

**Airforce
Group X**

**Previous Year Paper
5 November 2020
Memory Based Paper**

70 Questions

Que. 1 Read the passage and answer the questions that follow. Some words may be highlighted. Read carefully.

There was a flight of crows in a thick forest. One day, they saw a few peacocks dancing there. One of the crows felt very jealous. He was not contented with what he had. He wanted to be as beautiful as the peacocks. He said to himself, "How beautiful they look! What lovely feathers they have! If I were a peacock, I would also have looked so beautiful." He soon had an idea. "Every day, I'll watch these peacocks dance and whenever any of their feathers fall, I will pick them up and keep them. When I have enough, I'll stick them on my tail and.....hurrah.....I'll become as beautiful as a peacock!"

The **grumpy** crow left his friends and followed the peacocks wherever they went. He picked up each and every feather they dropped and kept them. One day he thought he had collected enough feathers. He stuck them inside his own feathers and danced with joy. Next day, the grumpy crow went in search of the peacocks. He quietly crept close to them and pretended to sleep. Soon, the peacocks got ready to dance. He also joined them in the dance and sang along with them. The peacocks soon realized that he was not one of them. Suddenly all of them stopped dancing and said, "Why do you want to act like a peacock?" The crow said, "You are so beautiful. I also want to look like you". The Peacocks said, "All of us have some good qualities. You may not look good, but you have an intelligent brain which we don't have. So be satisfied with what you are." The grumpy crow went home to join his friends. The oldest and the wisest crow said to him, "Son, you have learnt your lesson. You may not be as the beautiful as a peacock or as strong as a lion, but everyone loves you just as you are. So, just be yourself."

Why was the crow jealous of the peacocks?

1. He was not contented with what he had
2. He wanted to be as beautiful as the peacocks
3. He wanted to have their colourful feathers
4. All of these

Que. 2 What is the meaning of the word 'grumpy'?

1. Honest
2. Glorious
3. Irritable
4. Sick

Que. 3 What advice did the peacock give to the crow?

1. Become as strong as a lion
2. Be satisfied with what you are
3. Never lie to your seniors
4. Drink some water before going to sleep

Que. 4 What can be the theme of the passage?

1. Never wear feathers in your life
 2. Pride makes you weak
 3. Be yourself
 4. None of these
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Que. 5 Select the segment of the sentence that contains an error. If there is no error, mark No Error as your answer.

Mr Sharma is meeting (A) his clients on (B) the 15th of every month. (C) No Error.(D)

1. A
2. B
3. C
4. No Error

Que. 6 Select the segment of the sentence which contains an error. If there is no error, mark No Error as your answer.

While Mohan was returning (A) from his office, a man attacked on (B) him with a sword (C) No Error

1. A
2. B
3. C
4. No Error

Que. 7 Fill in the blank with the appropriate word.

When we reached the station, the train _____ left.

1. Has
2. Had
3. Would
4. Will

Que. 8 Give the noun form of the word 'adverse'.

1. Adversity
2. Adverction
3. Adversy
4. Adversity

Que. 9 What preposition generally follows the verb 'influence'? Keep in mind that we are talking about the V₁ form only.

1. On
2. From
3. Under
4. With

Que. 10 Select the correct passive form of the given sentence.

Can Ridhima watch that web series?

1. That web-series can be watched by Ridhima.
 2. Can that web-series be watch by Ridhima?
 3. Can that web-series be watched by Ridhima?
 4. Can that web-series being watched by Ridhima?
-

Que. 11 Select the correct passive form of the given sentence.

Amitabh was writing quotes.

1. Quotes were being wrote by Amitabh.
 2. Quotes is being written by Amitabh.
 3. Quotes are being wrote by Amitabh.
 4. Quotes were being written by Amitabh.
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Que. 12 In the following question, a sentence is given in Direct/Indirect speech. Out of the four alternatives choose the one which best expresses the sentence in Indirect/Direct Speech.

Rama said, "I am playing cricket."

1. Rama said that he was playing cricket.
 2. Rama said that he is playing cricket.
 3. Rama said that he played cricket.
 4. Rama said that he was played cricket.
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Que. 13 Direction: In the following question, a sentence is given in Direct/Indirect speech. Out of the four alternatives choose the one which best expresses the sentence in Indirect/Direct Speech.

Geeta said, "I did not do this deliberately."

1. Geeta said that she has not done this deliberately
 2. Geeta said that she had not done that deliberately
 3. Geeta said that I have not done this deliberately
 4. Geeta said that I had not done that deliberately
-

Que. 14 What is the synonym of the word given below?

Tremendous

1. Exciting
 2. Fantastic
 3. Eager
 4. Skilled
-

Que. 15 What is the antonym of the word given below?

Initiate

1. Start
 2. Begin
 3. Commence
 4. Finish
-

Que. 16 Determine the correct spelling.

