

ANSWERS & EXPLANATION

APTITUDE TEST–Test (4286) – 2024

1 (d)

The passage mostly covers the entertainment, social and financial aspects of Bollywood.

Assumption 1 is incorrect. The context of the propagation of Indian culture abroad is not a part of the passage. Therefore, this assumption is beyond the scope of the passage and is not correct.

Assumption 2 is incorrect. The context of the competition of Bollywood with other film industries is not covered in the passage. Hence, this assumption is beyond the scope of the passage and is not correct as per the passage.

2 (d)

Option (a) is incorrect. Indian cinema is one of the most influential and powerful tools to address various social issues. It is incorrect to say that the impact of Bollywood on society is miniscule. So, this statement does not quite capture the crux of the passage.

Option (b) is incorrect. The lines “*It is the world’s largest film industry in terms of the number of films produced, but not in terms of its financial returns*” cannot be taken to imply poor or unviable financial returns. The author only says that Bollywood is not the world leader in terms of financial returns on movies.

Option (c) is incorrect. The context of quality films is not a message of this passage. Only the quantity is mentioned in the line “*To satisfy the 14 million Indians who go to the cinema every day, the Indian film industry produces more than 1,000 films every year.*” Furthermore, Bollywood is already one of the most influential and powerful tools to address various social issues. So, the second part of the statement is also incorrect. This means that the given option is not correct as per the passage.

Option (d) is correct. The given option is correct because the passage clearly mentions, “*Since its inception in 1913, film has been a vital medium for the communication of social insights and conditions*”. Hence, cinema can be aptly called a mirror of society.

3 (b)

Option (a) is incorrect. The passage only focuses on dreams which are related to past events as given in the line - “*According to the hypothesis, since **dreams frequently represent events that occurred** (past) while a person was awake*”. The context of dreams about the future is not a part of the passage and hence not correct.

Option (b) is correct. Refer to the lines, “*While we dream, the brain is shifting between the information it should store and the information it should forget. Our mind also generates images and tales to best organise all this activity to forward the process*”. This explains that the brain works on memory while we are dreaming. Therefore, the given option is closer to the essence of the passage, and hence it is the correct answer.

Option (c) is incorrect. The given option is not correct because it states that the decision of storing or forgetting is based on the dreams we see. But, the line “*While we dream, the brain is shifting between the information it should store and the information it should forget*” only mentions that such exercise of storing and forgetting is done while one dreams. It is not ‘based’ on the dreams one sees during sleep. Hence, the given option is not correct.

Option (d) is incorrect. The context of the quality of dreams and their relationship with memory consolidation is not discussed in the passage. Hence, the given option is not correct as per the passage.

4 (c)

When a die is thrown, the probability of getting a 5 is $1/6$.

Probability of not getting 5 is $1 - 1/6 = 5/6$

Probability of getting 5 exactly twice in seven throws $= {}^7C_2 (5/6)^5 (1/6)^2$

$= [(7 \times 6)/2] \times (1/36) \times (5/6)^5 = (7/12) \times (5/6)^5$

Hence, option (c) is the right answer.

5 (b)

The bag contains only red and green balls.

The number of balls that are not red = number of balls that are green = 5

Probability that one ball chosen randomly is green = Number of green balls / Total number of balls = $5/12$

Hence, option (b) is the right answer.

6 (b)

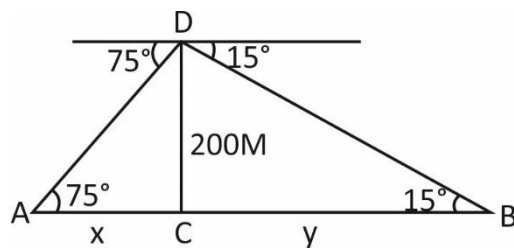
The total number of ways of selecting two students out of 10 students $= {}^{10}C_2 = (10 \times 9)/2 = 45$

The number of ways two adjacent students may get selected is 9, i.e. (1, 2), (2, 3), (3, 4), (4, 5), (5, 6), (6, 7), (7, 8), (8, 9) and (9, 10).

So, the required probability $= 9/45 = 1/5$

Hence, option (b) is the right answer.

7 (c)



Let CD be the height of the tower, and A and B be two points on the ground.

From $\triangle ACD$,

$$\tan 75^\circ = 200/x$$

$$\Rightarrow 2 + \sqrt{3} = 200/x$$

$$\Rightarrow x = 200/(2 + \sqrt{3})$$

$$\Rightarrow x = 200 \times (2 - \sqrt{3}) / [(2 + \sqrt{3})(2 - \sqrt{3})]$$

$$\Rightarrow x = 200(2 - \sqrt{3}) \text{ m}$$

From $\triangle BCD$,

$$\tan 15^\circ = 200/y$$

$$\Rightarrow 2 - \sqrt{3} = 200/y$$

$$\Rightarrow y = 200/(2 - \sqrt{3})$$

$$\Rightarrow y = 200 \times (2 + \sqrt{3}) / [(2 - \sqrt{3})(2 + \sqrt{3})]$$

$$\Rightarrow y = 200(2 + \sqrt{3})$$

$$\text{Distance } AB = x + y = 200(2 - \sqrt{3}) + 200(2 + \sqrt{3}) = 200(2 - \sqrt{3} + 2 + \sqrt{3}) = 200 \times 4 = 800 \text{ m}$$

Hence, option (c) is the right answer.

8 (c)

From S1,

We know the angle of elevation and the distance. So, we can find the height of the tower.

From S2,

We know the angle of elevation of the middle of the tree and the distance. So, we can find the height of the tree.

\therefore Using both the statements together, we can find which one is taller.

Hence, option (c) is the right answer.

9 (b)

The number of line segments that can be drawn by joining 4 points with each of the remaining 6 points = $4 \times 6 = 24$.

Hence, option (b) is the right answer.

10 (c)

As the numbers lie between 40,000 and 70,000, the first digit could be 4 or 6.

The last two digits of the numbers who are divisible by 4 could be 00, 04, 08, 16, 36, 40, 44, 48, 60, 64, 68, 76, 80, 84, 88.

Thus last 2 digits can be selected in 15 ways.

4.6			X	X
2 ways	7×7		15 ways	

The second and third digits can be selected in 7×7 ways.

∴ The total number of such numbers = $2 \times (7)^2 \times 15 = 1470$

Hence, option (c) is the right answer.

