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TEST BOOKLET

C

CSAT APTITUDE TEST– (4286) – 2024

Time Allowed: Two Hours **Maximum Marks: 200**

INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.

2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C** OR **D** AS THE CASE MAY BE IN THE APPROPRIATE PLACE IN THE ANSWER SHEET.

3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. **DO NOT** write ***anything else*** on the Test Booklet.

4. This Test Booklet contains **80** items (Questions). Each item is printed in **English.** Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider most appropriate. In any case, choose ***ONLY ONE*** response for each item.

5. You have to mark all your responses ***ONLY*** on the separate Answer Sheet provided. See direction in the answers sheet.

6. All items carry equal marks. Attempt all items. Your total marks will depend only on the number of **correct responses** marked by you in the answer sheet. For **every incorrect** response **one-third** of the allotted **Marks** will be deducted.

7. Before you proceed to mark in the Answer sheet the response to various items in the Test booklet, you have to fill in some particulars in the answer sheets as per the instruction sent to you with your Admission Certificate.

8. After you have completed filling in all responses on the answer sheet and the examination has concluded, you should hand over to Invigilator only the answer sheet. You are permitted to take away with you the Test Booklet.

9. Sheets for rough work are appended in the Test Booklet at the end.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ASKED TO DO SO

Directions for the following 3 (three) items:

*Read the following **two** passages and answer the items that follow each passage. Your answers to these items should be based on the passages only.*

Passage – 1

For the past hundred years, Bollywood has been one of the most dominant and distinctive features of Indian culture. Indian cinema is one of the most influential and powerful tools to address various social issues through the medium of screenplay. It is the world's largest film industry in terms of the number of films produced, but not in terms of its financial returns. 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. Since its inception in 1913, film has been a vital medium for the communication of social insights and conditions, while continuing to function as an important mode of entertainment for the masses. It's very intriguing to understand, sometimes, whether the movies are shaping society or vice versa.

1. Based on the above passage, the following *assumptions* have been made:

1. Bollywood has been successful in the propagation of Indian culture abroad.
2. Despite a huge audience going to the cinema every day, Bollywood has not been able to compete with other film industries.

Which of the above assumptions is/are valid?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

2. Which of the following statements ***best reflects the crux*** of the passage?

(a) Despite a long history and huge audience, the impact of Bollywood on society is miniscule.

(b) It is critical to ensure the financial viability of films for Bollywood to survive in the future.

(c) Bollywood needs quality films, focusing on addressing the most pressing social issues, through the medium of screenplay.

(d) In the context of social issues and insights, cinema can be aptly called a mirror of society.

Passage – 2

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. According to a 2019 review of dream ideas in the journal Brain Science Advances, the evidence does support the existence of something termed "sleep-dependent memory consolidation" and the fact that both REM and non-REM (NREM) sleep are necessary for memory processing. According to the hypothesis, since dreams frequently represent events that occurred while a person was awake; the brain is retrieving, processing, and learning from that information while it is at rest.

3. Which one of the following statements ***best reflects the crux*** of the passage?

(a) Dreams are not limited only to the past events in a person's life, they can be related to a future event as well.

(b) There is a strong relationship between dreams and information which the brain utilizes for memory consolidation.

(c) The decision of what information to store and what to forget, is based on the dreams we see while sleeping.

(d) Better memory consolidation is directly correlated with the quality of dreams one sees in sleep.

4. What is the probability of getting 5 exactly twice in seven throws of a die?

(a) $(7/12) \times (5/6)^7$

(b) $(7/12) \times (5/6)^4$

(c) $(7/12) \times (5/6)^5$

(d) $(7/12) \times (5/6)^3$

5. A bag contains seven red and five green balls. One ball is drawn randomly from the bag. What is the probability that the ball is ***not*** red?

(a) 7/12

(b) 5/12

(c) 1/2

(d) 1/4

6. Ten students are standing in a row. If Rajesh picked two students randomly from the row, then what is the probability that the selected students are standing adjacent to each other?

(a) 2/3

(b) 1/5

(c) 2/5

(d) None of these

7. From the top of a tower of height 200 m, the angle of depression of two points on opposite sides of the tower are observed to be 15^0 and 75^0. Find the distance between the two points on the surface in a straight line passing through the foot of the tower. ($\tan 15^0 = 2 - \sqrt{3}$ and $\tan 75^0 = 2 + \sqrt{3}$)

(a) 1200 m

(b) 600 m

(c) 800 m

(d) None of these

8. Two Statements S1 and S2 are given below followed by a question.

S1: The angle of elevation of the top of a tower from a distance of 15 m is 60^0.

S2: The angle of elevation of the middle of a tree from a distance of 15 m is 45^0.

Question: Which is taller, the tree or the tower?

Which one of the following is correct in respect of the above Statements and the Question?

(a) S1 alone is sufficient to answer the question.

(b) S2 alone is sufficient to answer the question.

(c) Both the statements are needed together to answer the question.

(d) Even both the statements together are not sufficient to answer the question.

9. Ten points are plotted in a plane such that no three of them lie on a straight line. If four of these points are joined to each of the remaining six points, how many line segments will get formed?

(a) 18

(b) 24

(c) 23

(d) 27

10. How many multiples of 4 greater than 40,000 but less than 70,000 can be formed using the digits 0, 1, 3, 4, 6, 7, and 8, if repetition of digits is allowed?

(a) 1340

(b) 1270

(c) 1470

(d) 1520

11. Ten pens are to be distributed among Ananya, Bipin and Chotu, such that Ananya receives more pens than Bipin, who in turn receives more pen than Chotu. Find the number of ways in which the distribution can be done, if each of them must receive at least one pen.

(a) 4

(b) 6

(c) 8

(d) 12

Directions for the following 3 (three) items:

*Read the following **two** passages and answer the items that follow each passage. Your answers to these items should be based on the passages only.*

Passage – 1

Food is at the centre of several funding questions for political philosophy. Here are some. One. The challenges that food consumption poses to the environment. For example, did you know that factory farming is responsible for a higher rate of pollution than airfare travel? Two. Food trades raise issues of fairness and equity in the global market. Exotic goods such as coffee, tea, and chocolate are chief examples: through the history of their commerce, we can reconstruct the complex relationships between continents, States, and people over the past three-four centuries. Three. Food production, distribution, and retail is an opportunity to talk about the condition of workers across the earth.

12. Which one of the following statements ***best reflects the crux*** of the passage?

(a) Food has been grossly underestimated in the context of the indirect effects it can have on diverse aspects of people's lives.

(b) Food not only connects the hearts and heads, but also continents, states, and their people.

(c) Organic farming, political diplomacy and ensuring adequate working conditions for food workers will solve the issues caused by food production and consumption.