1. Comitee
 2. Committee
 3. Commitee
 4. Comittee
-

Que. 17 Determine the correct spelling.

1. Preferrable
2. Prefurabel
3. Preferable
4. Prefferable

Que. 18 **Direction:** In the following question, out of the four given alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

Best of both worlds

1. All the advantages
2. To waste time here and there
3. To wish good luck
4. To keep quiet

Que. 19 In the following question, out of the four alternatives, select the alternative which is best substitute of the phrase.

The state or situation of being alone

1. Gravity
2. Charge
3. Cheap
4. Solitude

Que. 20 In the following question, parts of a sentence have been jumbled and labelled as P, Q, R, and S. You are required to rearrange the jumbled parts of the sentence and mark your response accordingly by selecting the correct option.

P. There are many people who

Q. Have no sense of thankfulness

R. In spite of having learned and developed a lot

S. Towards their parents and teachers

1. SRQP
2. PRQS
3. SRPQ
4. SQPR

Que. 21 The work done on moving a charge particle of - 5 C in an electric field is 100 J. Find the potential difference.

1. 20 volt
2. - 20 volt
3. 10 volt
4. - 10 volt

Que. 22 On which of the following, no magnetic force will act in a magnetic field region?

1. Beam of electrons
2. Beam of protons
3. Piece of a magnet

4. charge particle at rest

Que. 23 The length of a simple pendulum is increased then the time period will-

1. Decrease
2. increase
3. remain same
4. Can't predict

Que. 24 The centre of mass of a uniform cube will be at-

1. One corner of the cube
2. Geographical centre of the cube
3. Below geographical centre of the cube
4. Above geographical centre of the cube

Que. 25 The linear momentum of a particle is increased by 25% then find the increment in the kinetic energy if the mass of the particle is constant.

1. 50%
2. 60%
3. 56.25%
4. 25%

Que. 26 The slope of a velocity - time graph (v-t) gives-

1. Average velocity
2. Displacement
3. Force
4. Acceleration

Que. 27 A wire is pulled away from both the sides. The stress generated in the wire will be-

1. Tensile
2. Compressive
3. Shear
4. Compressive in one half and tensile in other half

Que. 28 Which type of behaviour is shown by a pure Germanium at absolute zero temperature?

1. Conductor
2. Semiconductor
3. Insulator
4. Can't predict

Que. 29 The escape velocity on earth is 11.2 km/s. Find the escape velocity on a planet having mass twice that of earth and radius half that of the earth.

1. 11.2 km/s
2. 22.4 km/s

3. 5.6 km/s
4. 0

Que. 30 Which physical quantity has the same dimension as that of \sqrt{LC} ?

1. Length
2. Mass
3. Resistance
4. Time period

Que. 31 A charged particle of charge q and mass m is moving in a magnetic field B with a velocity v . The velocity is perpendicular to the magnetic field. Find the radius of the path followed by the charged particle.

1. $\frac{mv}{Bq^2}$
2. $\frac{mv}{qB}$
3. $\frac{mv}{2qB}$
4. $\frac{2mv}{qB}$

Que. 32 1 kWh = _____ J

1. 3.6×10^4 J
2. 3.6×10^5 J
3. 3.6×10^6 J
4. 3.6×10^3 J

Que. 33 Which of the following phenomenon differentiate the electromagnetic waves and sound waves?

1. Diffraction
2. reflection
3. Refraction
4. Polarization

Que. 34 Which of the physics quantity has the same unit in both C.G.S and M.K.S system?

1. Velocity
2. Distance
3. Time
4. Mass

Que. 35 Human hair cling together when it is removed from water due to

1. Force of attraction between hairs
 2. Surface tension
 3. Viscosity of water
 4. Characteristic property of hairs
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Que. 36 The equations of two waves are given as $Y_1 = 20 \sin (4\pi t + \pi /4)$ and $y_2 = 20 \sin (4\pi t + \pi /3)$. Find the phase difference between two waves.

1. 0
2. $\pi/6$
3. $\pi/12$
4. $\pi/4$

Que. 37 Which law of thermodynamics is used for understanding the concept of energy conservation?

1. Zeroth law
2. First law
3. Second law
4. None of the above

Que. 38 What is the force between two spheres of charges 12×10^{-8} C and 18×10^{-8} C which are separated by a distance of 25 cm?

1. 3.11×10^{-3} N
2. 3.11×10^{-4} N
3. 6.2×10^{-3} N
4. 12×10^{-3} N

Que. 39 What is the value of unknown resistance when connected with 8Ω in parallel combination to give the equivalent resistance 3Ω ?

1. $\frac{5}{24} \Omega$
2. $\frac{24}{5} \Omega$
3. 10Ω
4. 5Ω

Que. 40 Which of the following laws can be explained by Huygens's principle?