11 (a)

The various ways in which we can distribute ten pens are:

Chotu	Bipin	Ananya
1	2	7
1	3	6
1	4	5
2	3	5

∴ Only 4 such ways exist.

Hence, option (a) is the right answer.

12 (d)

Option (a) is incorrect. The passage highlights various non-nutritional dimensions of food – environmental, economic, workers' rights related etc. However, the passage does not discuss underestimation or overestimation with regards to these aspects of food. Hence, this option is incorrect.

Option (b) is incorrect. The given option is partially correct due to the second part. However, the first part about food connecting the heads and hearts is not correct as the passage does not mention anything as such. The second part (food connects continents, states and people) has been mentioned in the context of fairness and equity in the global food market. Hence, the given option is not correct as per the passage. Also, as we will see later, option (d) stands out as a much better crux of the passage.

Option (c) is incorrect. The given option presents the solutions to the issues highlighted in the passage. So, this could be a rational implication of the passage. However, it is not the crux of the passage as the central theme of the passage deals more with the problems related to food and discussions arising thereof. Hence, this option is not the best crux of the passage.

Option (d) is correct. The major discussion in the passage is about the issues related to food, as seen in the line, "*Food is at the centre (root cause) of several funding questions for political philosophy*". The questions framed in the passage represent issues of different dimensions - environment, trade and human resources. Hence, this option best captures the essence of the passage.

13 (d)

Inference 1 is incorrect. Refer to the following lines “like water conservation, drought and flood control, irrigation, energy requirements, and food security; **however, they also have major socioeconomic and environmental drawbacks**” and “However, the study shows that large dams are not fulfilling the irrigation requirements of different states in India.” These lines highlight not just the peripheral issues (socioeconomic and environmental problems) of dams, but also their inadequacy in solving the intended objective (irrigation). However, it would be incorrect to say that environmental drawbacks of large dams have “overshadowed” the benefits they were intended to serve. The passage does not provide us a comparative analysis of the benefits and drawbacks of large dams.

Inference 2 is incorrect. The line, “We need to change our path which is majorly large dam-driven and should also implement cost-effective, environment-friendly, and socially acceptable measures to conserve water and alleviate water scarcity.” talks about the desired change in policies related to large dams. However, nowhere does it say that we should refrain from investing more in the construction of large dams. Just that we should focus on other solutions too.

14 (d)

Option (a) is incorrect. The context of the burden on the state exchequer is not discussed in the passage. Therefore, this option is beyond the scope of the passage and is not correct.

Option (b) is incorrect. There is no discussion in the passage on how micro irrigation techniques will solve issues concerning large dams, or on quality of soil. Hence, this option is beyond the scope of the passage and is not correct.

Option (c) is incorrect. Dams have major socioeconomic and environmental drawbacks. The last line of the passage also highlights the social aspects. Therefore, it would be incorrect to say that non-core aspects like socioeconomic development and environmental protection can be ignored.

Option (d) is correct. Refer to the lines, “...however, they also have major socioeconomic and environmental drawbacks” and “However, the study shows that **large dams are not fulfilling the irrigation requirements of different states in India. We need to change our path** which is majorly large dam-driven and should also implement cost-effective, environment-friendly, and socially acceptable measures to conserve water and alleviate water scarcity.” The author clearly recommends finding alternatives to large dams. This confirms that the future of water conservation, irrigation, energy requirements, and food security should not only be dependent on large dams. So, this option best captures the essence of the passage.

15 (a)

Let the number of patients that got admitted in hospital A in October = Number of patients that got admitted in hospital C in September = x

So, required ratio = $(42x/100) : (56x/100) = 3:4$

Hence, option (a) is the right answer.

16 (b)

$11x + 135$ is divisible by x. It means that 135 is divisible by x, or x is a factor of 135.

Now, $135 = 3^3 \times 5$

So, x can be 1, 3, 9, 27, 5, 15, 45 and 135. So, a total of 8 possible values.

Hence, option (b) is correct.

17 (d)

Required percentage = $[(1200 - 1130)/1130] \times 100 = (70/1130) \times 100 = 6.19\%$

Hence, option (d) is the right answer.

18 (d)

Total ration distributed by agency Q in 2005, 2006 and 2007 = $330 + 180 + 410 = 920$

Total ration distributed by agency R in 2004, 2005 and 2006 = $290 + 290 + 220 = 800$

Required percentage = $(920/800) \times 100 = 115\%$

Hence, option (d) is the right answer.

19 (d)

The probability that Ram gets selected in CSE, $P(R) = 2/3$

\therefore Probability that Ram is not selected in CSE, $P(\bar{R}) = (1 - 2/3) = 1/3$

The probability that Mohan gets selected in CSE, $P(M) = 5/8$

\therefore Probability that Mohan is not selected in CSE, $P(\bar{M}) = (1 - 5/8) = 3/8$

The probability that Sita gets selected in CSE, $P(S) = 4/7$

\therefore Probability that Sita is not selected in CSE, $P(\bar{S}) = (1 - 4/7) = 3/7$

Probability that exactly two friends get selected in CSE = $(2/3) \times (5/8) \times (3/7) + (2/3) \times (4/7) \times (3/8) + (1/3) \times (5/8) \times (4/7) = (5/28) + (1/7) + (5/42) = 37/84$

So, option (d) is the right answer.

20 (c)

Probability of winning a car = 0.30

Probability of winning a bike = 0.38

So, probability of winning a car or a bike = $0.30 + 0.38 = 0.68$

So, option (c) is the right answer.

21 (b)

Total number of green faces = 2.

Total number of faces = 6

Probability that green face appears as the top face = $2/6 = 1/3$

Hence, option (b) is the right answer.

22 (b)

Let the value of the prizes be $x, x - 50, x - 100, \dots$

This is an arithmetic sequence with first term, $a = x$ and common difference, $d = -50$. Number of terms are $n = 7$.

Now, Sum total of cash prizes = Rs. 5600 = $(n/2) [2a + (n - 1)d]$

$$\Rightarrow 5600 = (7/2) [2x + (7 - 1) \times (-50)]$$

$$\Rightarrow 5600 = (7/2) [2x + 6 \times (-50)]$$

$$\Rightarrow 5600 = (7/2) [2x - 300]$$

$$\Rightarrow 11200/7 = 2x - 300$$

$$\Rightarrow 1600 = 2x - 300$$

$$\Rightarrow 2x = 1600 + 300$$

$$\Rightarrow x = 1900/2$$

$$\Rightarrow x = \text{Rs. } 950$$

Therefore, the highest prize is $x = \text{Rs. } 950$

3rd highest prize = $x - 100 = 950 - 100 = \text{Rs. } 850$

Hence, option (b) is the right answer.

