

UPSC

CIVIL SERVICES
EXAMINATION
(PRELIMS)-CSAT

2018

PAPER

2

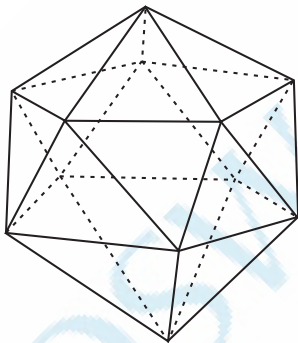
Max. Time: 2 Hours

Max. Marks: 200

General Instructions

1. This Test Booklet contains **80** items (questions). Each item comprises four responses (answers). In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
2. You have to mark all your responses **ONLY** on the separate OMR Sheet provided.
3. All items carry equal marks.
4. **Penalty for wrong answers:**
 - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **one-third (0.33)** of the marks assigned to that question will be deducted as penalty.
 - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above to that question.
 - (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be no penalty for that question.

1. Consider the following three-dimensional figure:



How many triangles does the above figure have ?

- (a) 18 (b) 20
(c) 22 (d) 24
2. Consider the following sum:
 $\bullet + 1\bullet + 2\bullet + 3\bullet + 1 = 21\bullet$
In the above sum, \bullet stands for
- (a) 4 (b) 5
(c) 6 (d) 8

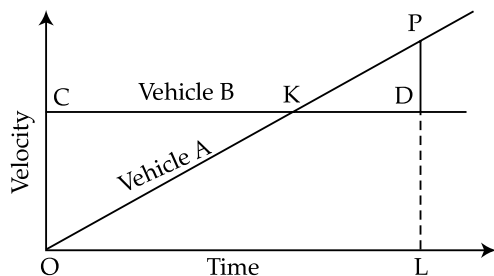
3. Consider the following pattern of numbers:

8	10	15	13
6	5	7	4
$\frac{4}{6}$	$\frac{6}{11}$	$\frac{8}{16}$	$\frac{8}{?}$

What is the number at ? in the above pattern ?

- (a) 17 (b) 19
(c) 21 (d) 23
4. How many diagonals can be drawn by joining the vertices of an octagon ?
- (a) 20 (b) 24
(c) 28 (d) 64
5. The figure drawn below gives the velocity graphs of two vehicles A and B. The straight line OKP represents the velocity of vehicle A at any instant, whereas the horizontal straight line CKD represents the velocity of vehicle B at any instant. In the figure, D is the point where perpendicular from P meets the

horizontal line CKD such that $PD = \frac{1}{2}LD$



What is the ratio between the distances covered by vehicles A and B in the time interval OL?

- (a) 1 : 2 (b) 2 : 3
(c) 3 : 4 (d) 1 : 1
6. A train 200 metres long is moving at the rate of 40 kmph. In how many seconds will it cross a man standing near the railway line ?
- (a) 12 (b) 15
(c) 16 (d) 18

Direction for the following 4 (four) items: Read the following four passages and answer the items (7-10) that follow. Your answers to these items should be based on the passages only.

Passage - 1

Global population was around 1.6 billion in 1990—today it is around 7.2 billion and growing. Recent estimates on population growth predict a global population of 9.6 billion in 2050 and 10.9 billion in 2100. Unlike Europe and North America, where only three to four per cent of population is engaged in agriculture, around 47 per cent of India's population is dependent upon agriculture. Even if India continues to do well in the service sector and the manufacturing sector picks up, it is expected that around 2030 when India overtakes China as the world's most populous country, nearly 42 per cent of India's population will still be predominantly dependent on agriculture.

7. Which of the following is the most logical and rational inference that can be made from the above passage?
- (a) Prosperity of agriculture sector is of critical importance to India,
(b) Indian economy greatly depends on its agriculture.
(c) India should take strict measures to control its rapid population growth.
(d) India's farming communities should switch over to other occupations to improve their economic conditions.

Passage - 2

Many pathogens that cause foodborne illnesses are unknown. Food contamination can occur at any stage from farm to plate. Since most cases of food poisoning go unreported, the true extent of global foodborne illnesses is unknown. Improvements in international monitoring have led to greater public awareness, yet the rapid globalization of food production increases consumers' vulnerability by making food harder to regulate and trace. "We have the world on our plates", says an official of WHO.

8. Which of the following is the most logical corollary to the above passage?
- (a) With more options for food come more risks.
(b) Food processing is the source of all foodborne illnesses.
(c) We should depend on locally produced food only.
(d) Globalization of food production should be curtailed.

Passage - 3

I am a scientist, privileged to be somebody who tries to understand nature using the tools of science. But it is also clear that there are some really important questions that science cannot really answer, such as: Why is there something instead of nothing? Why are we here? In those domains, I have found that faith provides a better path to answers. I find it oddly anachronistic that in today's culture there seems to be a widespread presumption that scientific and spiritual views are incompatible.

9. Which of the following is the most logical and rational inference that can be made from the above passage?
- (a) It is the faith and not science that can finally solve all the problems of mankind.
(b) Science and faith can be mutually complementary if their proper domains are understood.
(c) There are some very fundamental questions which cannot be answered by either science or faith.
(d) In today's culture, scientific views are given more importance than spiritual views.

Passage - 4

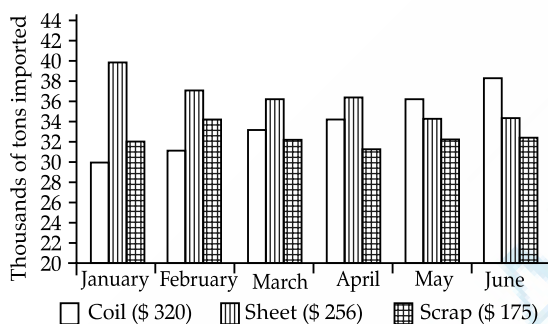
Though I have discarded much of past tradition and custom, and am anxious that India should rid

herself of all shackles that bind and contain her and divide her people, and suppress vast numbers of them, and prevent the free development of the body and the spirit; though I seek all this, yet I do not wish to cut myself off from that past completely. I am proud of that great inheritance that has been and is, ours and I am conscious that I too, like all of us, am a link in that unbroken chain which goes back to the dawn of history in the immemorial past of India.

10. The author wants India to rid herself of certain past bonds because

- he is not able to see the relevance of the past
- there is not much to be proud of
- he is not interested in the history of India
- they obstruct her physical and spiritual growth

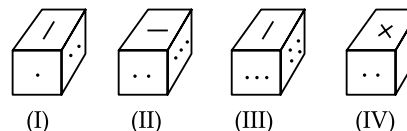
Direction for the following 3 (three) items: The following three items (11-13) are based on the graph given below which shows imports of three different types of steel over a period of six months of a year. Study the graph and answer the three items that follow.



The figures in the brackets indicate the average cost per ton over six months period.

- By how much (measured in thousands of tons) did the import of sheet steel exceed the import of coil steel in the first three months of the year?
 - 11
 - 15
 - 19
 - 23
- What was the approximate total value (in \$) of sheet steel imported over the six months period?
 - 45,555
 - 50,555
 - 55,550
 - 65,750
- What was the approximate ratio of sheet steel and scrap steel imports in the first three months of the year?
 - 1 : 1
 - 1.2 : 1
 - 1.4 : 1
 - 1.6 : 1

Direction for the following 3 (three) items: Rotated positions of a single solid are shown below. The various faces of the solid are marked with different symbols like dots, cross and line. Answer the three items (14-16) that follow the given figures.