(d) Food is a major cause of issues related to the environment, trade and human resources involved in food production.

Passage – 2

Dams are considered to be temples of modern India as they serve monumental purposes like water conservation, drought and flood control, irrigation, energy requirements, and food security; however, they also have major socioeconomic and environmental drawbacks. Currently, significant parts of India suffer from agricultural drought, and we need to combat this by critically analysing our water resource management policies. Our policies are centred on large dams. 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.

13. Which of the following is/are the ***most rational and logical inference/inferences*** that can be made from the passage?

1. The socioeconomic and environmental drawbacks of large dams have overshadowed the benefits they were intended to serve.
2. Considering our present water situation, we should refrain from investing more in the construction of large dams.

Select the correct answer using the code given below.

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

14. With reference to the passage, which one of the following statements is correct?

(a) Apart from socioeconomic and environmental drawbacks, large dams put a heavy burden on the state exchequer.

(b) Micro-irrigation techniques will not only solve the issues associated with large dams, but also help improve the quality of soil.

(c) Water resource management should focus on the core objective of ensuring water availability, and ignore non-core aspects like socioeconomic development and environmental protection.

(d) The future of water conservation, irrigation, energy requirements and food security should not only be dependent on large dams.

15. Study the following table carefully and answer the question that follows.

Table given below shows the percentage of COVID patients that died in different hospitals from July 2020 to December 2020, as compared to all the COVID patients that got admitted in those hospitals.

Month	**Percentage of COVID patients that died**					
	A	**B**	**C**	**D**	**E**	**F**
July	34	32	54	38	32	34
August	32	57	67	42	57	38
September	36	63	56	52	35	65
October	42	40	68	57	40	39
November	48	48	41	63	21	30
December	53	64	40	36	45	22

If the number of patients that got admitted in hospital A in October and hospital C in September is the same, then what is the respective ratio between the number of patients that died in hospital A in October and those that died in hospital C in September?

(a) 3:4

(b) 5:6

(c) 1:2

(d) Can't be determined

16. Let x be a positive integer, such that 11x + 135 is divisible by x. How many values of x are possible?

(a) 10

(b) 8

(c) 11

(d) 9

Directions for the following 2 (two) items:

Study the following table carefully and answer the questions that follow.

Table given below shows free ration (in ton) distributed by different agencies in different years.

Agencies	Years			
	2004	2005	2006	2007
P	180	230	450	300
Q	270	330	180	410
R	290	290	220	170
S	130	190	280	320
Total	870	1040	1130	1200

17. What is the percentage increase in total ration distributed in 2007 as compared to 2006?

(a) 8.50%

(b) 4.88%

(c) 7.25%

(d) None of these

18. Ration distributed by agency Q in 2005, 2006 and 2007 is what percent of the ration distributed by agency R in 2004, 2005 and 2006?

(a) 60%

(b) 168%

(c) 72%

(d) None of these

19. Three friends Ram, Mohan and Sita are preparing for CSE exam and the probabilities of their selection are 2/3, 5/8 and 4/7 respectively. What is the probability that exactly two of them will get selected in CSE?

(a) 3/8

(b) 13/12

(c) 15/27

(d) None of these

20. Raju bought a lottery ticket via which he can win one item from amongst car, bike, bicycle and T.V. The probabilities of winning car, bike, bicycle and T.V. are 0.30, 0.38, 0.22 and 0.10 respectively. What is the probability that Raju will win a car or a bike?

(a) 0.38

(b) 0.42

(c) 0.68

(d) None of these

21. The opposite faces of a fair dice are painted red, green and blue. One such painted dice is rolled. What is the probability that the face that appears as the top face is green?

(a) 1/2

(b) 1/3

(c) 1/4

(d) 1/6

22. A contractor decided to distribute a total of Rs. 5600 amongst seven workers as a cash prize for their hard work. If each cash prize is Rs. 50 less than its preceding cash prize, find the value of the third highest prize.

(a) Rs. 950

(b) Rs. 850

(c) Rs. 750

(d) Rs. 600

Directions for the following 4 (four) items:

*Read the following **two** passages and answer the items that follow each passage. Your answers to these items should be based on the passages only.*

Passage – 1

Cities are disproportionately wealthy, a key reason why the world is becoming more urban. Yet, cities are associated with poverty, too. Increases in GDP per capita unambiguously lower poverty and narrow rural-urban gaps. 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. Thus, many studies have confirmed the results of several regions and countries that rapid/excessive urbanization can lead to greater poverty and inequality.

23. Based on the above passage, the following *assumptions* have been made:

1. Policies should be made to distribute the disproportionate wealth of cities in rural areas.
2. Urbanization, up to a limit, can be beneficial for addressing poverty and rural-urban gaps.

Which of the above assumptions is/are valid?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

24. According to the author, the ***most rational inference*** that we may draw from the passage may be:

(a) Rapid growth of urban areas will ensure the growth of rural regions as well, through the phenomenon of trickle-down effect.
(b) Considering the ill effects of urbanization, governments should not focus on urbanization.
(c) Development of rural areas cannot be ignored for the sake of urbanisation.
(d) Both (b) and (c)

Passage – 2

The excessive extraction of groundwater for drinking and irrigation has shifted the Earth's axis of rotation, according to a new study. Noting that humans pumped out around 2,150 gigatons of groundwater between 1993 and 2010, the study says that the planet's axis has drifted at the rate of 4.36 cm per year towards the east. The study, 'Drift of Earth's Pole Confirms Groundwater Depletion as a Significant Contributor to Global Sea Level Rise 1993–2010', was published in the journal Geophysical Research Letters, earlier this month. It was carried out by Ki-Weon Seo, Taewhan Jeon, Jae-Seung Kim, Kookhyoun Youm of the Seoul National University (South Korea). Although the shift isn't significant enough to have real-life consequences, the study shows that humans have extracted so much water from the ground that it has impacted the planet's axis and contributed to global sea level rise. Earth spins around an imaginary axis that passes through the north pole, its center of mass and the south pole — just like a top spins around its spindle. 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 phenomenon is known as "polar motion". There are several other reasons responsible for polar motion like ocean currents and even hurricanes. But this phenomenon is also impacted by human activities. In 2016, a team of researchers demonstrated that climate-driven changes in water mass distribution, led by the melting of glaciers and ice in Greenland, can cause Earth's axis to drift. Five years later, another study said climate change was causing the rotational axis to shift more than usual since the 1990s.

25. Which of the following statements can be ***inferred*** from the above passage?

1. Climate change is the most dominant factor for a shift in the earth's axis of rotation.
2. The excessive extraction of groundwater has led to drought in some parts of the world.

Select the correct answer using the code given below.