23 (b)

Assumption 1 is incorrect. The author mentions that cities are disproportionately wealthy. The complex interlinkage of urbanisation and poverty levels is also discussed in the passage. However, the distribution of urban wealth in rural areas is nowhere indicated in the passage. The author only talks about the rural-urban gaps in poverty. Therefore, this assumption is not correct as per the information given in the passage.

Assumption 2 is correct. Refer to the lines “By contrast, levels of urbanization were either unrelated to measures of poverty and rural-urban gaps or had a nonlinear effect where, *initially, increases in urbanization likewise led to improvements in those measures*, but at higher levels of urbanization, increases in urbanization exacerbated urban poverty and rural-urban gaps.” Lower levels of urbanisation may help reduce the rural-urban gaps in poverty. Hence, this assumption is valid.

24 (c)

Option (a) is incorrect. The concept of the trickle-down effect is not a part of the passage. Therefore, the context of the growth of urban areas resulting in the growth of rural regions is not a part of the passage. Hence, as per the passage, this option is not correct.

Option (b) is incorrect. The line, “... initially, increases in urbanization likewise led to improvements in those measures, but at higher levels of urbanization, increases in urbanization exacerbated urban poverty and rural-urban gaps.” talk about the ill effects of urbanization. However, to conclude and state that governments should not focus on urbanization will be an extreme statement to make. The problem probably is “rapid urbanization”, as mentioned in the last line, “.... rapid/excessive urbanization can lead to greater poverty and inequality.” Therefore, this option is not correct. This makes option (d) incorrect too.

Option (c) is correct. Refer to the lines, “Cities are disproportionately wealthy, a key reason why the world is becoming more urban. Yet, cities are associated with poverty, too” and “...but at higher levels of urbanization, increases in urbanization exacerbated urban poverty and rural-urban gaps.” These show that excessive urbanization can backfire. Rural areas should also get their share of development. Therefore, it is correct to say that development of rural areas cannot be ignored for the sake of urbanisation.

25 (d)

Statement 1 is not correct. The passage mentions several reasons for the Polar Motion. “The excessive extraction of groundwater for drinking and irrigation has shifted the Earth’s axis of rotation”. “There are several other reasons responsible for polar motion like ocean currents and even hurricanes”. “...climate-driven changes in water mass distribution, led by the melting of glaciers and ice in Greenland, can cause Earth’s axis to drift”. However, the passage does not mention that climate change is the most dominant factor for the shift in the earth’s axis of rotation. **Hence, it is not a correct statement.**

Statement 2 is not correct. Nowhere in the passage is it mentioned that drought has occurred in some regions of the world due to over-extraction of groundwater. **Hence, it is not a correct statement.**

26 (b)

Statement (a) is not correct. In the passage, there is no mention of the shifting of climate belts along with the planet’s axis. **Hence, it is not a correct statement.**

Statement (b) is correct. The central theme of the passage is that Polar motion is caused due to multiple factors including groundwater extraction. **Hence, it is a correct statement.**

Statement (c) is not correct. Though Polar Motion is also caused by climate change; the passage does not mention that polar motion can be prevented with control of climate change. Other reasons for Polar Motion include ocean currents, hurricanes, and groundwater extraction. The passage says that “**Scientists for years have known that the poles and the axis keep shifting naturally as the mass distribution in and on the planet changes**”. This implies that the earth’s axis keeps shifting naturally and even if climate change is controlled Polar Motion will continue to occur. **Hence, it is not a correct statement.**

Statement (d) is not correct. The passage revolves around the theme of shift in the earth’s axis of rotation. It does not even mention irrigation of any kind. **Hence, it is not a correct statement.**

27 (b)

Let the ages of Ram and Shyam be x and y respectively.

Given, $x/y = 7/8$

or $x = 7y/8$ -----(i)

After 2 years,

$(x + 2)/(y + 2) = 9/10$ -----(ii)

$$\Rightarrow 10(x + 2) = 9(y + 2)$$

$$\Rightarrow 10x + 20 = 9y + 18$$

Putting $x = 7y/8$ from eqn. (i), we get:

$$10 \times (7y/8) + 20 = 9y + 18$$

$$\Rightarrow (70y/8) + 20 = 9y + 18$$

$$\Rightarrow 9y - (70y/8) = 2$$

$$\Rightarrow 2y/8 = 2$$

$$\Rightarrow y = 8$$

$$\text{And } x = 7y/8 = (7 \times 8)/8 = 7$$

Hence, after 12 years their age ratio, $(x + 12)/(y + 12) = (7 + 12)/(8 + 12) = 19/20$

Hence, option (b) is the right answer.

28 (b)

Total three digit numbers that can be formed using the given digits $= 5 \times 5 \times 4 = 100$

The units place can have either 0 or 5 for the number to be divisible by 5.

Total numbers having 0 as units digit $= 5 \times 4 = 20$

Total numbers having 5 as units digit $= 4 \times 4 = 16$

So, total numbers divisible by 5 $= 20 + 16 = 36$

Hence, required probability $= 36/100 = 9/25$

Hence, option (b) is the right answer.

29 (a)

There are 5 letters of which 'R' is repeated twice.

Number of distinct combinations that can be formed from these letters $= 5!/2 = 60$

Hence, option (a) is the right answer.

30 (a)

Let the radius of the circle be r cm.

Let the length and the breadth of the rectangle be l cm and b cm respectively.

The circumference of the circle and the perimeter of the rectangle are in the ratio of $\pi : 2$.

$$\text{So, } (2\pi r)/[2(l + b)] = \pi/2$$

$$\text{Or } (\pi/2)[2(l + b)] = 2\pi r$$

$$\text{Or } \pi(l + b) = 2\pi r$$

$$\text{Or } l + b = 2r$$

Radius of the circle equals one of the sides of the rectangle.