- What is the symbol on the face opposite to that containing a single dot?
 - Four dots
 - Three dots
 - Two dots
 - Cross
- What is the symbol on the face opposite to that containing two dots?
 - Single dot
 - Three dots
 - Four dots
 - Line
- What is the symbol on the face opposite to that containing the cross?
 - Single dot
 - Two dots
 - Line
 - Four dots

Directions for the following 4 (four) items: Read the following passage and answer the four items (17-20) that follow. Your answers to these items should be based on the passage only.

Passage

It is no longer enough for us to talk about providing for universal access to education. Making available schooling facilities is an essential prerequisite, but is insufficient to ensure that all children attend school and participate in the learning process. The school may be there, but children may not attend or they may drop out after a few months. Through school and social mapping, we must address the entire gamut of social, economic, cultural and indeed linguistic and pedagogic issues, factors that prevent children from weaker sections and disadvantaged groups, as also girls, from regularly attending and complementing elementary education. The focus must be on the poorest and most vulnerable since these groups are the most disempowered and at the greatest risk of violation or denial of their right to education.

The right to education goes beyond free and compulsory education to include quality education for all. Quality is an integral part of the right to education. If the education process lacks quality, children are being denied their right. The Right

of Children to Free and Compulsory Education Act lays down that the curriculum should provide for learning through activities, exploration and discovery. This places an obligation on us to change our perception of children as passive receivers of knowledge, and to move beyond the convention of using textbooks as the basis of examinations. The teaching-learning process must become stress-free; and a massive programme for curricular reform should be initiated to provide for a child-friendly learning system, that is more relevant and empowering. Teacher accountability systems and processes must ensure that children are learning and that their right to learn in a child-friendly environment is not violated. Testing and assessment systems must be reexamined and redesigned to ensure that these do not force children to struggle between school and tuition centres, and bypass childhood.

17. According to the passage, which of the following is/are of paramount importance under the Right to Education?

1. Sending of children to school by all parents
2. Provision of adequate physical infrastructure in schools
3. Curricular reforms for developing child-friendly learning system

Select the correct answer using the code given below.

- | | |
|------------|-----------------------|
| (a) 1 only | (b) 1 and 2 only |
| (c) 3 only | (d) None of the above |

18. With reference to the above passage, the following assumptions have been made:

1. The Right to Education guarantees teachers' accountability for the learning process of children.
2. The Right to Education guarantees 100% enrolment of children in the schools.
3. The Right to Education intends to take full advantage of demographic dividend.

Which of the above assumptions is/are valid?

- | | |
|------------|------------------|
| (a) 1 only | (b) 2 and 3 only |
| (c) 3 only | (d) 1, 2 and 3 |

19. According to the passage, which one of the following is critical in bringing quality in education?

- (a) Ensuring regular attendance of children as well as teachers in school
- (b) Giving pecuniary benefits to teachers to motivate them

- (c) Understanding the socio-cultural background of children
- (d) Inculcating learning through activities and discovery

20. What is the essential message in this passage?

- (a) The Right to Education now is a Fundamental Right.
- (b) The Right to Education enables the children of poor and weaker sections of the society to attend schools.
- (c) The Right to Free and Compulsory Education should include quality education for all.
- (d) The Government as well as parents should ensure that all children attend schools.

21. If LSJXVC is the code for MUMBAI, the code for DELHI is

- | | |
|-----------|-----------|
| (a) CCIDD | (b) CDKGH |
| (c) CCJFG | (d) CCIFE |

22. If RAMON is written as 12345 and DINESH as 675849, then HAMAM will be written as

- | | |
|-----------|-----------|
| (a) 92233 | (b) 92323 |
| (c) 93322 | (d) 93232 |

23. If X is between - 3 and - 1, and Y is between - 1 and 1, then $X^2 - Y^2$ is in between which of the following?

- | | |
|--------------|---------------|
| (a) -9 and 1 | (b) -9 and -1 |
| (c) 0 and 8 | (d) 0 and 9 |

24. X and Y are natural numbers other than 1, and Y is greater than X. Which of the following represents the largest number?

- | | |
|---------|------------------|
| (a) XY | (b) X/Y |
| (c) Y/X | (d) $(X + Y)/XY$ |

Direction for the following 2 (two) items: Read the following information and answer the two items that follow.

The plan of an office block for six officers A, B, C, D, E and F is as follows: Both B and C occupy offices to the right of the corridor (as one enters the office block) and A occupies on the left of the corridor. E and F occupy offices on opposite sides of the corridor but their offices do not face each other. The offices of C and D face each other. E does not have a corner office. F's office is further down the corridor than A's, but on the same side.

25. If E sits in his office and faces the corridor, whose office is to his left?

- | | |
|-------|-------|
| (a) A | (b) B |
| (c) C | (d) D |

26. Who is/are F's immediate neighbour/ neighbours?

- (a) A only (b) A and D
(c) C only (d) B and C

Direction for tie following 7 (seven) items: Read the following four passages and answer the items (27-33) that follow. Your answers to these items should be based on the passages only.

Passage - 1

'Desertification' is a term used to explain a process of decline in the biological productivity of an ecosystem, leading to total loss of productivity. While this phenomenon is often linked to the arid, semi-arid and sub-humid ecosystems, even in the humid tropics, the impact could be most dramatic. Impoverishment of human-impacted terrestrial ecosystems may exhibit itself in a variety of ways: accelerated erosion as in the mountain regions of the country, salinization of land as in the semi-arid and arid 'green revolution' areas of the country, e.g., Haryana and western Uttar Pradesh, and site quality decline—a common phenomenon due to general decline in tree cover and monotonous monoculture of rice/wheat across the Indian plains. A major consequence of deforestation is that it relates to adverse alterations in the hydrology and related soil and nutrient losses. The consequences of deforestation invariably arise out of site degradation through erosive losses. Tropical Asia, Africa and South America have the highest levels of erosion. The already high rates for the tropics are increasing at an alarming rate (e.g., through the major river systems—Ganga and Brahmaputra, in the Indian context), due to deforestation and ill-suited land management practices subsequent to forest clearing. In the mountain context, the declining moisture retention of the mountain soils, drying up of the underground springs and smaller rivers in the Himalayan region could be attributed to drastic changes in the forest cover. An indirect consequence is drastic alteration in the upland-lowland interaction, mediated through water. The current concern a tea planter of Assam has is about the damage to tea plantations due to frequent inundation along the flood-plains of Brahmaputra, and the damage to tea plantation and the consequent loss in tea productivity is due to rising level of the river bottom because of siltation and the changing course of the river system. The ultimate consequences of site desertification are soil

degradation, alteration in available water and its quality, and the consequent decline in food, fodder and fuel-wood yields essential for the economic well-being of rural communities.

27. According to the passage, which of the following are the consequences of decline in forest cover?

1. Loss of topsoil
2. Loss of smaller rivers
3. Adverse effect on agricultural production
4. Declining of groundwater

Select the correct answer using the code given below.

- (a) 1, 2 and 3 only (b) 2, 3 and 4 only
(c) 1 and 4 only (d) 1, 2, 3 and 4

28. Which of the following is/are the correct inference/inferences that can be made from the passage?

1. Deforestation can cause changes in the course of rivers.
2. Salinization of land takes place due to human activities only.
3. Intense monoculture practice in plains is a major reason for desertification in Tropical Asia, Africa and South America.

Select the correct answer using the code given below.

- (a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) None of the above is a correct inference

29. With reference to 'desertification', as described in the passage, the following assumptions have been made:

1. Desertification is a phenomenon in tropical areas only.
2. Deforestation invariably leads to floods and desertification.

Which of the above assumptions is/are valid?

