and  $f$  are eccentricities of a hyperbola and its conjugate respectively then the value of  $e^2 + f^2 - 2$  is equal to ...

[Question ID = 11337]

1.  $a^2 + b^2$

[Option ID = 45345]

2.  $a^2 + \frac{b^2}{a^2}$

[Option ID = 45346]

3.  $b^2 + \frac{a^2}{b^2}$



[Option ID = 45347]

4.  $\left(\frac{a}{b}\right)^2 + \left(\frac{b}{a}\right)^2$

[Option ID = 45348]

13)

A sphere of radius  $2r$  passes through the origin and points of intersection of the plane  $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$  with the coordinate axes. These four points are used to form a tetrahedron. The locus of the centroid of the tetrahedron is a:

[Question ID = 11338]

1. Circle

[Option ID = 45349]

2. Parabola

[Option ID = 45350]

3. Sphere

[Option ID = 45351]

4. Cone

[Option ID = 45352]

14)

The value of the gradient of  $z = ye^z$  at point  $(0,3)$  is:

[Question ID = 11339]

1.  $3\sqrt{10}$

[Option ID = 45353]

2.  $10\sqrt{3}$

[Option ID = 45354]

3.  $1/\sqrt{10}$

[Option ID = 45355]

4.  $\sqrt{10}$

[Option ID = 45356]

15) Which of the following is false:

[Question ID = 11340]

1. Every convergent positive series is convergent.

[Option ID = 45357]

2. Every absolutely convergent series is convergent

[Option ID = 45358]

3. If series  $\sum s_n$  converges and  $\sum |s_n|$  diverges then  $\sum s_n$  conditionally convergent.

[Option ID = 45359]

4. The series  $1 - 2^{-2} + 3^{-2} - 4^{-2} + \dots$  is a divergent series.

[Option ID = 45360]

16)

For  $x \in \mathbb{R}$ , let  $f(x) = x^2$  and  $g(x) = \sin^2 x$ . Let  $\alpha, \beta, \alpha < \beta$ , be the roots of the quadratic equation  $9x^2 - 9x\pi + 2\pi^2 = 0$ . The area bounded by the curve  $y(x) = (f \circ g)(x)$ , and the lines  $x = \alpha, x = \beta, y = 0$ , where  $f \circ g$  is the composition of the functions  $f$  and  $g$ , is

[Question ID = 11341]

1.  $\frac{\pi}{8}$

[Option ID = 45361]

2.  $\frac{\pi}{4} + \frac{5\sqrt{3}}{16}$

[Option ID = 45362]

3.  $\frac{\pi}{8} + \frac{9\sqrt{3}}{16}$

[Option ID = 45363]

4.  $\frac{\pi}{6} + \frac{\sqrt{3}}{4}$



[Option ID = 45364]

17)

The integral  $\int \sqrt{x + \sqrt{x^2 + 2}} dx = A(x + \sqrt{x^2 + 2})^k + \frac{B}{(x + \sqrt{x^2 + 2})^p} + C$ ,  $C$  is the constant of integration. Then

[Question ID = 11342]

1.  $A = \frac{1}{2}, B = -3, k = \frac{1}{2}, p = \frac{3}{2}$

[Option ID = 45365]

2.  $A = \frac{1}{3}, B = -2, k = \frac{3}{2}, p = \frac{1}{2}$

[Option ID = 45366]

3.  $A = \frac{1}{2}, B = -3, k = \frac{1}{2}, p = -\frac{3}{2}$

[Option ID = 45367]

4.  $A = \frac{1}{3}, B = -2, k = \frac{1}{2}, p = \frac{3}{2}$

[Option ID = 45368]

18) Let  $K = \{a + b\omega + c\omega^2 : \omega \neq 1, \omega^3 = 1, a, b, c \in \mathbb{Z}_5\}$ , where  $\mathbb{Z}_5$  is the set of integers multiplicative modulo 5.

Then which one of the following is NOT correct about  $K$ ?