1. Diffraction
2. Reflection
3. Refraction
4. All of the above

Que. 41 When a red colour paper is seen in the yellow light, it will appear as

1. red
2. yellow
3. White
4. black

Que. 42 If the threshold frequency for photoelectric effect on sodium metal is 1.6×10^4 Hz, then find its work function ($h = 6.6 \times 10^{-34}$ J/sec)

1. 10.56×10^{-34} J

2. $15.56 \times 10^{-30} \text{ J}$
3. $15.6 \times 10^{-30} \text{ J}$
4. $10.56 \times 10^{-30} \text{ J}$

Que. 43 Property of converging lens is:

1. converges light rays on a point
2. diverges light rays
3. no lens is converging
4. none of these

Que. 44 In which process, the change in internal energy of the system is equal to work done on the system or by the system

1. Isochoric
2. Isobaric
3. Isothermal
4. Adiabatic

Que. 45 The root-mean-square speed of the molecules of an enclosed gas is v . What will be the root mean square speed if the pressure is doubled, the temperature remaining the same?

1. $v/2$
2. v
3. $2v$
4. $4v$

Que. 46 $\cos^4 x - \sin^4 x$ is equal to ?

1. $\sin 2x$
2. $\cos 2x$
3. $\cos^2 x$
4. $\sin^2 x$

Que. 47 Find the domain of $\sin^{-1} 3x$

1. $[-1, 1]$
2. $\left[\frac{-1}{2}, \frac{1}{2}\right]$
3. $\left[\frac{-1}{3}, \frac{1}{3}\right]$
4. $\left[0, \frac{1}{3}\right]$

Que. 48 The range of the data:

21, 23, 15, 13, 8, 14, 11, 9 is

1. 16
2. 15
3. 12

Que. 49 Find the area of the region bounded by the curves $y = \frac{x^2}{2}$, the line $x = 2$, $x = 0$ and the x - axis ?

1. $\frac{8}{3}$ sq. units
2. $\frac{1}{3}$ sq. units
3. $\frac{2}{3}$ sq. units
4. $\frac{4}{3}$ sq. units

Que. 50 What is the degree of the differential equation $y = x \frac{dy}{dx} + \left(\frac{dy}{dx} \right)^2$?

1. 3
2. 0
3. 1
4. 2

Que. 51 The angle between two lines $y = m_1x + c_1$ and $y = m_2x + c_2$ is

1. $\tan^{-1} \left(\frac{m_1 - m_2}{1 - m_1 m_2} \right)$
2. $\pm \tan^{-1} \left(\frac{m_1 - m_2}{1 + m_1 m_2} \right)$
3. $\pm \tan^{-1} \left(\frac{m_1 + m_2}{1 + m_1 m_2} \right)$
4. None of the above

Que. 52 A die is tossed twice. What is the probability of getting a sum of 5?

1. $\frac{1}{6}$
2. $\frac{1}{7}$
3. $\frac{1}{8}$
4. $\frac{1}{9}$

Que. 53 The value of $i^n + i^{n+1} + i^{n+2} + i^{n+3}$, where $i = \sqrt{-1}$, is

1. 1
2. -1
3. 0
4. i

Que. 54 Find the determinant of the matrix $\begin{vmatrix} x & y & z \\ a & b & c \\ x+a & y+b & z+c \end{vmatrix}$

1. abc
2. xyz
3. 0
4. $ax + by + cz$

Que. 55 If the third term of G.P. is 4, then the product of its first 5 terms is

1. 4^5
2. 2^5
3. 4^{10}
4. 2^7

Que. 56 Find the middle terms in the expansion of $(x - \frac{1}{x})^{18}$

1. ${}^{18}C_9$
2. $-{}^{18}C_9$
3. $-{}^{18}C_{10}$
4. None of the above

Que. 57 Find the value of nC_n

1. 0
2. 1
3. n
4. n - 1

Que. 58 If $|\vec{a} \times \vec{b}| = |\vec{a} \cdot \vec{b}|$, then angle between \vec{a} and \vec{b} is

1. 90°
2. 60°
3. 45°
4. 30°

Que. 59 What is the value of $l^2 + m^2 + n^2$

1. 1
2. -1
3. 2
4. 0

Que. 60 The length of latus rectum of the ellipse $\frac{x^2}{100} + \frac{y^2}{75} = 1$ is

1. 10
2. 12
3. 15
4. 20

Que. 61 Find $\frac{d^2 \log x}{dx^2}$

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

2. $\frac{-1}{x^2}$
3. $\frac{-1}{x}$
4. $\frac{-1}{x^3}$

Que. 62 Find $\frac{d \sin^3 x}{dx}$

1. $\cos^3 x$
2. $\sin^2 x \cos x$
3. $3\sin^2 x \cos x$
4. $\sin^2 x$

Que. 63 Find general value of θ when $\tan \theta = \tan \alpha$

1. $n\pi - \alpha$
2. $n\pi + \alpha$
3. $\frac{n\pi}{2} + \alpha$
4. All of the above

Que. 64 If $f(x)$ is continuous at $x = a$ then $\lim_{x \rightarrow a} f(x)$

1. $f(a)$
2. $-f(a)$
3. $f(a)$
4. None of the above

Que. 65 Find the value of $\lim_{n \rightarrow \infty} \frac{1 - n^2}{\sum n}$

1. -2
2. 2
3. 1
4. -1

Que. 66 $\int \frac{1}{\sqrt{4-9x^2}} dx$ is equal to ?