If $l = r$, then $b = r$

If $b = r$, then $l = r$

In either case, $l = b = r$

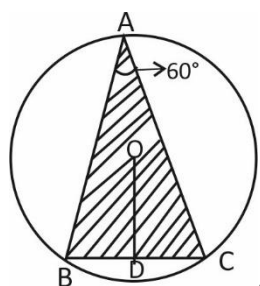
$$\text{Required ratio} = \pi r^2 : lb = \pi r^2 : r \times r = \pi : 1$$

Hence, option (a) is the right answer.

31 (b)

Let O be the centre of the circle, and D be the midpoint of BC .

Let us denote the radius of the circle by r .



Since, $\angle A = 60^\circ$ and chord AB and AC have the same length.

So, $\angle B = \angle C = (180^\circ - 60^\circ)/2 = 60^\circ$

Thus, $\angle A = \angle B = \angle C = 60^\circ$. So $\triangle ABC$ is an equilateral triangle.

By symmetry, the center of the equilateral triangle coincides with the center of the circle, and the distance from the center of the equilateral triangle to any of its vertices is equal to the radius of the circle.

So, $OB = OC = r$

OD must be a perpendicular to BC.

OB and OC will bisect $\angle B$ and $\angle C$ respectively.

$BD = OB \cos 30^\circ = r \times \sqrt{3}/2$

Length of the side of the equilateral triangle, $BC = 2 BD = 2(r \times \sqrt{3}/2) = r\sqrt{3}$

Area of $\triangle ABC = (\sqrt{3}/4) (r\sqrt{3})^2 = (3\sqrt{3}r^2)/4$

Combined area of all the three unshaded segments lying outside the shaded triangle = Area of the circle – Area of the triangle = $\pi r^2 - (3\sqrt{3}r^2)/4$

All these three unshaded segments must be equal in area.

So, Combined area of any two of these three segments = $(2/3) [\pi r^2 - (3\sqrt{3}r^2)/4]$

Percentage of the area of the circle that is not shaded = (Unshaded area / Area of circle) $\times 100\%$

$= [(2/3) [\pi r^2 - (3\sqrt{3}r^2)/4] / \pi r^2] \times 100$

$= (2/3) (4\pi - 3\sqrt{3}) / 4\pi \times 100$

$= (2/3) [(12.56 - 5.2) / 12.56] \times 100 = 39\%$ (approx.)

Hence, option (b) is the right answer.

32 (d)

S1 alone is not sufficient, as it only gives the relationship between the two sides.

S2 alone is also not sufficient as breadth is not known.

Using both the statements together:

As the length is p cm, the breadth will be \sqrt{p} cm (if $p > 1$), or p^2 (if $p < 1$)

\therefore The possible area of the rectangle = p^3 or $p\sqrt{p}$.

So, unique area of the rectangle cannot be found.

Hence, option (d) is the right answer.

33 (d)

Total earnings of P = $340 + 350 + 420 + 410 + 390 = \text{Rs. } 1910$

Total earnings of Q = $250 + 280 + 220 + 350 + 300 = \text{Rs. } 1400$

Total earnings of R = $280 + 260 + 360 + 400 + 380 = \text{Rs. } 1680$

Total earnings of S = $450 + 360 + 280 + 320 + 420 = \text{Rs. } 1830$

Total earnings of T = $380 + 400 + 400 + 420 + 460 = \text{Rs. } 2060$

Total earnings of U = $470 + 420 + 300 + 390 + 280 = \text{Rs. } 1860$

total earnings of V = $400 + 350 + 320 + 280 + 350 = \text{Rs. } 1700$

Required difference = $2060 - 1400 = \text{Rs. } 660$

Hence, option (d) is the right answer.

34 (a)

Average earning of all persons in city B = $(350 + 280 + 260 + 360 + 400 + 420 + 350)/7 = 2420/7$

Average earning of all persons in city D = $(410 + 350 + 400 + 320 + 420 + 390 + 280)/7 = 2570/7$

Required ratio = $(2420/7)/(2570/7) = 242/257 = 242 : 257$

Hence, option (a) is the correct answer.

35 (b)

$$\begin{aligned}\text{Total number of people who do not consume alcohol} &= 24000 \times (20/80) + 36000 \times (40/60) + 45000 \times (25/75) + 12000 \times (60/40) + 25000 \times (75/25) \\ &= 300 \times 20 + 600 \times 40 + 600 \times 25 + 300 \times 60 + 1000 \times 75 \\ &= 6000 + 24000 + 15000 + 18000 + 75000 \\ &= 1,38,000\end{aligned}$$

Hence, option (b) is the right answer.

36 (d)

Length of the canvas = 23 cm

Breadth of the canvas = 17 cm

Length of the painting excluding the border line = $[23 - (1.5 + 1.5)]$ cm = 20 cm

Breadth of the painting excluding the border line = $17 - (1.5 + 1.5) = 14$ cm

Area of the painting excluding the border line = (20×14) cm² = 280 cm²

Hence, option (d) is the correct answer.

37 (b)

Probability that the answer is correct, $P = 1/2$

Probability that the answer is incorrect, $Q = (1 - 1/2) = 1/2$

Probability that 6 or more answers are correct = $({}^7C_6) \times Q \times P^6 + ({}^7C_7) \times P^7$

$$= ({}^7C_6) \times (1/2) \times (1/2)^6 + 1 \times (1/2)^7$$

$$= 7 \times (1/2) \times (1/2)^6 + (1/2)^7$$

$$= (7/2) \times (1/64) + 1/128$$

$$= (7/128) + (1/128)$$

$$= 8/128$$

$$= 1/16$$

Hence, option (b) is the correct answer.

38 (b)

Total balls faced by Ambati = 300 balls

Dot balls played by him = 180 balls

Probability that a ball played by Ambati was a dot ball = $180/300 = 18/30 = 3/5 = 0.6$

Hence, option (b) is the correct answer.