[Question ID = 11343]

1.  $K$  has no zero divisor

[Option ID = 45369]

2.  $K$  has only one idempotent

[Option ID = 45370]

3. Every element of  $K$  is not a unit

[Option ID = 45371]

4.  $K$  is a field and the number of non-isomorphic subfields of  $K$  is 2

[Option ID = 45372]

19) Let  $G = U(98) = \{k \in \mathbb{N} : k \leq 98, \text{ and } \text{GCD}(k, 98) = 1\}$  be a group, where  $\mathbb{N}$  is the set of all natural numbers. The number of generators of the largest cyclic subgroup of  $G$  is

[Question ID = 11344]

1. 12

[Option ID = 45373]

2. 32

[Option ID = 45374]

3. 42

[Option ID = 45375]

4. 49

[Option ID = 45376]

20)

Let  $M = \begin{bmatrix} i & 0 \\ 0 & -i \end{bmatrix}$  and  $N = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$  over the field of complex numbers,

where  $i = \sqrt{-1}$ . Let  $G$  be a group generated by  $M$  and  $N$ .

Which one of the following is NOT correct about  $G$ ?

[Question ID = 11345]

1.  $G$  is non-abelian group of order 8

[Option ID = 45377]

2. Centre of  $G$  is of order 2

[Option ID = 45378]

3.  $G$  has a normal subgroup

[Option ID = 45379]

4. Centre of  $G$  is of order 4

[Option ID = 45380]

21)

Let  $f : \mathbb{R} \rightarrow \mathbb{R}$  be a twice differentiable function, and  $g : \mathbb{R}^2 \rightarrow \mathbb{R}$  be given by  $g(x, y) = f(x^2 - y^2)$ .

Then  $\frac{\partial}{\partial x} \left( \frac{\partial g}{\partial x} \right) = \frac{\partial}{\partial x} \left( \frac{\partial g}{\partial y} \right) = \frac{\partial}{\partial y} \left( \frac{\partial g}{\partial x} \right) = \frac{\partial}{\partial y} \left( \frac{\partial g}{\partial y} \right)$



then  $\frac{\partial}{\partial x}(\frac{\partial}{\partial x}) + \frac{\partial}{\partial y}(\frac{\partial}{\partial y}) - 2 \frac{\partial}{\partial x}(\frac{\partial}{\partial y})$  equals

[Question ID = 11346]

1.  $4(x+y)^2 f''(x^2 - y^2)$

[Option ID = 45381]

2.  $4(x-y)^2 f''(x^2 - y^2)$

[Option ID = 45382]

3.  $4(x^2 - y^2 - 2xy) f''(x^2 - y^2)$

[Option ID = 45383]

4.  $4(x^2 + y^2 + xy) f''(x^2 - y^2)$

[Option ID = 45384]

22) Let  $z$  be a complex number satisfying  $3|z - 12| = 5|z - 8i|$  and  $|z - 4| = |z - 8|$ , where  $i^2 = -1$ . If  $\text{Re}(z)$  and  $\text{Im}(z)$  are the real and the imaginary parts of  $z$  respectively, then value of  $\text{Re}(z) + \text{Im}(z)$  equals [Question ID = 11347]

1. -11 [Option ID = 45385]

2. 23 [Option ID = 45386]

3. 21 [Option ID = 45387]

4. -13 [Option ID = 45388]

23)

Let the Taylor's series of the function  $f(x) = \frac{1}{(1-x)^3}$  at  $x = 0$  be  $\sum_{n=0}^{\infty} a_n x^n$ .

The value of  $a_{15} - a_{13}$  is equal to

[Question ID = 11348]

1. 2 [Option ID = 45389]

2. 30 [Option ID = 45390]

3. 31 [Option ID = 45391]

4. 62 [Option ID = 45392]

24)

The growth rate  $\frac{dN}{dt}$  of the population  $N$  of the rabbits in a certain wildlife garden is proportional to the unutilized opportunity for growth described by the differential equation

$$\frac{dN}{dt} = k(750 - N), \text{ where } k \text{ is the constant of proportionality.}$$

It is given that the population of the rabbits at  $t = 0$  is 100, and after 2 years their population has grown to 230. The population of rabbits after 4 years is

[Question ID = 11349]

1. 234

[Option ID = 45393]

2. 316

[Option ID = 45394]

3. 433

[Option ID = 45395]

4. 334

[Option ID = 45396]

25) The number of cyclic subgroups of order 15 in a group  $G = Z_{30} \oplus Z_{20}$  equals

[Question ID = 11350]

1. 12

[Option ID = 45397]

2. 6

[Option ID = 45398]

3. 5

[Option ID = 45399]

4. 4

[Option ID = 45400]

26) Which one of the following sets is NOT a subring of the ring  $M_2(\mathbb{R})$ , of all  $2 \times 2$  real matrices?