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

26. Which of the following statements ***best reflects what is implied*** by the passage?

(a) The climate belts will eventually move in the same direction as the planet's axis, which is eastward.
(b) Polar motion is not an unusual occurrence, despite the fact that groundwater exploitation is partially to blame for it.
(c) Controlling climate change is necessary to prevent Polar Motion.
(d) Groundwater extraction for irrigation can be effectively replaced with drip irrigation.

27. The ages of Ram and Shyam are in ratio 7:8. After 2 years, the ratio of their ages will be 9:10. What will be the ratio of their ages after 12 years?

(a) 15/17
(b) 19/20
(c) 21/23
(d) None of these

28. A small kid is asked to form a three-digit number using the numbers 1, 2, 3, 4, 5 and 0 without repetition. What is the probability that the number he forms is divisible by 5?

(a) 1/5
(b) 9/25
(c) 10/33
(d) 1/4

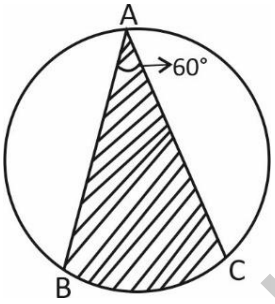
29. How many different combinations of the letters of the word PRIOR can be formed?

(a) 60
(b) 120
(c) 70
(d) None of the above

30. The circumference of a circle and the perimeter of a rectangle are in the ratio of $\pi : 2$. Find the ratio of their areas if the radius of the circle equals one of the sides of the rectangle.

(a) $\pi : 1$
(b) $\pi : 2$
(c) $\pi : 3$
(d) $\pi : 4$

31. In the circle below, chords AB and AC have the same length.



Find the approximate percentage of the area of the circle that is not shaded.

(a) 28%
(b) 39%
(c) 48%
(d) 60%

32. Two Statements S1 and S2 are given below followed by a Question.
S1: One side of the rectangle (in cm) is equal to the square of its other side (in cm).
S2: The longer side of the rectangle is p cm.
Question: What is the area of the rectangle?
Which one of the following is correct in respect of the above Statements and the Question?
(a) S1 alone is sufficient to answer the question.
(b) S2 alone is sufficient to answer the question.
(c) Both the statements are needed together to answer the question.
(d) Even both the statements together are not sufficient to answer the question.

Directions for the following 2 (two) items:
Study the following table carefully and answer the questions that follow.
Table given below shows the daily earning (in Rs.) of seven persons in five different cities.

Persons/Cities	A	B	C	D	E
P	340	350	420	410	390
Q	250	280	220	350	300
R	280	260	360	400	380
S	450	360	280	320	420
T	380	400	400	420	460
U	470	420	300	390	280
V	400	350	320	280	350

33. What is the difference in earnings between the person who earned the highest and the person who earned the lowest (considering their income from all the cities)?
(a) Rs. 440
(b) Rs. 620
(c) Rs. 360
(d) Rs. 660

34. What is the ratio of the average earnings of all persons in city B and D?
(a) 242 : 257
(b) 222 : 257
(c) 272 : 277
(d) 172 : 257

35. The table given below showcases the alcohol consumption habits of the people of five cities - A, B, C, D and E.

Cities	I	II
A	20%	24000
B	40%	36000
C	25%	45000
D	60%	12000
E	75%	25000

In the table there are two columns. Column I tabulates the percentage of people who do not consume alcohol, and Column II tabulates the number of people who consume alcohol.
What is the total number of people (including all cities) who do not consume alcohol?
(a) 1,62,300
(b) 1,38,000
(c) 1,82,700
(d) None of these

36. A painter bought a canvas which is 23 cm long and 17 cm wide, but he decided to draw a border line of 1.5 cm along each of its sides. What is the area left for painting excluding the border line?
(a) 230 cm²
(b) 250 cm²
(c) 270 cm²
(d) 280 cm²

37. In a multiple-choice examination, there are two possible answers for each of the 7 questions. What is the probability that a candidate would get 6 or more correct answers just by guessing, if he attempts all the questions?
(a) 2/3
(b) 1/16
(c) 2/7
(d) 1/8

38. The records of the last innings played by Ambati shows that out of the 300 balls faced by him, he played 180 dot balls. What is the probability that a particular ball played by him in that innings was a dot ball?
(a) 0.5
(b) 0.6
(c) 0.7
(d) 0.4

Directions for the following 3 (three) items:

*Read the following **two** passages and answer the items that follow each passage. Your answers to these items should be based on the passages only.*

Passage – 1

According to ISRO officials, the Chandrayaan-3 will reach the lunar orbit almost a month after its launch, and its lander, Vikram, and rover, Pragyaan, are likely to land on the Moon on August 23. Notably, the landing site of the latest mission is more or less the same as the Chandrayaan-2: near the south pole of the moon at 70 degrees latitude. If everything goes well, the Chandrayaan-3 will become the world's first mission to soft-land near the lunar south pole. All the previous spacecraft to have landed on the Moon have landed in the equatorial region, a few degrees latitude north or south of the lunar equator. The furthest that any spacecraft has gone from the equator was Surveyor 7, launched by NASA, which made a moon landing way back on January 10, 1968. This spacecraft landed near 40 degrees south latitude. 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. It is easier and safer to land near the equator. The terrain and temperature are more hospitable and conducive for a long and sustained operation of instruments. The surface here is even and smooth, very steep slopes are almost absent, and there are fewer hills or craters. Sunlight is present in abundance, at least on the side facing the earth, thus offering a regular supply of energy to solar-powered instruments. The polar regions of the Moon, however, are a very different, and difficult, terrain. Many parts lie in a completely dark region where sunlight never reaches, and temperatures can go below 230 degrees Celsius. Lack of sunlight and extremely low temperatures create difficulty in the operation of instruments. In addition, there are large craters all over the place, ranging from a few centimetres in size to those extending to several thousands of kilometres.

39. Which of the following statements can be ***inferred*** from the above passage?

1. No country has been successful in landing the spacecraft on the lunar south pole.
2. China succeeded in landing the spacecraft on the moon's far side.

Select the correct answer using the codes given below.

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

40. Which of the following are the reasons why any spacecraft has not ever landed near the lunar south pole?

1. Lack of sunlight
2. Low temperatures
3. Craters
4. Absence of steep slopes
5. High gravitational pull

Select the correct answer using the codes given below.