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

Passage- 2

A diversity of natural assets will be needed to cope with climate change and ensure productive agriculture, forestry, and fisheries. For example, crop varieties are needed that perform well under

drought, heat, and enhanced CO₂. But the private-sector and farmer-led process of choosing crops favours homogeneity adapted to past or current conditions, not varieties capable of producing consistently high yields in warmer, wetter, or drier conditions. Accelerated breeding programmes are needed to conserve a wider pool of genetic resources of existing crops, breeds, and their wild relatives. Relatively intact ecosystems, such as forested catchments, mangroves, wetlands, can buffer the impacts of climate change. Under a changing climate, these ecosystems are themselves at risk, and management approaches will need to be more proactive and adaptive. Connections between natural areas, such as migration corridors, may be needed to facilitate species movements to keep up with the change in climate.

30. With reference to the above passage, which of the following would assist us in coping with the climate change?

1. Conservation of natural water sources
2. Conservation of wider gene pool
3. Existing crop management practices
4. Migration corridors

Select the correct answer using the code given below.

- (a) 1, 2 and 3 only (b) 1, 2 and 4 only
(c) 3 and 4 only (d) 1, 2, 3 and 4

31. With reference to the above passage, the following assumptions have been made:

1. Diversification of livelihoods acts as a coping strategy for climate change.
2. Adoption of monocropping practice leads to the extinction of plant varieties and their wild relatives.

Which of the above assumptions is/are valid?

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

Passage - 3

Today, the top environmental challenge is a combination of people and their aspirations. If the aspirations are more like the frugal ones we had after the Second World War, a lot more is possible than if we view the planet as a giant shopping mall. We need to get beyond the fascination with glitter and understand that the planet works as a biological system.

32. Which of the following is the *most crucial and logical inference* that can be made from the above passage?

- (a) The Earth can meet only the basic needs of humans for food, clothing and shelter.
- (b) The only way to meet environmental challenge is to limit human population.
- (c) Reducing our consumerism is very much in our own interest.
- (d) Knowledge of biological systems can only help us save this planet.

Passage - 4

Some people believe that leadership is a quality which you have at birth or not at all. This theory is false, for the art of leadership can be acquired and can indeed be taught. This discovery is made in time of war and the results achieved can surprise even the instructors. Faced with the alternatives of going left or right, every soldier soon grasps that a prompt decision either way is better than an endless discussion. A firm choice of direction has an even chance of being right while to do nothing will be almost certainly wrong.

33. The author of the passage holds the view that

- (a) leadership can be taught through war experience only
- (b) leadership can be acquired as well as taught
- (c) the results of training show that more people acquire leadership than are expected
- (d) despite rigorous instruction, very few leaders are produced

34. A number consists of three digits of which the middle one is zero and their sum is 4. If the number formed by interchanging the first and last digits is greater than the number itself by 198, then the difference between the first and last digits is

- (a) 1 (b) 2
(c) 3 (d) 4

35. A solid cube of 3 cm side, painted on all its faces, is cut up into small cubes of 1 cm side. How many of the small cubes will have exactly two painted faces?

- (a) 12 (b) 8
(c) 6 (d) 4

36. While writing all the numbers from 700 to 1000, how many numbers occur in which the digit at hundred's place is greater than the digit at ten's place, and the digit at ten's place is greater than the digit at unit's place?
- (a) 61 (b) 64
(c) 85 (d) 91
37. If $\text{Pen} < \text{Pencil}$, $\text{Pencil} < \text{Book}$ and $\text{Book} > \text{Cap}$, then which one of the following is always true?
- (a) $\text{Pen} > \text{Cap}$ (b) $\text{Pen} < \text{Book}$
(c) $\text{Pencil} = \text{Cap}$ (d) $\text{Pencil} > \text{Cap}$
38. A bookseller sold 'a' number of Geography textbooks at the rate of ₹ x per book, 'a + 2' number of History textbooks at the rate of ₹ (x + 2) per book and 'a - 2' number of Mathematics textbooks at the rate of ₹ (x - 2) per book. What is his total sale in ₹?
- (a) $3x + 3a$ (b) $3ax + 8$
(c) $9ax$ (d) x^3a^3
39. A bag contains 15 red balls and 20 black balls. Each ball is numbered either 1 or 2 or 3. 20% of the red balls are numbered 1 and 40% of them are numbered 3. Similarly, among the black balls, 45% are numbered 2 and 30% are numbered 3. A boy picks a ball at random. He wins if the ball is red and numbered 3 or if it is black and numbered 1 or 2. What are the chances of his winning?
- (a) $\frac{1}{2}$ (b) $\frac{4}{7}$
(c) $\frac{5}{9}$ (d) $\frac{12}{13}$
40. Two persons, A and B are running on a circular track. At the start, B is ahead of A and their positions make an angle of 30° at the centre of the circle. When A reaches the point diametrically opposite to his starting point, he meets B. What is the ratio of speeds of A and B, if they are running with uniform speeds?
- (a) 6 : 5 (b) 4 : 3
(c) 6 : 1 (d) 4 : 2
41. A student has to get 40% marks to pass in an examination. Suppose he gets 30 marks and fails by 30 marks, then what are the maximum marks in the examination?
- (a) 100 (b) 120
(c) 150 (d) 300
42. 19 boys turn out for playing hockey. Of these, 11 are wearing hockey shirts and 14 are wearing hockey pants. There are no boys without shirts and/or pants. What is the number of boys wearing full uniform?
- (a) 3 (b) 5
(c) 6 (d) 8
- Direction for the following 6 (six) items:** Read the information given below and answer the six items (43-48) that follow.
- A, B, C and D are students. They are studying in four different cities, viz. P, Q, R and S (not necessarily in that order). They are studying in Science college, Arts college, Commerce college and Engineering college (not necessarily in that order), which are situated in four different States, viz. Gujarat, Rajasthan, Assam and Kerala (not necessarily in that order). Further, it is given that—
- (i) D is studying in Assam
(ii) Arts college is located in city S which is in Rajasthan
(iii) A is studying in Commerce college
(iv) B is studying in city Q
(v) Science college is located in Kerala
43. A is studying in
- (a) Rajasthan (b) Gujarat
(c) city Q (d) Kerala
44. Science college is located in
- (a) city Q (b) city S
(c) city R (d) city P
45. C is studying in
- (a) Science college (b) Rajasthan
(c) Gujarat (d) city Q
46. Which one of the following statements is
- (a) D is not studying in city S.
(b) A is studying in Science college.
(c) A is studying in Kerala.
(d) Engineering college is located in, Gujarat.
47. Which one of the following statements is correct regarding Engineering college?
- (a) C is studying there.
(b) B is studying there.
(c) It is located in Gujarat.
(d) D is studying there.
48. Which one of the following statements is correct?
- (a) Engineering college is located in Assam.
(b) City Q is situated in Assam.
(c) C is studying in Kerala.
(d) B is studying in Gujarat.

Direction for the following 8 (eight) item: Read the following eight passages and answer the items (49-56) that follow. Your answers to these items should be based on the passages only.

Passage - 1

All actions to address climate change ultimately involve costs. Funding is vital in order for countries like India to design and implement adaptation and mitigation plans and projects. The problem is more severe for developing countries like India, which would be one of the hardest hit by climate change, given its need to finance development. Most countries do indeed treat climate change as real threat and are striving to address it in a more comprehensive and integrated manner with the limited resources at their disposal.

49. With reference to the above passage, the following assumptions have been made:

1. Climate change is not a challenge for developed countries.
2. Climate change is a complex policy issue and also a development issue for many countries.
3. Ways and means of finance must be found to enable developing countries to enhance their adaptive capacity.