[Question ID = 11351]

1.  $\left\{ \begin{pmatrix} a & b \\ 0 & c \end{pmatrix} : a, b, c \in \mathbb{R} \right\}$



[Option ID = 45401]

2.  $\left\{ \begin{pmatrix} a & a \\ b & b \end{pmatrix} : a, b, c \in \mathbb{R} \right\}$

[Option ID = 45402]

3.  $\left\{ \begin{pmatrix} a & 1 \\ 1 & b \end{pmatrix} : a, b, c \in \mathbb{R} \right\}$

[Option ID = 45403]

4.  $\left\{ \begin{pmatrix} a & b \\ b & a \end{pmatrix} : a, b, c \in \mathbb{R} \right\}$

[Option ID = 45404]

27)

In a triangle ABC, let the sides AB and AC be represented by the vectors

$\hat{i} - 3\hat{j} + \sqrt{2}\hat{k}$  and  $3\hat{i} + \hat{j} + \sqrt{2}\hat{k}$ , respectively.

Let  $\theta$  be the  $\angle ABC$  and  $d$  be the length of the median of  $\triangle ABC$  drawn from A on the side BC.

Then

[Question ID = 11352]

1.  $\theta = 180^\circ - \cos^{-1} \sqrt{\frac{5}{12}}$  and  $d = \sqrt{7}$

[Option ID = 45405]

2.  $\theta = 180^\circ - \cos^{-1} \sqrt{\frac{5}{12}}$  and  $d = \sqrt{5}$

[Option ID = 45406]

3.  $\theta = \cos^{-1} \sqrt{\frac{5}{12}}$  and  $d = \sqrt{7}$

[Option ID = 45407]

4.  $\theta = \cos^{-1} \sqrt{\frac{5}{12}}$  and  $d = \sqrt{5}$

[Option ID = 45408]

28)

Let  $M = \begin{bmatrix} 50 & 20 \\ 20 & 80 \end{bmatrix}$ . Let  $\lambda_1$  and  $\lambda_2$  be the eigenvalues of M

and their eigenvectors be  $X_1 = \begin{pmatrix} 20 \\ \lambda_1 - 50 \end{pmatrix}$  and  $X_2 = \begin{pmatrix} \lambda_2 - 80 \\ 20 \end{pmatrix}$ , respectively.

The value of  $(X_1 + X_2)^T (X_1 - X_2) + (X_1)^T X_2$  equals

[Question ID = 11353]

1. 5600

[Option ID = 45409]

2. 1600

[Option ID = 45410]

3. 0

[Option ID = 45411]

4. 4000

[Option ID = 45412]

29) Let  $\text{Re}(z)$  and  $\text{Im}(z)$  be the real and imaginary parts of any complex number  $z$ , and  $\arg(z)$  denotes the principal argument of  $z$ . Let  $z_1$  and  $z_2$  be two distinct complex numbers such that  $\text{Re}(z_1) = |z_1 - 2|$  and  $\text{Re}(z_2) = |z_2 - 2|$ . If  $\arg(z_1 - z_2) = \pi/6$  then

[Question ID = 11354]

1.  $\text{Im}(z_1 + z_2) = 4\sqrt{3}$

[Option ID = 45413]

2.  $\text{Im}(z_1 + z_2) = \frac{4}{\sqrt{3}}$

[Option ID = 45414]

3.  $\text{Re}(z_1 - z_2) = 8$

[Option ID = 45415]

4.  $\text{Re}(z_1 - z_2) = 9$

[Option ID = 45416]

30) Which one of the following statements is NOT correct in the ring  $= Z_4 \oplus Z_6$  ?