(a) 1, 2 and 3 only

(b) 2, 3 and 4 only

(c) 2, 3 and 5 only

(d) 3, 4 and 5 only

Passage – 2

Experts say carbon capture and storage — a way to grab a planet-heating gas and lock it underground — is sorely needed to cut pollution in sectors where other clean technologies are farther behind. There are cases where capturing carbon makes a lot of sense — but we also need to push all the options to avoid CO_2 in the first place, said Georg Kobiela, an expert in the cleaning up industry at the environmental nonprofit German watch. "Some applications can be just a fig leaf for keeping fossil fuel business models alive." Carbon capture and storage (CCS) is a way to catch carbon and trap it beneath the earth. It is different to carbon dioxide removal (CDR) — where carbon is sucked out of the atmosphere — although some of the technologies overlap. The key difference is that CDR brings down the level of carbon dioxide in the atmosphere, cooling the planet, while CCS in fossil fuel plants and factories prevents the gas from getting out in the first place. In its latest review of scientific research, the Intergovernmental Panel on Climate Change (IPCC) found both options will be needed for emissions that are hard to wipe out. For chemical processes that release carbon dioxide, there are few alternatives to capturing CO_2 straight away or sucking it out of the air later. Scientists see a big role for CCS in factories that make cement and fertiliser, as well as in plants that burn rubbish. They are split on whether it makes sense to use it to make steel and hydrogen, which have some greener alternatives.

41. Which of the following statements best reflects the ***most logical and rational message*** conveyed by the author?

(a) Carbon capture and storage (CCS) will make the lithosphere unstable.

(b) Carbon emissions cannot be controlled by CCS alone.

(c) Carbon dioxide removal (CDR) technology is more efficient than CCS.

(d) Global warming is an existential threat to humanity.

42. The sum of ages of Shika and Rudra is 62 years. 6 years ago, the age of Shikha was 4 times that of Rudra. Find the difference between the present ages of Shikha and Rudra.

(a) 27 years

(b) 30 years

(c) 16 years

(d) None of these

43. The sum of the ages of Ram, Shyam and Ghanshyam is 185 years. Shyam's age is twice that of Ram's and Ghanshyam's age is 17 years more than Ram's. The respective ages of Ram, Shyam and Ghanshyam must be:

(a) 40 years, 86 years and 59 years

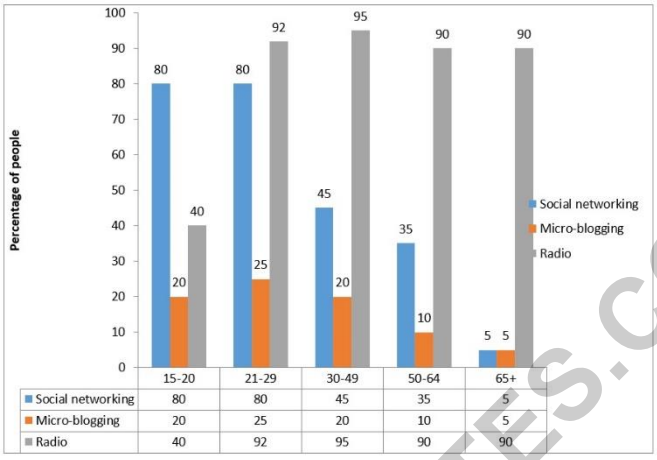
(b) 40 years, 80 years and 65 years

(c) 42 years, 84 years and 59 years

(d) None of these

44. Study the following chart carefully and answer the question that follows.

The chart given below gives information about the types of media that people in different age groups use to get daily news. A person may use more than one media to get one's dose of daily news.



	15-20	21-29	30-49	50-64	65+
Social networking	80	80	45	35	5
Micro-blogging	20	25	20	10	5
Radio	40	92	95	90	90

Which of the following ***cannot*** be concluded from the given graph?

(a) Only 7% people of 65+ age group use social networking to get daily news.

(b) More than 80% people of 20+ age group use social networking to get daily news.

(c) Only 10% people of 50-64 age group use Micro-Blogging to get daily news.

(d) 50% people of 15-20 age group use Radio to get daily news.

Direction for the following 2 (two) items:

Study the following table carefully and answer the questions that follow.

Table given below shows the number of students that participated in various exams held in seven districts.

Districts	NEET	JEE	CUET	MBA	OTHER
A	13500	20700	23600	15500	8400
B	10600	16200	18800	13400	14700
C	15400	24500	13000	18400	3700
D	17500	14800	25500	8600	6600
E	22500	22200	27500	11200	13700
F	19400	21600	16500	17800	9900
G	23500	12300	21600	25600	15800

45. The total number of students that participated in NEET in districts A, B and C together is approximately what percent of the number of students that participated in MBA in districts D, E and G together?

(a) 87%
(b) 79%
(c) 63%
(d) 58%

46. Which of the following ***cannot*** be concluded from the given table?

(a) The number of students that participated in others in district G is more than the number of students that participated in MBA in district E.
(b) The number of students that participated in MBA in district C is less than the number of students that participated in JEE in district F.
(c) The number of students that participated in NEET in district E is less than the number of students that participated in CUET in district B.
(d) The number of students that participated in JEE in district D is more than the number of students that participated in NEET in district B.

47. Hemendra took an interest free loan of ₹ 25800 with the promise that he would pay back ₹ 500 at the end of the first month and from second month onwards, he would pay ₹ 50 more than what he paid in the previous month. What was the last installment paid by him? (in ₹)

(a) ₹1650
(b) ₹ 1270
(c) ₹ 1500
(d) ₹ 1450

48. Consider the following information and the Statements and Question that follow:

Three numbers are in a geometric progression, wherein the common ratio is more than 1. The least of them is 1.

Statement-1: The sum of the numbers is 21.

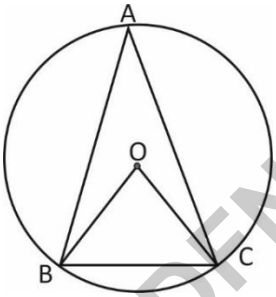
Statement-2: The product of the numbers is 64.

Question: Find the middle number in the geometric progression.

Which one of the following is correct in respect of the above Statements and the Question?

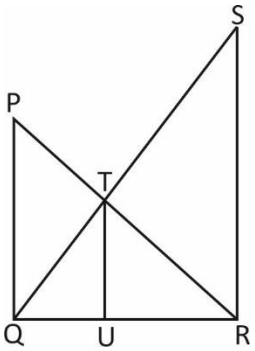
(a) Statement 1 alone is sufficient to answer the question.
(b) Statement 2 alone is sufficient to answer the question.
(c) Both statements are needed together to answer the question.
(d) Either statement-1 alone or statement-2 alone is sufficient to answer the question.

49. In the diagram given below, O is the centre of the circle and OB = 6 cm. The perimeter of triangle BOC is 18 cm. Find ∠BAC.