Which of the above assumptions is/are valid?

- (a) 1 and 2 only (b) 3 only
(c) 2 and 3 only (d) 1, 2 and 3

Passage - 2

Cooking with biomass and coal in India is now recognized to cause major health problems, with women and children in poor populations facing the greatest risk. There are more than 10 lakh premature deaths each year from household air pollution due to polluting cooking fuels with another 1-5 lakh due to their contribution to general outdoor air pollution in the country. Although the fraction of the Indian population using clean cooking fuels, such as LPG, natural gas and electricity, is slowly rising, the number using polluting solid fuels as their primary cooking fuel has remained static for nearly 30 years at about 70 crore.

50. Which of the following is the most crucial and logical inference that can be made from the above passage?

- (a) Rural people are giving up the use of polluting solid fuels due to their increasing awareness of health hazards.

- (b) Subsidizing the use of clean cooking fuels will solve the problem of India's indoor air pollution.
(c) India should increase its import of natural gas and produce more electricity.
(d) Access to cooking gas can reduce premature deaths in poor households.

Passage - 3

Scientific knowledge has its dangers, but so has every great thing. Over and beyond the dangers with which it threatens the present, it opens up as nothing else can, the vision of a possible happy world; a world without poverty, without war, with little illness. Science, whatever unpleasant consequences it may have by the way, is in its very nature a liberator.

51. Which one of the following is the most important implication of the passage?

- (a) A happy world is a dream of science.
(b) Science only can build a happy world, but it is also the only major threat.
(c) A happy world is not possible without science.
(d) A happy world is not at all possible with or without science.

Passage - 4

The Arctic's vast reserves of fossil fuel, fish and minerals are now accessible for a longer period in a year. But unlike Antarctica, which is protected from exploitation by the Antarctic Treaty framed during the Cold War and is not subject to territorial claims by any country, there is no legal regime protecting the Arctic from industrialization, especially at a time when the world craves for more and more resources. The distinct possibility of ice-free summer has prompted countries with Arctic coastline to scramble for great chunks of the melting ocean.

52. Which one of the following is the most important implication of the passage?

- (a) India can have territorial claims in the Arctic territory and free access to its resources.
(b) Melting of summer ice in the Arctic leads to changes in the geopolitics.
(c) The Arctic region will solve the world's future problem of resource crunch.
(d) The Arctic region has more resources than Antarctica.

Passage - 5

Being a member of the WTO, India is bound by the agreements that have been signed and ratified, by its members, including itself. According to Article 6 of the Agriculture Agreement, providing minimum support prices for agricultural products is considered distorting and is subject to limits. The subsidy arising from 'minimal supports' cannot exceed 10 per cent of the value of agricultural production for developing countries. PDS in India entails minimum support prices and public stockholding of food grains. It is possible that, in some years, the subsidy to producers will exceed 10 per cent of the value of agricultural production.

53. What is the *crucial message* conveyed by the above passage?
- India should revise its PDS.
 - India should not be a member of WTO.
 - For India, food security collides with trade.
 - India provides food security to its poor.

Passage - 6

India's educational system is modelled on the mass education system that developed in the 19th century in Europe and later spread around the world. The goal of the system is to condition children as 'good' citizens and productive workers. This suited the industrial age that needed the constant supply of a compliant workforce with a narrow set of capabilities. Our educational institutes resemble factories with bells, uniforms and batch-processing of learners, designed to get learners to conform. But, from an economic point of view, the environment today is very different. It is a complex, volatile and globally interconnected world.

54. With reference to the above passage, the following assumptions have been made:
- India continues to be a developing country essentially due to its faulty education system.
 - Today's learners need to acquire new-age skill-sets.
 - A good number of Indians go to some developed countries for education because the educational systems there are a perfect reflection of the societies in which they function.

Which of the above assumptions is/are valid?

- 1 and 3 only
- 2 only
- 2 and 3 only
- 1, 2 and 3

Passage - 7

The practice of dieting has become an epidemic; everyone is looking out for a way to attain that perfect body. We are all different with respect to our ethnicity, genetics, family history, gender, age, physical and mental and spiritual health status, lifestyles and preferences. Thereby, we also differ in what foods we tolerate or are sensitive to. So, we really cannot reduce so many complexities into one diet or diet book. This explains the failure of diets across the world in curbing obesity. Unless the reasons for weight gain are well understood and addressed and unless habits are changed permanently, no diet is likely to succeed.

55. What is the *most logical and rational inference* that can be made from the above passage?
- Obesity has become an epidemic all over the world.
 - A lot of people are obsessed with attaining a perfect body.
 - Obesity is essentially an incurable disease.
 - There is no perfect diet or one solution for obesity.

Passage - 8

Monoculture carries great risks. A single disease or pest can wipe out swathes of the world's food production, an alarming prospect given that its growing and wealthier population will eat 70% more by 2050. The risks are magnified by the changing climate. As the planet warms and monsoon rains intensify, farmlands in Asia will be flooded. North America will suffer more intense droughts, and crop diseases will spread to new latitudes.

56. Which of the following is the *most logical, rational and crucial message* given by the passage?
- Preserving crop genetic diversity is an insurance against the effects of climate change.
 - Despite great risks, monoculture is the only way to ensure food security in the world.
 - More and more genetically modified crops only can save the world from impending shortages of food.
 - Asia and North America will be worst sufferers from climate change and the consequent shortage of food.

57. A shopkeeper sells an article at ₹ 40 and gets X% profit. However, when he sells it at ₹ 20, he faces same percentage of loss. What is the original cost of the article?

(a) ₹ 10 (b) ₹ 20
(c) ₹ 30 (d) ₹ 40

58. There are 24 equally spaced points lying on the circumference of a circle. What is the maximum number of equilateral triangles that can be drawn by taking sets of three points as the vertices?

(a) 4 (b) 6
(c) 8 (d) 12

59. Consider the sequence given below:

4/12/95, 1/1/96, 29/1/96, 26/2/96, ...

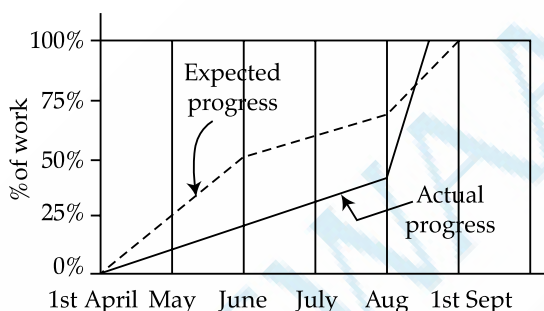
What is the next term of the series ?

(a) 24/3/96 (b) 25/3/96
(c) 26/3/96 (d) 27/3/96

60. Twelve equal squares are placed to fit in a rectangle of diagonal 5 cm. There are three rows containing four squares each. No gaps are left between adjacent squares. What is the area of each square?

(a) $\frac{5}{7}$ sq cm (b) $\frac{7}{5}$ sq cm
(c) 1 sq. cm (d) $\frac{25}{12}$ sq cm

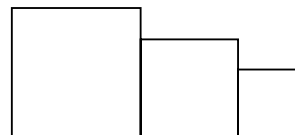
61. Consider the following graph:



Which one of the following statements is not correct with reference to the graph given above?

- (a) On 1st June, the actual progress of work was less than expected.
(b) The actual rate of progress of work was the greatest during the month of August.
(c) The work was actually completed before the expected time.
(d) During the period from 1st April to 1st September, at no time was the actual progress more than the expected progress.