[Question ID = 11355]

1. The set of all units in  $R$  is  $\{(1, 1), (1, 5), (3, 1), (3, 5)\}$

[Option ID = 45417]

2. The set of all nilpotent elements in  $R$  is  $\{(0, 0), (0, 2)\}$

[Option ID = 45418]

3. The total number of the zero-divisors in  $R$  is 28.

[Option ID = 45419]

4. The set of zero-divisors is  $\{(a, b) : a = 0, 2 \text{ and } b = 0, 2, 3, 4\}$

[Option ID = 45420]

31) Given that  $3^x = 656$ . The value of  $5^{x-5}$  is ... [Question ID = 11356]

1. 81 [Option ID = 45421]  
2. 125 [Option ID = 45422]  
3. 225 [Option ID = 45423]  
4.  $1/125$  [Option ID = 45424]

32) What is the next term in the series 6, 20, 42, 72, 110, ... is [Question ID = 11357]

1. 156 [Option ID = 45425]  
2. 210 [Option ID = 45426]  
3. 110 [Option ID = 45427]  
4. 196 [Option ID = 45428]

33) Next term in the series zaa, yeb, xic, wod, vue, ... is

[Question ID = 11358]

1. uaf

[Option ID = 45429]

2. uef

[Option ID = 45430]

3. teg

[Option ID = 45431]

4. tag

[Option ID = 45432]

34) Age of a child is half of the age of father. Twenty years ago the age of father was 10 times the age of son. What is the age of father? [Question ID = 11359]

1. 60 years [Option ID = 45433]  
2. 55 years [Option ID = 45434]  
3. 50 years [Option ID = 45435]  
4. 45 years [Option ID = 45436]

35) In a race of 1 Kilometer, athlete A beats athlete B by 50 meters, in another race of 500 meters, athlete B beats athlete C by 50 meters. By how many meters (Approximately) can athlete A beat athlete C in a race of 400 meters?

[Question ID = 11360]

1. 50 meters

[Option ID = 45437]

2. 58 meters

[Option ID = 45438]

3. 62 meters

[Option ID = 45439]

4. 70 meters

[Option ID = 45440]

36) Persons A, B, and C can finish a work in 15, 10, and 12 days respectively. Person B and person C start the work together but are asked to leave after 4 days. In how many days will the remaining work be done by person A?

[Question ID = 11361]

1. 2 days

[Option ID = 45441]

2. 3 days

[Option ID = 45442]

3. 4 days

[Option ID = 45443]

4. 5 days

[Option ID = 45444]



1) The causes and physical characteristics of pandemics and disasters are very different. More than any previous disaster such as Ebola, HIV, SARS, TB and malaria, the Coronavirus Disease (COVID-19) has exposed underlying risks and vulnerabilities and challenged the traditional notion of risk. The impact on population groups with pre-existing vulnerabilities has been particularly severe especially where the health crisis has turned into a humanitarian and economic crisis. There are examples of countries.

In the Asia-Pacific region that experienced disasters in the year or months before the onset of the COVID-19 pandemic and where the impacts of both the virus itself and the government response to contain its spread have either reinforced the socio-economic impacts of the previous disaster or have impeded planned recovery efforts. In April 2020, the small island states of Fiji, Solomon Islands, Tonga and Vanuatu were impacted by Tropical Cyclone Harold. While they were relatively isolated from the health risks of COVID-19 due to early closure of borders, they were already feeling the effects of economic losses due to reduced market demand from tourism, fisheries and global commodities

Which of the following is a vulnerable group?

[Question ID = 11362]

1. Persons with pre-existing disabilities  
[Option ID = 45445]
2. People living with pet animals  
[Option ID = 45446]
3. People living in multi-storeyed buildings  
[Option ID = 45447]
4. People living in residential complexes  
[Option ID = 45448]

2) The causes and physical characteristics of pandemics and disasters are very different. More than any previous disaster such as Ebola, HIV, SARS, TB and malaria, the Coronavirus Disease (COVID-19) has exposed underlying risks and vulnerabilities and challenged the traditional notion of risk. The impact on population groups with pre-existing vulnerabilities has been particularly severe especially where the health crisis has turned into a humanitarian and economic crisis. There are examples of countries.

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What disaster struck island states of Fiji?