(a) 20^0
(b) 30^0
(c) 25^0
(d) 35^0

50. In the diagram given below, ∠PQR = ∠QRS = ∠TUR = 90^0, PQ = 8 m, SR = 12 m, and UR = 6 m. Find TU (in meter).



(a) 4.2 m
(b) 3.6 m
(c) 4.8 m
(d) 5.4 m

51. If x cm and y cm are the length and breadth of a rectangle inscribed in an equilateral triangle of side 6 cm, then which of the following is the value of y?
(a) (√3/2) (6 – x)
(b) (√3/2) (6 + x)
(c) (√3/2) (3 + x)
(d) (√3/2) (3 – x)

52. Ramesh distributed 148 t-shirts amongst 4 orphanages in arithmetic progression, such that the product of the second and the third terms is 8 more than the product of the first and the last terms. What is the number of t-shirts given to the third orphanage?
(a) 43
(b) 32
(c) 38
(d) 49

53. Find the sum of the terms of a Geometric Progression, if the first term is 4, the last term is (1/64) and the common ratio is (1/2).
(a) 32
(b) 51/2
(c) 74/7
(d) None of these

54. From a well shuffled pack of 52 cards, 4 cards are drawn at random with replacement. How many different combinations of cards can be obtained?
(a) $^{52}C_4$
(b) 52^4
(c) $^{26}C_4$
(d) None of the above

Directions for the following 3 (three) items:
*Read the following **three** passages and answer the items that follow each passage. Your answers to these items should be based on the passages only.*

Passage – 1

The government will reportedly introduce a revised version of the Digital Personal Data Protection Bill in the upcoming Monsoon session of Parliament. This is an opportune moment for the government to consider making further improvements to the Bill. 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. The government should bring back such a provision and also introduce an interoperability provision. Interoperability empowers users to escape the walled garden platforms that the internet has currently siloed users into. Data portability and interoperability have several advantages. They will empower ordinary users or digital nagriks. Right now, 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. They have little choice but to sign up for digital platforms that use their data carelessly, as evidenced by the recent spate of breaches in India. This is because they are dependent on these platforms for essential services — everything from education to employment. These platforms have become chokepoints or gatekeepers that come in between users and their friends, customers, constituents, etc.

55. Which of the following statements can be ***inferred*** from the above passage?

1. Data portability allows individuals to transfer their personal data across different services.
2. Online users have no control over the modalities of storage of their data.

Select the correct answer using the code given below.

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Passage – 2

The cold desert of Ladakh had a deluge of rains on July 8 and 9, 2023, which has brought to the fore its vulnerabilities to extreme rainfall, a consequence of global warming. The occurrence was part of the extreme rainfall events all over north and northwest India due to a rare interaction of a western disturbance with the monsoon system, currently in an active mode over the country. "It rained here for almost 24 hours and some of the old houses have leakages now. These houses are not adapted to such rainfall," Sushant Guleria, a resident of Leh, told Down to Earth. "There are also small landslides around Leh city. These heavy rains are disastrous for Ladakh's vulnerable landscape," Guleria added. The Union Territory (UT) of Ladakh had a deficit in rainfall of 21 percent on July 8, according to data from the India Meteorological Department (IMD). Kargil district had a deficit of 77 per cent and Leh district had a deficit of 8 per cent. The region, being a cold desert, receives such meagre rainfall that the percentages of deficits can change pretty quickly. Between July 8 and July 9 (8:30 am), the UT received 19.1 mm against the normal of 0.1 mm. This was more than 10,000 per cent of the normal rainfall. Now the absolute rainfall for the period June 1-July 9 is 24.1 mm as against the normal of 6.5 mm. Between July 8 and July 9, Kargil district received 21 mm rainfall against a normal of 0 mm and Leh district received 18.5 mm against a normal of 0.1 mm.

56. What is the ***primary idea*** conveyed by the passage?

(a) Ladakh, typically a cold desert, received an extreme amount of rainfall due to a unique interaction of western disturbance with the active monsoon system, highlighting its vulnerability to such weather events.
(b) The heavy rainfall in Ladakh is a regular event and does not cause any serious issues to the landscape or its inhabitants.
(c) The primary concern about the heavy rains in Ladakh is the leakage in old houses, which are not built to withstand such weather conditions.
(d) The rainfall in Ladakh occurs solely due to the monsoon system.

Passage – 3

Halfway to the United Nations-mandated Sustainable Development Goals for 2030 agreed upon in 2015, the world is not on track to achieving the target of universal and equitable access to safe and affordable drinking water for all. Countries are also off-track on the target to ensure access to adequate and equitable sanitation and hygiene for all and ending open defecation, stated the World Health Organization (WHO) and UNICEF in a new report released, July 6, 2023. Since 2015, the coverage of safely managed drinking water has increased from 69-73 per cent. There has been progress in both rural and urban areas. But the rate of progress is slow and far from what is needed. As a result, around 38 per cent of the population in rural areas do not have access to safe and affordable drinking water. In urban areas, 19 percent of the population lacks access, according to the report. Globally, 2.2 billion people still lack safely managed drinking water. This includes 1.5 billion with basic services, 292 million with limited services, 296 million with unimproved and 115 million drinking surface water. 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. While none of the eight SDG regions is on track to achieve universal access to clean and affordable drinking water and sanitation for all by 2030, sub-Saharan Africa (SSA) is behind all. In 2022, just 31 per cent of the population in SSA had safe drinking water in comparison to 73 percent globally. When 57 per cent of the global population or 4.5 billion people used safely managed sanitation services, just 24 percent of the population in SSA had access, data showed.

57. Which of the following statements can be ***inferred*** from the above passage?

1. Many countries are not being able to provide universal hygiene to their citizens.
2. Achieving universal access to potable water by 2030 requires more intense effort.

Select the correct answer using the codes given below.

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

58. In a pack of 52 cards the Ace of diamond is replaced with an Ace of spade. From this pack, a card is drawn at random. What is the probability that the card drawn is from the spade suit?

(a) 1/4
(b) 1/2
(c) 7/26
(d) 3/13

59. In a school, 70% of the students are below 20 years of age, in which 85% are girls and rest are boys. If the total number of girls below 20 years is 5950, then what is the total number of students in the school?

(a) 15000
(b) 12000
(c) 1500
(d) None of these

60. If the ratio of the volume of a sphere to the surface area of the same sphere is 1:1, then what is its volume?

(a) 36 π cubic unit
(b) 27 π cubic unit
(c) 18 π cubic unit
(d) 42 π cubic unit

61. Six boys and five girls of a class are to be seated in a row. In how many ways can the students be seated such that no two boys are together and no two girls are seated together and the boys occupy the extreme ends?