39 (c)

Statement 1 is correct. No country has been able to land a spacecraft on the lunar south pole. Prior spacecrafts have all made equatorial landings on the Moon, a few degrees either north or south of the lunar equator. The passage says, "*If everything goes well, the Chandrayaan-3 will become the world's first mission to soft-land near the lunar south pole*". **Hence, it is a correct statement.**

Statement 2 is correct. China's Chang'e 4 is the first spacecraft to touch down on the opposite side of the moon. It is clearly mentioned in the passage that "*Even China's Chang'e 4, which became the first spacecraft to land on the far side of the moon — the side that does not face the earth — landed near the 45-degree latitude*". **Hence, it is a correct statement.**

40 (a)

Statement 1 is correct. The passage says, "*Many parts lie in a completely dark region where sunlight never reaches*". **Hence, it is a correct option.**

Statement 2 is correct. In the polar regions of the moon, the temperature is extremely low. Hence, it creates difficulty in operations. The passage says, "*...lack of sunlight and extremely low temperatures create difficulty in the operation of instruments*". **Hence, it is a correct option.**

Statement 3 is correct. The presence of craters on the lunar poles makes it difficult for any spacecraft to operate. The passage says “...there are large craters all over the place, ranging from a few centimetres in size to those extending to several thousands of kilometres”. **Hence, it is a correct option.**

Statement 4 is not correct. The absence of steep slopes is a feature of the equatorial region of the moon, which makes it easy for operations of instruments. According to the passage, “The surface here is even and smooth, very steep slopes are almost absent, and there are fewer hills or craters”. **Hence, it is not a correct option.**

Statement 5 is not correct. The passage makes no mention of the fact that the landing of spacecraft is challenging in polar areas due to gravity. **Hence, it is not a correct statement.**

41 (b)

Option (a) is not correct. The passage discusses the issues of carbon emissions and how CDR and CCS will control carbon emissions which in turn will control global warming. It nowhere mentions that CCS will make the lithosphere unstable. **Hence, it is not a correct statement.**

Option (b) is correct. The passage talks about CCS and CDR with regards to controlling carbon emissions. According to IPCC, both techniques will be needed for controlling carbon emissions. **Hence, it is a correct statement.**

Option (c) is not correct. The passage mentions two techniques (CDR and CSS) for controlling carbon emissions. Nowhere does it mention that one technique is more efficient than the other. **Hence, it is not a correct statement.**

Option (d) is not correct. The passage talks about the control of carbon emission by CDR and CSS, but does not mention global warming being an existential threat to humanity. **Hence, it is not a correct statement.**

42 (b)

Let present ages of Shikha and Rudra be x and y respectively.

$$\text{So, } x + y = 62$$

$$\text{Or } x = 62 - y$$

$$6 \text{ years ago, the age of Shikha} = x - 6$$

$$6 \text{ years ago, the age of Rudra} = y - 6$$

$$6 \text{ years ago, the age of Shikha was 4 times that of Rudra.}$$

$$\text{So, } x - 6 = 4(y - 6)$$

$$\text{Or } x - 6 = 4y - 24$$

$$\text{Or } 4y - x = 18$$

$$\text{Or } 4y - (62 - y) = 18 \quad (\text{since, } x = 62 - y)$$

$$\text{Or } 5y - 62 = 18$$

$$\text{Or } 5y = 80$$

$$\text{Or } y = 80/5 = 16$$

$$\text{Now, } x = 62 - y = 62 - 16 = 46$$

$$\text{Difference between the present ages of Shikha and Rudra} = 46 - 16 = 30 \text{ years}$$

So, option (b) is the right answer.

43 (c)

$$\text{Let Ram's age} = x \text{ years}$$

$$\text{Shyam's age} = 2x \text{ years}$$

$$\text{Ghanshyam's age} = (x+17) \text{ years}$$

According to the question,

$$x + 2x + (x + 17) = 185$$

$$\Rightarrow 4x = 185 - 17$$

$$\Rightarrow x = 168/4$$

$$\Rightarrow x = 42$$

Ram's age = $x = 42$ years
 Shyam's age = $2x = 84$ years.
 Ghanshyam's age = $x + 17 = 42 + 17 = 59$ years
 Hence, option (c) is the right answer.

44 (c)

By looking at the graph we can say that only 10% people of 50-64 age group use Micro-Blogging to get daily news.
 Hence, option (c) is the correct answer.

45 (a)

Total number of students that participated in NEET in districts A, B and C = $13500 + 10600 + 15400 = 39500$
 Total number of students that participated in MBA in districts D, E and G = $8600 + 11200 + 25600 = 45400$
 Required percent = $(39500/45400) \times 100 = 87\%$ (approx..)
 Hence, option (a) is the right answer.

46 (c)

The number of students that participated in NEET in district E is not less than the number of students that participated in CUET in district B. So, option (c) **cannot** be concluded.
 Hence, option (c) is the correct answer.

47 (a)

Here, $a = 500$, $d = 50$
 Let the time in which the entire loan is cleared be n months.
 So, $(n/2) [2 \times 500 + (n - 1) 50] = 25800$
 $\Rightarrow 50n^2 + 950n - 51600 = 0$
 $\Rightarrow n^2 + 19n - 1032 = 0$
 Solving the equation, we get:
 $n = 24$
 So, Last installment = The amount paid in 24th month = $a + 23d = 500 + (23 \times 50) = \text{Rs. } 1650$
 Hence, option (a) is the right answer.

48 (d)

Let common ratio be r .
 So, the terms are $1, r, r^2$
 Using statement-1:
 $1 + r + r^2 = 21$
 $\Rightarrow r^2 + r - 20 = 0$
 $\Rightarrow (r + 5)(r - 4) = 0$
 $\Rightarrow r = -5$, or $r = 4$
 If $r = 4$, the numbers are 1, 4 and 16.
 The middle term is 4.
 Statement 1 alone is sufficient.
 Using statement-2:
 $1 \times r \times r^2 = 64$
 $\Rightarrow r^3 = 64$

$$\Rightarrow r = 4$$

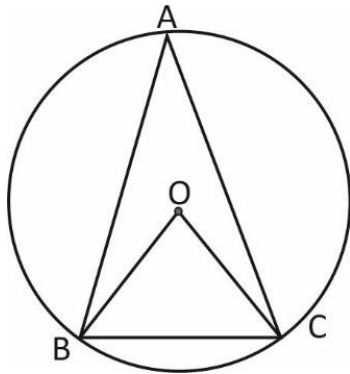
The middle term is 4.

\therefore Statement 2 alone is sufficient.

Thus, either statement-1 alone or statement-2 alone is sufficient to answer the question.

Hence, option (d) is the right answer.

49 (b)



$OB = OC = 6 \text{ cm}$ (\because the radii are equal)

The perimeter of the triangle $BOC = OB + OC + BC = 18 \text{ cm}$

Or $6 + 6 + BC = 18 \text{ cm}$

Or $BC = 6 \text{ cm}$.

So, $OB = OC = BC$

\therefore Triangle BOC is an equilateral triangle.