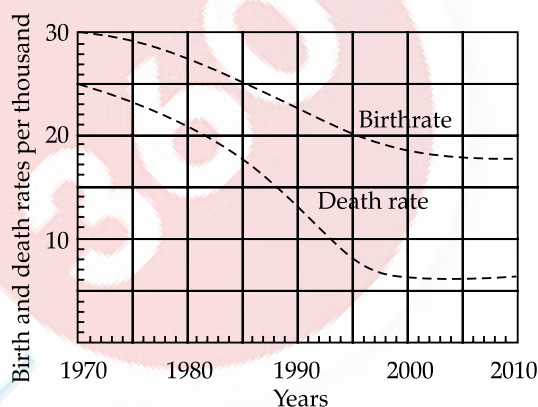
62. For a sports meet, a winners' stand comprising three wooden blocks is in the following form:



There are six different colours available to choose from and each of the three wooden blocks is to be painted such that no two of them has the same colour. In how many different ways can the winners' stand be painted?

(a) 120 (b) 81
(c) 66 (d) 36

Direction for the following 2 (two) items: Consider the following graph in which the birth rate and death rate of a country are given, and answer the two items (63-64) that follow.



63. Looking at the graph, it can be inferred that from 1990 to 2010

(a) population growth rate has increased
(b) population growth rate has decreased
(c) growth rate of population has remained stable
(d) population growth, rate shows no trend

64. With reference to the above graph, consider the following statements considering 1970 as base year:

1. Population has stabilized after 35 years.
2. Population growth rate has stabilized after 35 years.
3. Death rate has fallen by 10% in the first 10 years.
4. Birth rate has stabilized after 35 years.

Which of the above are the *most logical and rational statements* that can be made from the above graph?

- (a) 1 and 2 only (b) 1, 2 and 3
(c) 3 and 4 (d) 2 and 4
65. Average hourly earnings per year (E) of the workers in a firm are represented in figures A and B as follows:

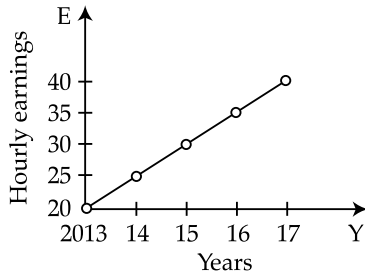


Fig. A

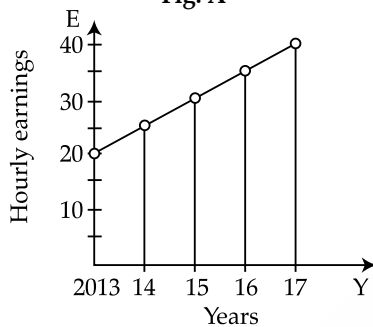
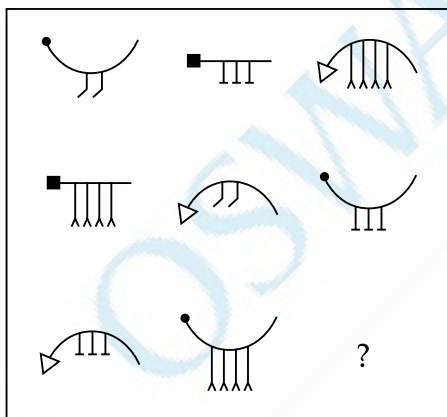


Fig. B

From the figures, it is observed that the

- (a) values of E are different
(b) ranges (i.e., the difference between the maximum and the minimum) of E are different
(c) Slopes of the graphs are same
(d) rates of increase of E are different
66. Consider the figures given below:



To fit the question mark, the correct answer is

- (a) (b)
(c) (d)

67. Consider the following figures A and B:

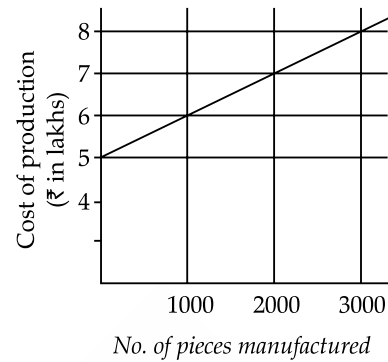


Fig. A

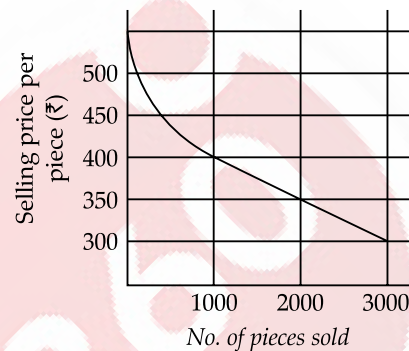
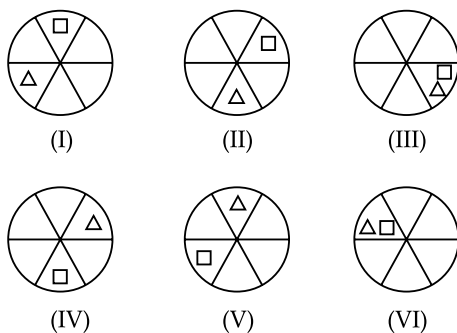


Fig. B

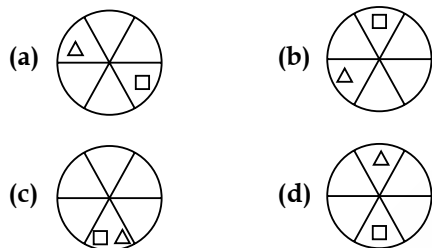
The manufacturing cost and projected sales for a product are shown in the above figures A and B respectively. What is the minimum number of pieces that should be manufactured to avoid a loss?

- (a) 2000 (b) 2500
(c) 3000 (d) 3500
68. A lift has the capacity of 18 adults or 30 children. How many children can board the lift with 12 adults?
- (a) 6 (b) 10
(c) 12 (d) 15
69. A person bought a refrigerator worth ₹ 22,800 with 12.5% interest compounded yearly. At the end of first year he paid ₹ 8,650 and at the end of second year ₹ 9,125. How much will he have to pay at the end of third year to clear the debt?
- (a) ₹ 9,990 (b) ₹ 10,000
(c) ₹ 10,590 (d) ₹ 11,250

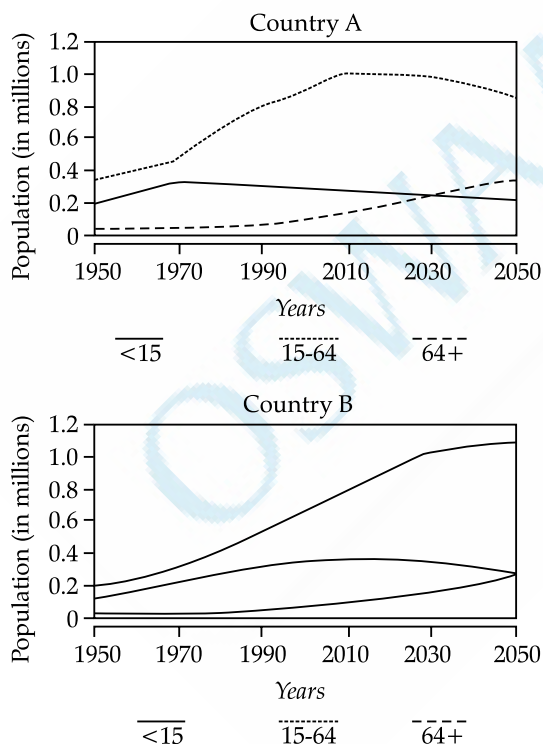
70. Consider the following figures:



In the figures (I) to (VI) above, some parts are shown to change their positions in regular directions. Following the same sequence, which of the figures given below will appear at (VII) stage?