(a) $2 \times 5! \times 6!$
(b) $5! \times 5!$
(c) $6! \times 6!$
(d) None of the above

62. Two Statements S1 and S2 are given below followed by a question.

S1: Sum of the interior angles of the polygon is $(2n - 4) \times 90°$, where n is the number of sides of the polygon.

S2: One of the exterior angles of the regular polygon is 60°.

Question: What is the number of sides in the regular polygon?

Which one of the following is correct in respect of the above Statements and the Question?

(a) S1 alone is sufficient to answer the question.
(b) S2 alone is sufficient to answer the question.
(c) Both the statements are needed together to answer the question.
(d) Even both the statements together are not sufficient to answer the question.

63. In a cricket match each team consists of 11 players. At the beginning of match, each of the players of one team shakes hand with all the players of the second team and again at the end of the match, each of the players of the winning team shakes hand with all the players of the losing team. How many total handshakes were done in the process?

(a) 242
(b) 121
(c) 132
(d) 143

64. Kamlesh bought some pencils for ₹ 180. He sold all but 2 pencils for ₹ 160, making a profit of ₹ 2 per pencil. Find the number of pencils he bought.
(a) 18
(b) 12
(c) 10
(d) 16

65. In a small game of lottery, 25 tickets are sold. Out of the 25 tickets, 10 carry prizes and the remaining are blank. What is the probability that a person who bought a ticket wins a prize?
(a) 1/25
(b) 2/15
(c) 2/5
(d) None of the above

Directions for the following 2 (two) items:
Read the given table carefully and answer the 2 (two) items that follow:
The given table gives the marks distribution of the students in a class in a Maths test of 50 marks. Students who scored less than 10 are deemed failed in the test.

Marks	Number of students
<10	12
10-20	15
21-30	20
31-40	21
41-50	12

66. For a survey, one student of this class is called at random to answer a few questions. What is the probability that the summoned student has failed in the maths test?
(a) 1/5
(b) 1/12
(c) 3/20
(d) Cannot be determined.

67. The students who scored more than 40 are called distinction students. Ram is one of the distinction students. One of the distinction students is selected by lottery to represent the class. What is the probability that Ram is selected as the representative?
(a) 3/20
(b) 1/12
(c) 1/80
(d) None of the above

68. There are 5 different maths books, 4 different physics books and 3 different chemistry books. The number of ways in which at least one book can be given away is:
(a) $(2^5 - 1)(2^4 - 1)(2^3 - 1)$
(b) 2^{12}
(c) $2^{12} - 1$
(d) $(2^5 - 1)(2^4 - 1)(2^3 - 1) - 1$

69. There are 6 letters and corresponding 6 addressed envelopes. If the letters are placed into the envelops randomly (such that there is only one letter in each envelope), then in how many ways can exactly two letters be placed into their corresponding envelops?
(a) 125
(b) 145
(c) 135
(d) None of these

Directions for the following 2 (two) items:
Read the given information carefully and answer the 2 (two) items that follow.
The numbers 1 through 20 are written on small chits, all identical in shape and size and are placed in a bowl. One chit is drawn at random from the bowl.

70. What is the probability that the number written on the chit is a multiple of 4?

(a) 1/2

(b) 1/4

(c) 1/5

(d) 1/10

71. What is the probability that the number written on the chit is a multiple of either 3 or of 5 but not of both?

(a) 7/20

(b) 9/20

(c) 1/5

(d) 2/5

Directions for the following 3 (three) items:

Read the following ***three*** *passages and answer the items that follow each passage. Your answers to these items should be based on the passages only.*

Passage – 1

India, after achieving independence from British rule in 1947, pursued socialist-minded development plans that emphasized self-reliance and state-led investment in heavy capital-intensive industries. The "license raj" was created in which most imports required government approval, most investments required government permission, and most foreign investments were barred. The government put into place a stringent quantitative restriction (QR) to restrict imports to the amount of foreign exchange available. Imports of only those goods were allowed that were considered essential and were not produced at home. Under restricted trade, India succeeded in industrializing, but inefficiency and bureaucratic controls were rampant and economic growth was slow.

72. Which one of the following statements ***best reflects the crux*** of the passage?

(a) The real villain behind India's poor investment and slow growth was the "license raj".

(b) For faster economic growth, India should have adopted the LPG reforms just after independence.

(c) Without capitalism as a developmental model, industry-led growth is not possible.

(d) India still faces the issues of inefficiency and bureaucratic controls which hinder the growth of the country.

Passage – 2

As professionals grow in their careers, they must be continually developed to perform effectively and help their organizations to be successful. Training in ethics is an important part of the development of a professional accountant. 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. Furthermore, since professional accountants accept a responsibility to act in the public interest, their actions go well beyond satisfying the needs of an individual client or employer, so relevant ethical training must be sufficiently broad.

73. Which one of the following statements ***best reflects the crux*** of the passage?

(a) Professional accountants must not only be trained in ethics, but ethics must play a critical role in their selection as well.

(b) Without ethical values, it will be impossible for professionals and organizations to grow.

(c) Uniform training of staff in ethical values will not serve the objectives of any organization.

(d) In an organization, ethical values vary from profession to profession, but ethical training is important. This applies to professional accountants too.

Passage – 3

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. The unique advantage of insurance is that it can transfer otherwise unmanageable risks away from farmers, businesses, and countries. 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. Access to insurance can increase farmers' willingness to make riskier and potentially more profitable investments, thereby building their businesses.

74. Which one of the following statements ***best reflects the underlying message*** of the passage?

(a) Merely offering insurance will not suffice, India needs effective insurance penetration.

(b) For the farmer's benefit, along with providing climate risk insurance, the claims must be timely disbursed.

(c) The vehicle of climate risk insurance can break the vicious cycle of risks, shocks and poverty traps for rural people and make them climate resilient.

(d) Agriculture in India is risky, so, climate risk insurance gives the required confidence to the farmer for building their businesses.

75. A bag of coins contain five coins of gold, six coins of silver and seven coins of bronze. All the coins are of the same shape and size. A person draws a coin and finds it to be a bronze coin. What is the probability that the next coin that he draws is ***not*** of bronze?

(a) 11/18

(b) 6/17

(c) 11/18

(d) 11/17

76. There are 7 red balls, 6 blue balls and 5 green balls. The number of ways in which one or more balls can be chosen is:

(a) 300

(b) 288

(c) 336

(d) 335

Directions for the following 3 (three) items:

*Read the following **two** passages and answer the items that follow each passage. Your answers to these items should be based on the passages only.*

Passage – 1

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 as substitutes for lost or degraded natural structures. 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. 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. Looking forward, cross-disciplinary collaborations will facilitate the development of sophisticated and effective structures to assist animal conservation in this era of rapid global change.