So, $\angle BOC = 60^\circ$

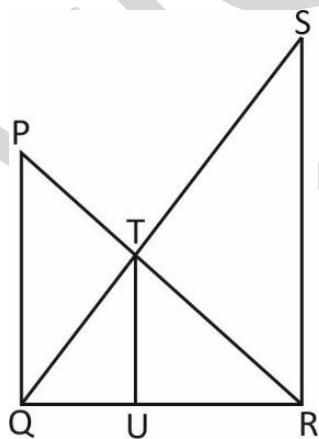
Now, $\angle BOC = 2 \angle BAC$

(As the angle subtended by a chord at centre of a circle is always twice the angle it subtends at any point on the circumference in the same segment as that in which the centre lies)

$\therefore \angle BAC = \angle BOC / 2 = 60^\circ / 2 = 30^\circ$

Hence, option (b) is the right answer.

50 (c)



$\angle PQR = \angle QRS = \angle TUR = 90^\circ$

$PQ = 8 \text{ m}$, $SR = 12 \text{ m}$, $UR = 6 \text{ m}$

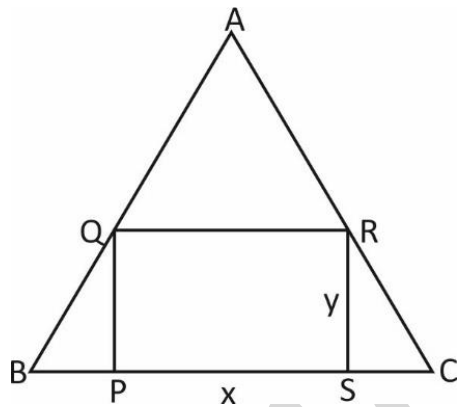
In ΔTUR and ΔPQR , $\angle R$ is common.

Also, $\angle TUR = \angle PQR = 90^\circ$

$\therefore \Delta TUR \sim \Delta PQR$

$\therefore TU/PQ = UR/QR$
 Or $TU \times QR = UR \times PQ$ (1)
 Similarly, $\Delta TUQ \sim \Delta SRQ$
 $\therefore TU/SR = QU/QR$
 Or $TU \times QR = QU \times SR$ (2)
 From equations (1) and (2):
 $UR \times PQ = QU \times SR$
 Or $6 \times 8 = QU \times 12$
 Or $QU = 6 \times 8/12 = 4$ m
 $QR = QU + UR = 4 + 6 = 10$ m
 Now, $TU/SR = QU/QR$
 $\Rightarrow TU/12 = 4/10$
 $\Rightarrow TU = 4.8$ m
 Hence, option (c) is the right answer.

51 (a)



$BC = 6$ cm, $PS = x$ cm, $RS = y$ cm
 $BP = CS = (6 - x)/2$ cm
 $\angle C = 60^\circ$ (equilateral triangle)
 In triangle CSR,
 $\tan 60^\circ = RS/CS$
 $\Rightarrow \sqrt{3} = y/[(6 - x)/2]$
 $\Rightarrow y = (\sqrt{3}/2) (6 - x)$
 Hence, option (a) is the right answer.

52 (c)

Let the distributed t-shirts be $a-3d$, $a-d$, $a+d$ and $a+3d$
 \therefore Sum of the number of distributed t-shirts $= a - 3d + a - d + a + d + a + 3d = 148$
 $\Rightarrow 4a = 148$
 $\Rightarrow a = 37$
 According to the question,
 $(a - d)(a + d) = (a - 3d)(a + 3d) + 8$
 $\Rightarrow a^2 - d^2 = a^2 - 9d^2 + 8$
 $\Rightarrow 8d^2 = 8$
 $\Rightarrow d^2 = 1$
 $\Rightarrow d = \pm 1$
 For $d = 1$,

T-shirts distributed to the third orphanage = $a + d = 37 + 1 = 38$

For $d = -1$

T-shirts distributed to the third orphanage = $37 - 1 = 36$

Hence, option (c) is the right answer.

53 (d)

First term = 4, Last term = $1/64$, Common ratio, $r = 1/2$

The sum of the terms of a G.P. = $[\text{first term} - r \times \text{last term}] / (1 - r)$

= $[4 - (1/2) \times (1/64)] / (1 - 1/2)$

= $[4 - (1/128)] / (1/2)$

= $[(512 - 1)/128] \times 2$

= $511/64$

Hence, option (d) is the right answer.

54 (b)

As the cards are replaced after every drawing, on every instance, one card is drawn from a pack of 52 cards.

Number of ways of drawing the first card = Number of ways of drawing the second card = Number of ways of drawing the third card = Number of ways of drawing the fourth card = 52

Total number of ways of drawing 4 cards = 52^4

Hence, option (b) is the right answer.

55 (c)

Inference 1 is correct. The previous version of the Bill had a clause relating to data portability, which allows users to transfer their data across platforms. The passage says, "*One of the provisions in an earlier version of the Bill concerned data portability, which empowers users to 'port' or transfer their data across different platforms*". **Hence, it is a correct statement.**

Inference 2 is correct. Internet users do not have any control over where and how much of their data is saved. The passage says, "...users online are powerless when it comes to the scope and extent to which their data is collected, stored and processed by data-hungry platforms". **Hence, it is a correct statement.**

56 (a)

Option (a) is the correct answer. The passage mainly discusses the occurrence of unusual and extreme rainfall in Ladakh which is typically known as a cold desert. This rainfall was due to a unique combination of a western disturbance and the monsoon system. This event has exposed Ladakh's vulnerability to such extreme weather phenomena. This answer option captures all these arguments. Therefore, it is correct.

Option (b) is incorrect because, as mentioned in the passage, Ladakh, being a cold desert, usually has a meagre rainfall. The passage points out that the recent extreme rainfall is an anomaly, and it has caused problems such as leakages in houses and small landslides, indicating its impact on the landscape and inhabitants.

Option (c) is also incorrect as it is overly focused on one specific problem caused by the heavy rain – leakages in old houses. While this issue was mentioned in the passage, it's not the central theme. The passage primarily discusses the unusual occurrence of such extreme rainfall in Ladakh and its implications for the region.

Option (d) is incorrect as the passage clearly states that the extreme rainfall in Ladakh was due to a "*rare interaction of a western disturbance with the monsoon system*" indicating that it was not solely due to the monsoon system.