[Question ID = 11363]

1. Earthquake  
[Option ID = 45449]
2. Floods  
[Option ID = 45450]
3. Cyclone  
[Option ID = 45451]
4. Economic losses  
[Option ID = 45452]

3) The causes and physical characteristics of pandemics and disasters are very different. More than any previous disaster such as Ebola, HIV, SARS, TB and malaria, the Coronavirus Disease (COVID-19) has exposed underlying risks and vulnerabilities and challenged the traditional notion of risk. The impact on population groups with pre-existing vulnerabilities has been particularly severe especially where the health crisis has turned into a humanitarian and economic crisis. There are examples of countries.

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Which of the following is false?

[Question ID = 11364]

1. COVID 19 has challenged the traditional notion of risk.  
[Option ID = 45453]
2. In Fiji economic losses occurred due to reduced market from tourism.



[Option ID = 45454]

3. Many countries experienced disasters in the years or months before the onset of the COVID-19

[Option ID = 45455]

4. The characteristics of TB and COVID 19 are same.

[Option ID = 45456]

4) The causes and physical characteristics of pandemics and disasters are very different. More than any previous disaster such as Ebola, HIV, SARS, TB and malaria, the Coronavirus Disease (COVID-19) has exposed underlying risks and vulnerabilities and challenged the traditional notion of risk. The impact on population groups with pre-existing vulnerabilities has been particularly severe especially where the health crisis has turned into a humanitarian and economic crisis. There are examples of countries.

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In the full form of COVID

[Question ID = 11365]

1. 'CO' stands for 'corona,' 'VI' for 'virus,' and 'D' for disease.

[Option ID = 45457]

2. 'CO' stands for 'corona,' 'V' for 'virus,' 'I' for induced and 'D' for disease.

[Option ID = 45458]

3. 'CO' stands for 'corona,' 'V' for 'virus,' 'I' for incite and 'D' for disease

[Option ID = 45459]

4. 'CO' stands for 'corona,' 'V' for 'virus,' 'I' for indicative and 'D' for disease

[Option ID = 45460]

5) The causes and physical characteristics of pandemics and disasters are very different. More than any previous disaster such as Ebola, HIV, SARS, TB and malaria, the Coronavirus Disease (COVID-19) has exposed underlying risks and vulnerabilities and challenged the traditional notion of risk. The impact on population groups with pre-existing vulnerabilities has been particularly severe especially where the health crisis has turned into a humanitarian and economic crisis. There are examples of countries.

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Countries In the Asia-Pacific region experienced disasters before the onset of the COVID-19.

[Question ID = 11366]

1. A week

[Option ID = 45461]

2. Months

[Option ID = 45462]

3. Years

[Option ID = 45463]

4. Decades

[Option ID = 45464]

Topic:- MCA C

1) Air pollution is the single greatest environmental risk to living beings and one of the main causes of death and disease globally. Air pollution affects all but it disproportionately affects women, children and the elderly, especially in low-income populations as they are often exposed to high levels of ambient air pollution and indoor air pollution from cooking and heating with wood fuel and kerosene and also has a negative impact on ecosystems.

Some air pollutants, such as black carbon, methane, hydro- fluorocarbons and ground-level ozone, are also short-lived climate pollutants and are responsible for a significant portion of air pollution-related deaths, as well as impacts on crops and hence food security, so their reduction has co-benefits for the climate. The average atmospheric lifetime of a single black carbon soot particle is only two or three weeks. Methane has an atmospheric lifetime of 12 years. Ground-level ozone lasts only a few hours to a few days in the atmosphere. The average HFC lifespan, weighted by their respective emissions, is 15 years.

All countries need to substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination by 2030, as well as to reduce the adverse per capita environmental impact





paying special attention to air quality and municipal and other waste management by 2030.

Today, the international community acknowledges that improving air quality can enhance climate change mitigation and that climate change mitigation efforts can improve air quality. Seventh of September every year is designated as the International Day of Clean Air for blue skies.

Air pollution disproportionately affects...especially in low-income populations

[Question ID = 11368]

1. Women only  
[Option ID = 45469]
2. Children only  
[Option ID = 45470]
3. Elderly only  
[Option ID = 45471]
4. women, children and the elderly  
[Option ID = 45472]

2) Air pollution is the single greatest environmental risk to living beings and one of the main causes of death and disease globally. Air pollution affects all but it disproportionately affects women, children and the elderly, especially in low-income populations as they are often exposed to high levels of ambient air pollution and indoor air pollution from cooking and heating with wood fuel and kerosene and also has a negative impact on ecosystems.