77. Based on the above passage, the following *assumptions* have been made:

1. Artificial habitats can be misused as disguises for circumventing real wildlife conservation measures.
2. The concept of artificial habitats needs continuous research for better implementation.

Which of the above assumptions is/are valid?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

78. With reference to the passage, which one of the following statements is correct?

(a) Artificial habitats for the conservation of wildlife are only a short-term measure and not long-term.

(b) Creation of artificial habitats will still not address the anthropogenic causes of wildlife losses.

(c) The creation of artificial habitats is the only practical way for the conservation of endangered species.

(d) The successful implementation of artificial habitats lies in the understanding of factors of natural habitat selection.

Passage – 2

In the event of a natural disaster, the affected residents need information from various sources and media so that their panic does not last long. The most needed information is fast assistance, shelter, and logistics. Disasters on the one hand are the cause of damage and destruction of various facilities, and the occurrence of victims in families, 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, 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.

79. Which of the following statements ***best reflects the crux*** of the passage?

(a) The faster dissemination of information helps in the development of compassion after natural disasters.

(b) Compassion is a necessary value in dealing with disaster trauma in a community.

(c) Natural disasters help one forget the past, and develop a sense of community among victims.

(d) Both (a) and (b)

80. Two friends are playing a game with two similar dices. As per the rules, each of the players throws the dices one by one. The person who gets a sum of either 8 or 10 on the single throw of two dices wins the game. What are the total possible number of ways in which a player can get a winning score?

(a) 4

(b) 5

(c) 6

(d) 8

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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.

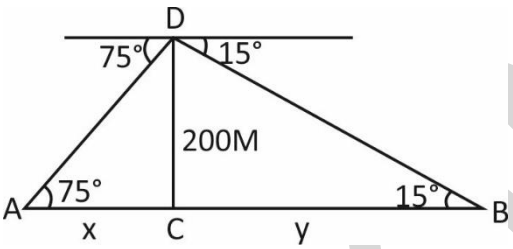
5 (b)

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 ΔACD,
$\tan 75^0 = 200/x$
$\Rightarrow 2 + \sqrt{3} = 200/x$
$\Rightarrow x = 200/(2 + \sqrt{3})$
$\Rightarrow x = 200 \times (2 - \sqrt{3})/[(2 + \sqrt{3})\ (2 - \sqrt{3})]$
$\Rightarrow x = 200\ (2 - \sqrt{3})$ m
From Δ BCD,
$\tan 15^0 = 200/y$
$\Rightarrow 2 - \sqrt{3} = 200/y$
$\Rightarrow y = 200/(2 - \sqrt{3})$
$\Rightarrow y = 200 \times (2 + \sqrt{3}) / [(2 - \sqrt{3})\ (2 + \sqrt{3})]$
$\Rightarrow y = 200\ (2 + \sqrt{3})$
Distance AB = $x + y = 200(2 - \sqrt{3}) + 200(2 + \sqrt{3}) = 200\ (2 - \sqrt{3} + 2 + \sqrt{3}) = 200 \times 4 = 800$ 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.
∴ 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 = $4 \times 6 = 24$.

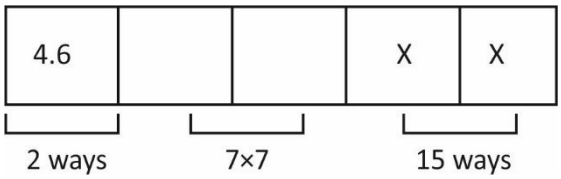
Hence, option (b) is the right answer.

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.



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

$\therefore$ 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

$\therefore$ 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] × 100 = (70/1130) × 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) ×100 = 115%
Hence, option (d) is the right answer.

19 (d)

The probability that Ram gets selected in CSE, P(R)] = 2/3
∴ 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
∴ 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
∴ 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) × (5/8) × (3/7) + (2/3) × (4/7) × (3/8) + (1/3) × (5/8) × (4/7) = (5/28) + (1/7) + (5/42) = 37/84
So, option (d) is the right answer.

20 (c)

Probability of wining 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 prices be x, x− 50, x − 100, ...
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]
⇒ 5600 = (7/2) [2x + (7 – 1) × (- 50)]
⇒ 5600 = (7/2) [2x + 6 × (- 50)]
⇒ 5600 = (7/2) [2x – 300]
⇒ 11200/7 = 2x – 300
⇒ 1600 = 2x – 300
⇒ 2x = 1600 + 300
⇒ x = 1900/2
⇒ x = Rs. 950
Therefore, the highest prize is x = Rs. 950
3rd highest prize = x – 100 = 950 – 100 = 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:
$10 \times (7y/8) + 20 = 9y + 18$
$\Rightarrow (70y/8) + 20 = 9y + 18$
$\Rightarrow 9y - (70y/8) = 2$
$\Rightarrow 2y/8 = 2$
$\Rightarrow y = 8$
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)

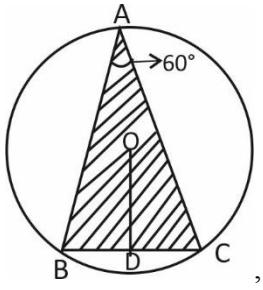
There are 5 letters of which 'R' is repeated twice.
Number of distinct combinations that can be formed from these letters $= 5!/2 = 60$
Hence, option (a) is the right answer.

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 $\pi : 2$.
So, $(2\pi r)/[2(l + b)] = \pi/2$
Or $(\pi/2)[2(l + b)] = 2\pi r$
Or $\pi(l + b) = 2\pi r$
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, $l = b = r$
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.



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Since, $\angle A = 60^0$ and chord AB and AC have the same length.
So, $\angle B = \angle C = (180^0 - 60^0)/2 = 60^0$
Thus, $\angle A = \angle B = \angle C = 60^0$. So ΔABC 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.
$BD = OB \cos 30^0 = r \times \sqrt{3}/2$
Length of the side of the equilateral triangle, $BC = 2\ BD = 2(r \times \sqrt{3}/2) = r\sqrt{3}$
Area of $\Delta ABC = (\sqrt{3}/4)\ (r\sqrt{3})^2 = (3\sqrt{3}r^2)/4$
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) × 100%
$= [(2\ r^2/3)\ [\pi – 3\sqrt{3}/4] / \pi r^2] \times 100$
$= (2/3)\ (4\pi – 3\sqrt{3}) / 4\pi] \times 100$
$= (2/3)\ [(12.56 – 5.2) / 12.56] \times 100 = 39\%$ (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 = Rs. 1910
Total earnings of Q = 250 + 280 + 220 + 350 + 300 = Rs. 1400
Total earnings of R = 280 + 260 + 360 + 400 + 380 = Rs. 1680
Total earnings of S = 450 + 360 + 280 + 320 + 420 = Rs. 1830
Total earnings of T = 380 + 400 + 400 + 420 + 460 = Rs. 2060
Total earnings of U = 470 + 420 + 300 + 390 + 280 = Rs. 1860
total earnings of V = 400 + 350 + 320 + 280 + 350 = Rs. 1700
Required difference = 2060 – 1400 = 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)