57 (c)

Statement 1 is correct. The report claims that countries are falling short of achieving their SDGs. The passage clearly mentions, “Countries are also off-track on the target to ensure access to adequate and equitable sanitation and hygiene for all and ending open defecation”. The passage further says, “There has been progress in both rural and urban areas. But the rate of progress is slow and far from what is needed”. Hence, it is correct to say that many countries are not able to provide universal hygiene to their citizens.

Statement 2 is correct. Although achieving the objectives of universal access to water is still far off, there are global efforts to accomplish them. The passage says, “So, achieving universal coverage to water by 2030 will require a six-fold increase in current rates of progress for safely managed drinking water, the global bodies wrote”. This highlights the scale and intensity of efforts required to ensure universal access to clean drinking water. Therefore, this answer option is correct.

58 (c)

As the Ace of diamond is replaced with an Ace of spade.

So, total number of spades = 14

Total number of cards = 52

Probability that one card drawn randomly is a spade = $14/52 = 7/26$

Hence, option (c) is the right answer.

59 (d)

Let total students in the school be x .

Number of girls below 20 years = 5950

70% of the students are below 20 years of age, in which 85% are girls and rest are boys.

85% of 70% of $x = 5950$

$$\Rightarrow x \times (70/100) \times (85/100) = 5950$$

$$\Rightarrow x = 5950 \times 10000 / (70 \times 85)$$

$$\Rightarrow x = 10,000$$

Hence, option (d) is the right answer.

60 (a)

Let the radius of sphere be 'r' unit.

$$\text{Volume of sphere} = (4/3) \pi r^3$$

$$\text{Surface area of sphere} = 4\pi r^2$$

$$\text{Now, } (4/3) \pi r^3 / 4 \pi r^2 = 1/1$$

$$\text{Or } r/3 = 1$$

$$\text{Or } r = 3$$

$$\therefore \text{Volume of the sphere} = (4/3) \pi (3)^3 = 36 \pi \text{ cubic unit}$$

Hence, option (a) is the right answer.

61 (d)

The boys are seated at the extreme ends and the girls are seated in the five places between the six boys.

The arrangement is something as shown in the arrangement shown below:

B, G, B, G, B, G, B, G, B, G, B

Number of ways of seating 6 boys in 6 places = $6!$

Number of ways of seating 5 girls in 5 places = $5!$

Total number of ways of seating 11 students = $6! \times 5!$

Hence, option (d) is the right answer.

62 (b)

From S1:

Sum of interior angles of the polygon is $(2n - 4) \times 90^\circ$, where n is the number of sides of the polygon.

It is always true for any regular polygon.

Here, we can't find the number of sides in the regular polygon, because the sum of interior angles of the polygon is not given.

Thus, S1 alone is not sufficient.

From S2:

One of its exterior angles of the regular polygon = 60°

\therefore The number of sides = $360^\circ/60^\circ = 6$

\therefore Thus, S2 alone is sufficient.

Hence, option (b) is the right answer.

63 (a)

In the beginning, all the players shake hands with all the players of the other team.

So, one player shakes hands with 11 players.

All the 11 players shake hands with all the other 11 players.

Total number of handshakes = $11 \times 11 = 121$

At the end of the match, the same process is repeated,

Total number of handshakes at the end of the match = 121

So, Total number of handshakes done = $121 + 121 = 242$

Hence, option (a) is the right answer.

64 (c)

Let the number of pencils bought by Kamlesh be Rs. x and cost of each pencil be Rs. y .

$\therefore xy = 180$

Also, $(x - 2)(y + 2) = 160$

$\Rightarrow xy - 2y + 2x - 4 = 160$

$\Rightarrow 180 - 2(180/x) + 2x - 4 = 0$ (since, $xy = 180$)

$\Rightarrow 16 - (360/x) + 2x = 0$

$\Rightarrow 8 - (180/x) + x = 0$

Multiplying both sides by x , we get:

$x^2 + 8x - 180 = 0$

$\Rightarrow x^2 + 18x - 10x - 180 = 0$

$\Rightarrow (x - 10)(x + 18) = 0$

$\Rightarrow x = -18$ or 10

Number of pencils bought can't be negative. Thus, $x = 10$

So, Kamlesh bought 10 pencils.

Hence, option (c) is the right answer.

65 (c)

Total number of tickets = 25

Total number of prizes = 10

Probability of winning = $10/25 = 2/5$

Hence, option (c) is the right answer.

66 (c)

The number of students who have failed = 12

Total number of students = 80.

Probability that one student chosen randomly has failed = $12/80 = 3/20$

Hence, option (c) is the correct answer.

67 (b)

The group of students from among whom the representative has to be chosen has 12 students, including Ram.

Probability that one student chosen randomly from this group is Ram himself = $1/12$

Hence, option (b) is the correct answer.

68 (c)

Since, books are different, we have 12 different books and we can give one or more of them in $2^{12} - 1$ ways.

Hence, option (c) is the right answer.

69 (c)

Out of 6 letters, any two letters can be placed into their corresponding envelopes in 6C_2 ways.

Of the remaining 4 letters, no letter can be placed into their corresponding envelope. This can be done in $4! [(1/2!) - (1/3!) + (1/4!)] = 12 - 4 + 1 = 9$ ways

So, the total number of ways = ${}^6C_2 \times 9 = (6 \times 5/2) \times 9 = 9 \times 15 = 135$ ways

Hence, option (c) is the right answer.

70 (b)

Total number of chits in the bowl = 20.

Number of multiples of 4 less than or equal to 20 = 5

Required probability = $5/20 = 1/4$

Hence, option (b) is the right answer.

71 (d)

Total number of chits in the bowl = 20

Number of multiples of 3 and 5 but not of both = 8 (3, 6, 9, 12, 18, 5, 10, 20)

Required probability = $8/20 = 2/5$

Hence, option (d) is the right answer.

72 (a)

Option (a) is correct. The central theme of the passage is the “license raj”. The lines “*The “license raj” was created in which most imports required government approval, most investments required government permission, and most foreign investments were barred*” and “*Under restricted trade, India succeeded in industrializing, but inefficiency and bureaucratic controls were rampant and economic growth was slow*” confirm the multiple issues due to license raj. Hence, as per the passage, it would be correct to call license raj as the main villain of India’s poor investment and slow economic growth. Therefore, this answer option best captures the crux of the passage.