1. $\sin^{-1}\left(\frac{3x}{2}\right) + c$
2. $\frac{1}{3}\sin^{-1}\left(\frac{3x}{2}\right) + c$
3. $\frac{1}{3}\sin^{-1}\left(\frac{x}{2}\right) + c$
4. None of the above

Que. 67 Find the value of x if $\begin{bmatrix} 2x & 3 \\ 4 & x \end{bmatrix} = \begin{bmatrix} 6 & 3 \\ 4 & 3 \end{bmatrix}$

1. 0
2. 2
3. 3

4. 4

Que. 68 The longest period of $3\sin x - 4\sin^3 x$ is ?

1. 2π
2. $\frac{\pi}{3}$
3. $\frac{2\pi}{3}$
4. None of the above

Que. 69 Which of the following equals $1 + \tan^2 \theta$?

1. $\sec^2 \theta$
2. $\cos^2 \theta$
3. $\sin^2 \theta$
4. $\cot^2 \theta$

Que. 70 Find the equation of the line which makes intercepts 2 and -3 on the line x-axis and the y-axis respectively ?

1. $3x + 2y + 6 = 0$
2. $3x - 2y - 6 = 0$
3. $3x + 2y - 6 = 0$
4. $3x - 2y + 6 = 0$

70 Questions

Que. 1	Correct Option - 4
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Que. 2	Correct Option - 3
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Que. 3	Correct Option - 2
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Que. 4	Correct Option - 3
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Que. 5	Correct Option - 1
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Que. 6	Correct Option - 2
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Que. 7	Correct Option - 2
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Que. 8	Correct Option - 4
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Que. 9	Correct Option - 1
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Que. 10	Correct Option - 3
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Que. 11	Correct Option - 4
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Que. 12	Correct Option - 1
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Que. 13	Correct Option - 2
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Que. 14	Correct Option - 2
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Que. 15	Correct Option - 4
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Que. 16	Correct Option - 2
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Que. 17	Correct Option - 3
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Que. 18	Correct Option - 1
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Que. 19	Correct Option - 4
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Que. 20	Correct Option - 2
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Que. 21	Correct Option - 2
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Que. 22	Correct Option - 4
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Que. 23	Correct Option - 2
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Que. 24	Correct Option - 2
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Que. 25	Correct Option - 3
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Que. 26	Correct Option - 4
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Que. 27	Correct Option - 1
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Que. 28	Correct Option - 3
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Que. 29	Correct Option - 2
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Que. 30	Correct Option - 4
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Que. 31	Correct Option - 2
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Que. 32	Correct Option - 3
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Que. 33	Correct Option - 4
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Que. 34	Correct Option - 3
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Que. 35	Correct Option - 2
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Que. 36	Correct Option - 3
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Que. 37	Correct Option - 2
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Que. 38	Correct Option - 1
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Que. 39	Correct Option - 2
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Que. 40	Correct Option - 4
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Que. 41	Correct Option - 4
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Que. 42	Correct Option - 4
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Que. 43	Correct Option - 1
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Que. 44	Correct Option - 4
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Que. 45	Correct Option - 2
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Que. 46	Correct Option - 2
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Que. 47	Correct Option - 3
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Que. 48	Correct Option - 2
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Que. 49	Correct Option - 4
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Que. 50	Correct Option - 4
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Que. 51	Correct Option - 2
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Que. 52	Correct Option - 4
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Que. 53	Correct Option - 3
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Que. 54	Correct Option - 3
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Que. 55	Correct Option - 1
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Que. 56	Correct Option - 2
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Que. 57	Correct Option - 2
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Que. 58	Correct Option - 3
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Que. 59	Correct Option - 1
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Que. 60	Correct Option - 3
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Que. 61	Correct Option - 2
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Que. 62	Correct Option - 3
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Que. 63	Correct Option - 2
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Que. 64	Correct Option - 1
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Que. 65	Correct Option - 1
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Que. 66	Correct Option - 2
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Que. 67	Correct Option - 3
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Que. 68	Correct Option - 3
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Que. 69	Correct Option - 1
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Que. 70	Correct Option - 2
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