Total number of people who do not consume alcohol = 24000 × (20/80) + 36000 × (40/60) + 45000 × (25/75) + 12000 × (60/40) + 25000 × (75/25)
= 300 × 20 + 600 × 40 + 600 × 25 + 300 × 60 + 1000 × 75
= 6000 + 24000 + 15000 + 18000 + 75000
= 1,38,000
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) cm^2 = 280 cm^2
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.
So, x + y = 62
Or x = 62 - y
6 years ago, the age of Shikha = x - 6
6 years ago, the age of Rudra = y - 6
6 years ago, the age of Shikha was 4 times that of Rudra.
So, x - 6 = 4(y - 6)
Or x - 6 = 4y - 24
Or 4y - x = 18
Or 4y - (62 - y) = 18 (since, x = 62 - y)
Or 5y - 62 = 18
Or 5y = 80
Or y = 80/5 = 16
Now, x = 62 - y = 62 - 16 = 46
Difference between the present ages of Shikha and Rudra = 46 - 16 = 30 years
So, option (b) is the right answer.

43 (c)

Let Ram's age = x years
Shyam's age = 2x years
Ghanshyam's age = (x+17) years
According to the question,
x + 2x + (x + 17) = 185
⇒ 4x = 185 – 17
⇒ x = 168/4
⇒ 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) × 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 × 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 × 50) = 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:
$1 \times r \times r^2 = 64$
$\Rightarrow r^3 = 64$

$\Rightarrow r = 4$

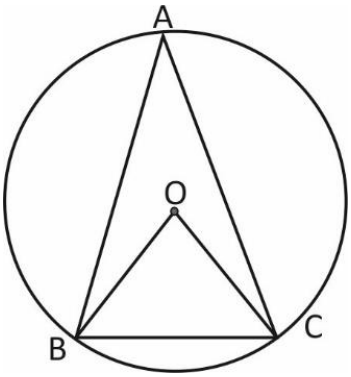
The middle term is 4.

$\therefore$ 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 cm ($\because$ the radii are equal)

The perimeter of the triangle BOC = OB + OC + BC = 18 cm

Or 6 + 6 + BC = 18 cm

Or BC = 6 cm.

So, OB = OC = BC

$\therefore$ Triangle BOC is an equilateral triangle.

So, $\angle BOC = 60^0$

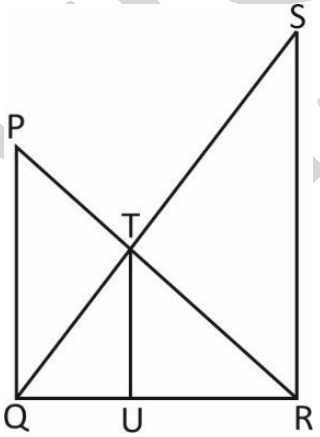
Now, $\angle BOC = 2\ \angle BAC$

(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)

$\therefore \angle BAC = \angle BOC/2 = 60^0/2 = 30^0$

Hence, option (b) is the right answer.

50 (c)



$\angle PQR = \angle QRS = \angle TUR = 90^0$

PQ = 8 m, SR = 12 m, UR = 6 m

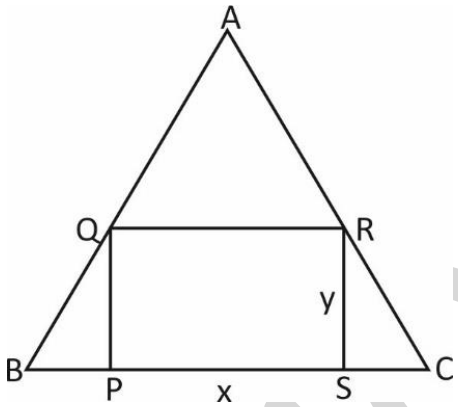
In Δ TUR and ΔPQR, $\angle R$ is common.

Also, $\angle TUR = \angle PQR = 90^0$

$\therefore \Delta$ TUR ~ ΔPQR

∴ TU/PQ = UR/QR
Or TU × QR = UR × PQ ....(1)
Similarly, ΔTUQ~ ΔSRQ
∴ TU/SR = QU/QR
Or TU × QR = QU × SR ....(2)
From equations (1) and (2):
UR × PQ = QU × SR
Or 6 × 8 = QU × 12
Or QU = 6 × 8/12 = 4 m
QR = QU + UR = 4 + 6 = 10 m
Now, TU/SR = QU/QR
⇒ TU/12 = 4/10
⇒ 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
∠C = 60^0 (equilateral triangle)
In triangle CSR,
tan 60^0 = RS/CS
⇒ √3 = y/[(6 - x)/2]
⇒ y = (√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
∴ Sum of the number of distributed t-shirts = a – 3d + a – d + a + d + a + 3d = 148
⇒ 4a = 148
⇒ a = 37
According to the question,
(a – d) (a + d) = (a – 3d) (a + 3d) + 8
⇒ $a^2 – d^2 = a^2 – 9d^2 + 8$
⇒ $8d^2 = 8$
⇒ $d^2 = 1$
⇒ d = ± 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. = [first term – r × last term]/(1 – r)
= [4 – (1/2) × (1/64)] / (1 – 1/2)
= [4 – (1/128)] / (1/2)
= [(512 – 1)/128)] × 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.
Volume of sphere = $(4/3)\ \pi r^3$
Surface area of sphere = $4\pi r^2$
Now, $(4/3)\ \pi r^3 / 4\ \pi r^2 = 1/1$
Or $r/3 = 1$
Or $r = 3$
$\therefore$ Volume of the sphere = $(4/3)\ \pi(3)^3 = 36\ \pi$ 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! × 5!
Hence, option (d) is the right answer.

62 (b)

From S1:
Sum of interior angles of the polygon is $(2n - 4) \times 90^0$, 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 = 60^0
∴ The number of sides = $360^0/60^0 = 6$
∴ 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 shakes 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.
∴ $xy = 180$
Also, $(x - 2)(y + 2) = 160$
$\Rightarrow xy - 2y + 2x - 4 = 160$
$\Rightarrow 180 - 2(180/x) + 2x - 164 = 0$ (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 ${}^{6}C_{2}$ 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 = ${}^{6}C_{2} \times 9 = (6 \times 5/2) \times 9 = 9 \times 15 = 135$ 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 × 7 × 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.