71. Consider the following graphs. The curves in the graphs indicate different age groups in the populations of two countries A and B over a period of few decades:



With reference to the above graphs, which of the following are the *most logical and rational inferences* that can be made?

- Over the last two and a half decades, the dependency ratio for country B has decreased.
- By the end of next two and a half decades, the dependency ratio of country A will be much less than that of country B.
- In the next two decades, the workforce relative to its total population will increase in country B as compared to country A.

Select the correct answer using the code given below.

- (a) 1 and 2 only (b) 2 and 3 only
(c) 1 and 3 only (d) 1, 2 and 3

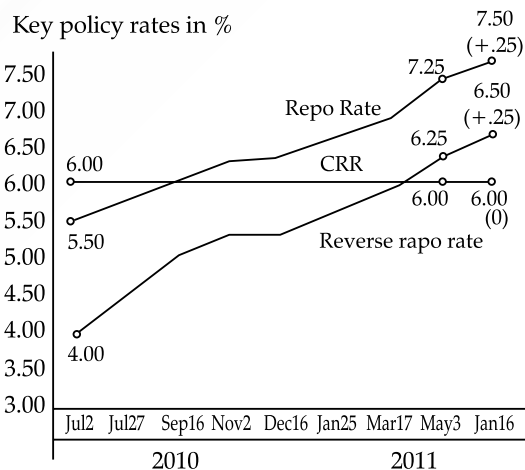
72. Lakshmi, her brother, her daughter and her son are badminton players. A game of doubles is about to begin:

- Lakshmi's brother is directly across the net from her daughter.
- Her son is diagonally across the net from the worst player's sibling.
- The best player and the worst player are on the same side of the net.

Who is the best player?

- (a) Her brother (b) Her daughter
(c) Her son (d) Lakshmi

73. The graph given below indicates the changes in key policy rates made by the Central Bank several times in a year:



Which one of the following can be the *most likely reason* for the Central Bank for such an action?

- (a) Encouraging foreign investment
- (b) Increasing the liquidity
- (c) Encouraging both public and private savings
- (d) Anti- inflationary stance

Direction for the following 2 (two) items: The following table gives the GDP growth rate and Tele density data of different states of a country in a particular year. Study the table and answer the two items (74-75) that follow.

States	Per capita income (\$)	GDP growth rate (%)	Tele density
State 1	704	9.52	70.27
State 2	419	5.31	35.88
State 3	254	10.83	50.07
State 4	545	9.78	5.94
State 5	891	10.8	76.12
State 6	1077	11.69	77.5
State 7	900	8.88	104.86
State 8	395	5.92	6
State 9	720	7.76	82.25
State 10	893	9.55	96.7
State 11	363	4.7	57.7
State 12	966	7.85	63.8
State 13	495	9.37	52.3
State 14	864	5.46	97.9
State 15	497	7.48	62.3
State 16	777	7.03	93.8
State 17	335	5.8	49.9
State 18	599	7.49	47.84

74. With reference to the above table, which of the following is/are the most logical and rational inference/ inferences that can be made?

- 1. Higher per capita income is generally associated with higher tele density.
- 2. Higher GDP growth rate always ensures higher per capita income.
- 3. Higher GDP growth rate does not necessarily ensure higher tele density.

Select the correct answer using the code given below.

- (a) 1 only
- (b) 2 and 3
- (c) 1 and 3
- (d) 3 only

75. With reference to the above table, the following assumptions have been made:

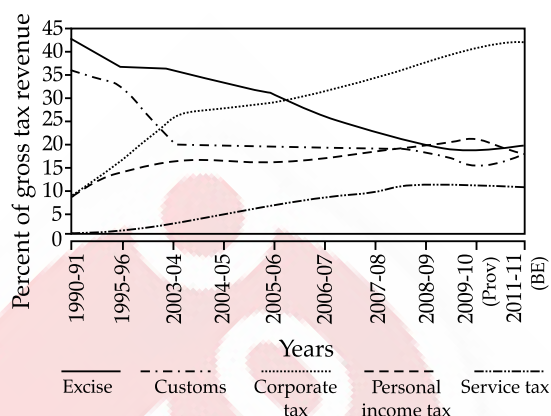
- 1. Nowadays, prosperity of an already high performing State cannot be sustained without making further large investments in its telecom infrastructure.

- 2. Nowadays, a very high tele density is the most essential condition for promoting the business and economic growth in a state.

Which of the above assumptions is/are valid ?

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

76. The following graph indicates the composition of our tax revenue for a period of two decades:



With reference to the above graph, which of the following is/are the most logical and rational inference/ inferences that can be made?

- 1. During the given period, the revenue from Direct Taxes as percentage of gross tax revenue has increased while that of Indirect Taxes decreased.
- 2. The trend in the revenue from Excise Duty demonstrates that the growth of manufacturing sector has been negative during the given period.

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

77. If $x - y = 8$, then which of the following must be true ?

- 1. Both x and y must be positive for any value of x and y .
- 2. If x is positive, y must be negative for any value of x and y .
- 3. If x is negative, y must be positive for any value of x and y .

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 nor 3

Direction for the following 3 (three) items: Read the following two passage and answer the items (78-80) that follow. Your answers to these items should be based on the passages only.

Passage - 1

The quest for cheap and plentiful meat has resulted in factory farms where more and more animals are squeezed into smaller lots in cruel and shocking conditions. Such practices have resulted in many of the world's health pandemics such as the avian flu. Worldwide, livestock are increasingly raised in cruel, cramped conditions, where animals spend their short lives under artificial light, pumped full of antibiotics and growth hormones, until the day they are slaughtered. Meat production is water-intensive. 15000 litres of water is needed for every kilogram of meat compared with 3400 litres for rice, 3300 litres for eggs and 255 litres for a kilogram of potatoes.

78. What is the most rational and crucial message given by the passage?

- (a) Mass production of meat through industrial farming is cheap and is suitable for providing protein nutrition to poor countries.
- (b) Meat-producing industry violates the laws against cruelty to animals.
- (c) Mass production of meat through industrial farming is undesirable and should be stopped immediately.
- (d) Environmental cost of meat production is unsustainable when it is produced through industrial farming.

Passage - 2

A male tiger was removed from Pench Tiger Reserve and was relocated in Panna National Park. Later, this tiger trekked toward his home 250 miles away. The trek of this solitary tiger highlights a crisis. Many wildlife reserves exist as islands of fragile habitat in a vast sea of humanity, yet tigers can range over a hundred miles, seeking prey, mates and territory. Nearly a third of India's tigers live outside tiger reserves, a situation that is dangerous for both human and animal. Prey and tigers can only disperse if there are recognized corridors of land between protected areas to allow unmolested passage.

79. Which of the following is the most rational and crucial message given by the passage?

- (a) The conflict between man and wildlife cannot be resolved, no matter what efforts we make.
- (b) Safe wildlife corridors between protected areas is an essential aspect of conservation efforts.
- (c) India needs to declare more protected areas and set up more tiger reserves.
- (d) India's National Parks and Tiger Reserves need to be professionally managed.

80. With reference to the above passage, the following assumptions have been made:

1. The strategy of conservation of wildlife by relocating them from one protected area to another is not often successful.
2. India does not have suitable legislation to save the tigers, and its conservation efforts have failed which forced the tigers to live outside protected areas.

Which of the above assumptions is/are valid?