Option (b) is incorrect. LPG reforms are not mentioned in the passage. So, this option is beyond the scope of the passage.

Option (c) is incorrect. The given option presents an extreme scenario of no industry-led growth without capitalism. This claim is not discussed in the passage and hence, we cannot validate the claim based on the information given in the passage.

Option (d) is incorrect. The author does talk about inefficiency and bureaucratic controls in the era of licence raj. Whether or not these issues are still prevalent is not touched upon in the passage. So, this option is beyond the scope of the passage and is not the best crux.

73 (d)

Option (a) is incorrect. The given option is partially correct because of the lines “*Training in ethics is an important part of the development of a professional accountant.*” However, the second part which is about the role of ethics at the selection stage is not discussed in the passage. Hence, this option does not reflect the best crux of the passage.

Option (b) is incorrect. The lines “As professionals grow in their careers, they must be continually developed to perform effectively and help their organizations to be successful” and “Furthermore, since professional accountants ... so relevant ethical training must be sufficiently broad” reflect that ethical values are important for the professional accountant. However, to say that without ethical values, it will be impossible for professional accountants and organizations to grow would be rather extreme. Also, the option just talks about professional in general, rather than professional accountants.

Option (c) is incorrect. The given option is very generic and broad in context. It misses the specific context of professional accountants (the core theme of the passage). So, this does not present the best crux of the passage.

Option (d) is correct. The lines, “The ethical challenges faced by managers will likely differ from those of more junior staff, so to be effective, ethics training should be tailored for the appropriate level of staff.” convey the same meaning as the statement in option (d). So, this is the best crux of the passage.

74 (c)

Option (a) is incorrect. The passage does not cover the context of the importance of insurance penetration. It is only discussing the advantages of insurance – e.g. it can transfer otherwise unmanageable risks away from farmers, businesses, and countries. Hence, this option is beyond the scope of the passage.

Option (b) is incorrect. The passage nowhere discusses the context of claim disbursement. Hence, this option is also beyond the scope of the passage.

Option (c) is correct. The passage focuses on the importance of climate risk insurance. It explains how farmers face a vicious cycle and how insurance can help change it to a virtuous cycle. Read the following lines - “Agricultural and climate risk insurance breaks the vicious cycle of risks, shocks and poverty traps that prevent rural people from strengthening their livelihoods and improving their lives” and “But insurance does more than that; when used with other tools and techniques as part of a holistic approach, it can create a virtuous cycle that enables farming families to produce, earn and invest more, and to build their assets and their resilience.” So, this option best captures the underlying message of the passage.

Option (d) is incorrect. The option seems to be correct, but the context of India is not a part of the passage. Hence, this option is not the best underlying message of the passage.

75 (d)

The bag has five coins of gold, six coins of silver and seven coins of bronze.

After one bronze coin has been drawn, the coins left in the bag are: five coins of gold, six coins of silver and six coins of bronze.

So total coins = $5 + 6 + 6 = 17$

Number of coins that are not of bronze = 11

Probability that one coin drawn randomly is not of bronze = $11/17$

Hence, option (d) is the right answer.

76 (d)

Red balls can be chosen in 8 ways.

Similarly, blue balls can be chosen in 7 ways.

And green balls can be chosen in 6 ways.

So, the total number of ways in which the balls may be chosen = $8 \times 7 \times 6 = 336$ ways

Total number of ways of choosing at least one ball = $336 - 1 = 335$

Hence, option (d) is the right answer.

77 (c)

Assumption 1 is correct. The following line from the passage “It is important to highlight possible ecological risks associated with the use of artificial habitat structures and urge that **they are not exploited as inappropriate biodiversity offsets or for greenwashing**” validates the given assumption. Hence, this assumption is correct.

Assumption 2 is correct. The given assumption is correct because of the lines “*The design of these structures must be well informed by the drivers of natural habitat selection, and **their use should be part of an experimental framework to enable evaluation and refinement.***” These lines confirm the given assumption.

78 (d)

Option (a) is incorrect. The passage nowhere analyses the artificial habitats to be a short-term or a long-term measure. It only covers the mechanism or the relevance of such habitats. Hence, this option is not a correct statement as per the passage.

Option (b) is incorrect. The passage does not cover the context of anthropogenic causes for wildlife losses and whether artificial habitats will address these causes. Hence, this option is beyond the scope of the passage and therefore not correct.

Option (c) is incorrect. Refer to the lines, “*Habitat loss and degradation, and their interaction with other threats, are driving declines in animal populations worldwide. One potential approach for mitigating these threats is to create artificial habitat structures...*” These structures have been mentioned as a possible solution to check the decline of endangered species. However, it would be incorrect to say that these artificial structures are the only practical way out. So, this option is not the correct statement as per the passage.

Option (d) is correct. The following lines, “*The design of these structures must be well informed by the drivers of natural habitat selection, and their use should be part of an experimental framework to enable evaluation and refinement*” fall in line with the given option. It states that understanding the drivers of natural selection is very important for the implementation of artificial habitats. Hence, this option is correct as per the information given in the passage.

79 (c)

Option (a) is incorrect. As per the passage, there is no correlation between faster dissemination of information and the development of compassion after disasters. After a disaster, people need quick information to dispel their panic. In another context, one of the positives of a disaster is the development of feelings of compassion in the community. The author quotes these two aspects in different contexts.

Option (b) is incorrect. The given option is not correct because of the lines “*... but on the other hand, natural disasters have caused compassion and have been recognized by 78.6% of respondents from the total number of victims interviewed in a study ...*”. This means that compassion is an outcome of the disaster. It would be incorrect to say that it will help in disaster trauma. Also, terming it to be the necessary value is an extreme claim to be made. Hence, as per the passage, this option is not correct.

Since options (a) and (b) are incorrect, option (d) is also incorrect.

Option (c) is correct. Refer to the lines, “*... who before the disaster were among those who were hostile, did not communicate with each other, even hated each other. Natural disasters unite their hearts and strengthen the embrace of disaster through ecological communication among victims.*” The past hostilities are forgotten and a new sense of compassion germinates. Therefore, this answer option best reflects the crux of the passage.

80 (b)

To win, a person needs either a sum of 8 or of 10.

Combinations which give a sum of 8 = {(6,2), (5,3), (4,4)}

Combinations which give a sum of 10 = {(6,4), (5,5)}

Total number of winning combinations = 3 + 2 = 5

Hence, option (b) is the right answer.

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