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Which of the following is false

[Question ID = 11369]

1. Air pollution can cause food security.  
[Option ID = 45473]
2. Reducing short lived pollutants can improve the climate.  
[Option ID = 45474]
3. Adverse per capita environmental impact of cities is under control  
[Option ID = 45475]
4. Climate change mitigation efforts can improve air quality.  
[Option ID = 45476]

3) Air pollution is the single greatest environmental risk to living beings and one of the main causes of death and disease globally. Air pollution affects all but it disproportionately affects women, children and the elderly, especially in low-income populations as they are often exposed to high levels of ambient air pollution and indoor air pollution from cooking and heating with wood fuel and kerosene and also has a negative impact on ecosystems.

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What is the full form of SLCP?

[Question ID = 11370]

1. Short-Lived Climate Pollutants  
[Option ID = 45477]
2. Short-Lived Climate Pollution  
[Option ID = 45478]
3. Short-Lived Carbon Pollutants



[Option ID = 45479]

4. Short-Life Climate Pollutants

[Option ID = 45480]

4) Air pollution is the single greatest environmental risk to living beings and one of the main causes of death and disease globally. Air pollution affects all but it disproportionately affects women, children and the elderly, especially in low-income populations as they are often exposed to high levels of ambient air pollution and indoor air pollution from cooking and heating with wood fuel and kerosene and also has a negative impact on ecosystems.

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International Day of Clean Air for blue skies' falls on ... every year.

[Question ID = 11371]

1. 17<sup>th</sup> September

[Option ID = 45481]

2. 7<sup>th</sup> September

[Option ID = 45482]

3. 27<sup>th</sup> September

[Option ID = 45483]

4. 30<sup>th</sup> September

[Option ID = 45484]

5) Air pollution is the single greatest environmental risk to living beings and one of the main causes of death and disease globally. Air pollution affects all but it disproportionately affects women, children and the elderly, especially in low-income populations as they are often exposed to high levels of ambient air pollution and indoor air pollution from cooking and heating with wood fuel and kerosene and also has a negative impact on ecosystems.

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Match List I with List II

List I	List II
A. Black Carbon	I. 12 YEARS
B. Methane	II. 15 YEARS
C. Hydro- Fluorocarbons	III. 2-3 WEEKS
D. Ground-Level Ozone	IV. FEW HOURS TO FEW DAYS

Choose the correct answer from the options given below

[Question ID = 11372]

1. A - III, B - I, C - II, D - IV

[Option ID = 45485]

2. A - II, B - III, C - IV, D - I

[Option ID = 45486]

3. A - IV, B - II, C - III, D - I

[Option ID = 45487]

4. A - I, B - IV, C - II, D - III

[Option ID = 45488]

Topic:- MCA D

1) What is the floating point representation of 12.25?[Question ID = 11373]

1. 1100.01 [Option ID = 45489]
2. 1100.11001 [Option ID = 45490]
3. 1100.10 [Option ID = 45491]
4. 1100.10011 [Option ID = 45492]

2) Consider the following function:

```
void swap (int x, int y)
{
    int temp = x;
    x = y;
    y = temp;
}
```

The above function is invoked as follows:

```
int a = 3;
int b = 4;
swap(a, b);
```

What will be the values assigned to a and b on execution of the function call: swap(a, b)?

[Question ID = 11374]

1. a = 3, b = 3  
[Option ID = 45493]
2. a = 3, b = 4  
[Option ID = 45494]
3. a = 4, b = 3  
[Option ID = 45495]
4. a = 4, b = 4  
[Option ID = 45496]

3) The value of n in the following code segment is

```
int a[] = {1, 2, 3, 4};
int i = 0, n;
i++;
n = a[++i];
```

[Question ID = 11375]

1. 1  
[Option ID = 45497]
2. 2  
[Option ID = 45498]
3. 3  
[Option ID = 45499]
4. 4  
[Option ID = 45500]

4) The following bit pattern denotes a negative integer in two's complement form.

1111111111111010

What value does it represent?

[Question ID = 11376]

1. -6  
[Option ID = 45501]
2. -4  
[Option ID = 45502]
3. -2  
[Option ID = 45503]
4. -1  
[Option ID = 45504]