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

OMR SHEET**Darken the circle for each question.**

Q.No.	Response
1.	(a) (b) (c) (d)
2.	(a) (b) (c) (d)
3.	(a) (b) (c) (d)
4.	(a) (b) (c) (d)
5.	(a) (b) (c) (d)
6.	(a) (b) (c) (d)
7.	(a) (b) (c) (d)
8.	(a) (b) (c) (d)
9.	(a) (b) (c) (d)
10.	(a) (b) (c) (d)
11.	(a) (b) (c) (d)
12.	(a) (b) (c) (d)
13.	(a) (b) (c) (d)
14.	(a) (b) (c) (d)
15.	(a) (b) (c) (d)
16.	(a) (b) (c) (d)
17.	(a) (b) (c) (d)
18.	(a) (b) (c) (d)
19.	(a) (b) (c) (d)
20.	(a) (b) (c) (d)

Q.No.	Response
21.	(a) (b) (c) (d)
22.	(a) (b) (c) (d)
23.	(a) (b) (c) (d)
24.	(a) (b) (c) (d)
25.	(a) (b) (c) (d)
26.	(a) (b) (c) (d)
27.	(a) (b) (c) (d)
28.	(a) (b) (c) (d)
29.	(a) (b) (c) (d)
30.	(a) (b) (c) (d)
31.	(a) (b) (c) (d)
32.	(a) (b) (c) (d)
33.	(a) (b) (c) (d)
34.	(a) (b) (c) (d)
35.	(a) (b) (c) (d)
36.	(a) (b) (c) (d)
37.	(a) (b) (c) (d)
38.	(a) (b) (c) (d)
39.	(a) (b) (c) (d)
40.	(a) (b) (c) (d)

Q.No.	Response
41.	(a) (b) (c) (d)
42.	(a) (b) (c) (d)
43.	(a) (b) (c) (d)
44.	(a) (b) (c) (d)
45.	(a) (b) (c) (d)
46.	(a) (b) (c) (d)
47.	(a) (b) (c) (d)
48.	(a) (b) (c) (d)
49.	(a) (b) (c) (d)
50.	(a) (b) (c) (d)
51.	(a) (b) (c) (d)
52.	(a) (b) (c) (d)
53.	(a) (b) (c) (d)
54.	(a) (b) (c) (d)
55.	(a) (b) (c) (d)
56.	(a) (b) (c) (d)
57.	(a) (b) (c) (d)
58.	(a) (b) (c) (d)
59.	(a) (b) (c) (d)
60.	(a) (b) (c) (d)

Q.No.	Response
61.	(a) (b) (c) (d)
62.	(a) (b) (c) (d)
63.	(a) (b) (c) (d)
64.	(a) (b) (c) (d)
65.	(a) (b) (c) (d)
66.	(a) (b) (c) (d)
67.	(a) (b) (c) (d)
68.	(a) (b) (c) (d)
69.	(a) (b) (c) (d)
70.	(a) (b) (c) (d)
71.	(a) (b) (c) (d)
72.	(a) (b) (c) (d)
73.	(a) (b) (c) (d)
74.	(a) (b) (c) (d)
75.	(a) (b) (c) (d)
76.	(a) (b) (c) (d)
77.	(a) (b) (c) (d)
78.	(a) (b) (c) (d)
79.	(a) (b) (c) (d)
80.	(a) (b) (c) (d)

ANSWERS WITH EXPLANATION

1. Option (b) is correct.

As we can observe from the figure that it has
 5 triangles → At the upper most part
 5 triangles → At the lower most part
 10 triangles → At the middle part
 (2 triangles each in 5 faces)
 Total no. of triangles = $5 + 5 + 10 = 20$.

2. Option (d) is correct.

We will put options one by one in place of •

$$\begin{array}{r} \bullet \\ 1 \bullet \\ 2 \bullet \\ \bullet 3 \\ + \bullet 1 \\ \hline 21 \bullet \end{array}$$

(i) Taking 4 as •

$$4 + 14 + 24 + 43 + 41 = 126$$

It is not correct

(ii) Taking 5 as •

$$5 + 15 + 25 + 53 + 51 = 149$$

It is not correct

(iii) Taking 6 as •

$$6 + 16 + 26 + 63 + 61 = 172$$

It is also not correct

(iv) Taking 8 as •

$$8 + 18 + 28 + 83 + 81 = 218$$

So, • is 8

[* We can get correct option by adding unit digit of numbers]

3. Option (a) is correct.

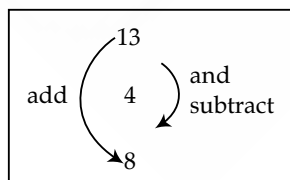
If we check pattern in each column

$$8 + 4 - 6 = 6$$

$$10 + 6 - 5 = 11$$

$$15 + 8 - 7 = 16$$

$$\therefore 13 + 8 - 4 = 17$$



4. Option (a) is correct.

We know that,

$$\text{Number of diagonals} = \frac{n(n-3)}{2}$$

[n is number of sides]

In octagon, number of sides = 8

$$\text{No. of diagonals} = \frac{8(8-3)}{2} = 20$$

5. Option (c) is correct.

We know that, area gives distance in V - t graph

Let PD be "x" units

$$\therefore PL = x + 2x = 3x \text{ units}$$

$$\therefore LD = 2x \text{ units}$$

$$\frac{\text{Distance covered by A}}{\text{Distance covered by B}} = \frac{\text{Area of } \triangle POL}{\text{Area of } \triangle OLD}$$

$$= \frac{\frac{1}{2} \times OL \times 3x}{\frac{1}{2} \times OL \times 2x} = \frac{3}{2}$$

Required ratio is 3 : 2.

6. Option (d) is correct.

Given that,

$$\text{Speed of train} = 40 \text{ km/h} = 40 \times \frac{5}{18} \text{ m/s}$$

Time taken by train of 200 m to cross a man
 = time taken by train to cover 200 m (as man has ~ 0 m width)

$$\text{Required time} = \frac{200}{40 \times \frac{5}{18}} = 18 \text{ sec}$$

7. Option (a) is correct.

According to the passage, Currently, 47% of people are engaged in agriculture and in 2030 this number will be around 42%. It is written by the author that even if the service sector and manufacturing sector pick up the pace then also in the next decade or so, only 5% of people will shift from agriculture to other fields. It is clear that agriculture is an important player in the Indian economy and it will remain so. Therefore, growth in these sectors will also impact the prosperity of India. Hence option (a) is correct.

The author does not seem to be concerned about the increasing population. He has just presented the information regarding the

rapidly increasing population of the country but has not discussed its implications or solutions. Hence, option (c) can be discarded.

Option (d) is out of the scope of the passage as it is not an inference but a suggestion.

8. Option (a) is correct.

A corollary is a proposition that follows from one already proved in the passage.

Food production is seeing globalisation. Staple foods are the things of old times. Nowadays we are having the world on our plates. The food produced at one place travels the world over. Contamination of this food can occur at any stage from its journey from farm to end consumer's plate. It is correct to conclude that with more food options, consumers are becoming vulnerable and at an increased risk of infection. Option (a) is correct.

Option (b) is incorrect in blaming all the food-related diseases on food processing.

Option (c) is not the intent of the author in the passage. It is not feasible as well in a globally connected world.

Option (d) provides an irrational solution for the problem of food poisoning. If the world is globally connected politically, economically and socially, it is not practical to stop the globalization of food production.

9. Option (b) is correct.

According to the author, science has its limit in understanding and solving the mystery of existence. It can answer some questions while for other questions, it is silent. Faith can answer these questions. But then, faith has its limitation. It needs the help of science to answer this. These both domains are different but can play complementary roles to enhance the scope of their pursuits. Option (b) is the most correct answer.

The author has not given the upper hand to faith or science over each other. Hence, option (a) and option (d) are not correct.

Option (c) is not in the scope of the passage. It is a judgement that is not supported by the content of the passage.

10. Option (d) is correct.

The author feels proud of the great inheritance of India, option (b) contradicts it. Hence, it

is discarded. He is finding relevance and connection in the glorious past of India, but his concern is just traditions and customs which he does not find good for Indian interests. Option (a) and option (c) are not correct.

Option (d) is the best logical answer. It shows the true concern of the author in some traditions and customs which divide people of India and hamper the unrestricted physical and spiritual growth.

11. Option (c) is correct.

From the given graph,

Sheet steel's import in Jan, Feb. and March
 $= 40 + 37 + 36 = 113\ 000$'s tons

Coil steel's import in Jan, Feb. and March
 $= 30 + 31 + 33 = 94\ 000$'s tons

Sheet steel's import exceed coil steel's import by
 $= 113\ 000 - 94\ 000 = 19\ 000$'s tons.

12. Option (c) is correct.

Total import of sheet steel in 6 months
 $= 40 + 37 + 36 + 36 + 34 + 34 = 217$
 Total value of sheet imported
 $= 217 \times 256 = 55\ 552$ \$
 $\cong 55,550$ \$ approx.

13. Option (b) is correct.

Import of sheet in first 3 months
 $= 40 + 37 + 36 = 113$

Import of scarp in first 3 months
 $= 32 + 34 + 32 = 98$

Required ratio $= \frac{113}{98} = \frac{1.15}{1} \cong 1.12 : 1$

For solutions 14, 15 and 16:

We will observe adjacent faces of particular symbol to decide symbol on its opposite face. Eliminate adjacent faces to get symbol on opposite face.

line will have X on its opposite face

.. will have:: on its opposite face

. will have ... on its opposite face

Now we can answer the given questions.

14. Option (b) is correct.

15. Option (c) is correct.

16. Option (c) is correct.

17. Option (c) is correct.

According to the passage, it is not sufficient to admit the children to schools and provide the physical infrastructure. Despite these facilitations, they do not find education engaging and leave schools prematurely.

The author suggests a change in the curriculum to make education more student-friendly and relevant to increase the retention rate in the schools. The curriculum should provide for learning through activities, exploration and discovery. We have to change our perception of children as passive receivers of knowledge and move beyond the convention of using textbooks as the basis of testing their knowledge.

Based on the facts given above, statement 3 is the correct answer to the question.

18. Option (a) is correct.

Teacher's accountability is a demand made by the author as an educational reform. It can be assumed that process must ensure that children are learning and their right to learn in a child friendly environment is not violated. Right to Education does not guarantee full enrolment of children in the school. It is not a valid conclusion that Right to education intends to take full advantage of demographic dividend. Hence, Statement 1 is correct, statement 2 and 3 are incorrect.

19. Option (d) is correct.

Regular attendance of children and teachers is paramount for ensuring quality education and maintaining the level of learning. But this is based on a premise that the curriculum itself is updated, relevant and has quality. But this is not the case in the passage.

The author says that the curriculum needs improvement. The teaching activities are failing to engage students and hence, the attrition rate from schools is increasing. A plethora of measures is required to ensure quality education. The curriculum should provide for learning through activities, exploration and discovery. We have to change our perception of children as passive receivers of knowledge and move beyond the convention of using textbooks as the basis of testing their knowledge. Quality can be increased by engaging content and ways to develop the learning capability of the children.

The author has not suggested monetary incentives to increase the quality of education. Moreover, these steps can bring students to schools but cannot ensure the quality of education. Option (d) is the best answer.

20. Option (c) is correct.

Right to education brings students from weaker sections of society to the hallowed doors of the education system, but then they leave after some time due to shortcomings in our education system.

The author of the passage is positive for the Right to education but his prime focus is on highlighting the need for quality education. He has advocated the reforms in the curriculum to make it more empowering and meaningful for students. He has also recommended upgrading the teaching methods with the use of stress-free student-friendly techniques.

Option (a) is out of the scope of the passage. Option (d) and Option (b) are limited to bringing the students to schools. They do not transcend to the next level – the quality education for students of all sections, which is the biggest concern of the author.

Only option (c) carries the essential message of the passage.

21. Option (a) is correct.

CODE	L	S	J	X	V	C
	12	19	10	24	22	3
WORD	M	U	M	B	A	I
	13	21	13	2	1	9
GAP	-1	-2	-3	-4	-5	-6

D	E	L	H	I	WORD
4	5	12	8	9	
C	C	I	D	D	CODE
3	3	9	4	4	
-1	-2	-3	-4	-5	GAP

22. Option (b) is correct.

By observing given codes, we can conclude that

WORD	R	A	M	O	N	D	I	E	S	H
CODE	1	2	3	4	5	6	7	8	4	9

∴ CODE for HAMAM is 92323.

23. Option (d) is correct.

$$\because -3 < X < -1 \quad \text{on squaring} \quad 1 < X^2 < 9$$

$$-1 < Y < 1 \quad \text{on squaring} \quad 0 < Y^2 < 1$$

[As least value in this square is 0]

$$1 - 1 < X^2 - Y^2 < 9 - 0$$

$$\text{i.e., } 0 < X^2 - Y^2 < 9$$

\therefore For maximum of $X^2 - Y^2$, we take difference of maximum of X^2 and minimum of Y^2 .

For minimum of $X^2 - Y^2$ we take difference of minimum of X^2 and maximum of Y^2 .

24. Option (a) is correct.

$$\because Y > X \text{ and } X \neq 1, Y \neq 1$$

Let Y be "10" and X be "9"

$$\therefore XY = 90 \quad \frac{X}{Y} = 0.9$$

$$\frac{Y}{X} = 1.11 \quad \frac{(X+Y)}{XY} = \frac{19}{90} = 0.211$$

So, largest number will be XY.

For solution 25 and 26:

Given conditions are:

- (i) There are 6 officers A, B, C, D, E and F
- (ii) B and C is offices are at right
- (iii) A's office is at left
- (iv) E and F occupy offices on opposite sides
- (v) E and F do not face each other
- (vi) C and D face each other. E is not at corner
- (vii) F and A are in same side (left), F's office is down to A's.

Based on above information, the arrangement of offices is

	F		B	
Left	A	Corridor	E	Right
	D		C	

25. Option (c) is correct.

C's office is in left of E, when E face corridor.

26. Option (a) is correct.

A is only immediate neighbour of F.

27. Option (d) is correct.

The author has explicitly mentioned in the last paragraph of the passage that due to deforestation and ill land management numerous adverse effects can be seen ranging from the loss of fertility of soil to drying up of small rivers. This has resulted in decreasing the production capacity of farms. He has called it site degradation and given an example of tea plants to highlight these adverse effects.

The adverse effect of receding groundwater is one of the consequences of decline in forest cover based on the facts as discussed here, option (d) is the most appropriate answer in the context

28. Option (a) is correct.

Deforestation has been linked with several adverse effects on the hydrology of the Himalayan region. Small rivers have dried up. Underwater springs have also dried up. On the other hand, rivers like the Brahmaputra are observing frequent floods and run off water from their surface. Hence, inference can be drawn that the author has discussed the change in course of a river due to deforestation. Statement 1 is correct.

The impoverishment of human-impacted terrestrial ecosystems is on the rise. Land salinization has been marked as one of the effects of the declining cover of forests across the plains. Statement 2 is incorrect.

But, the sentence, 'Impoverishment of human impacted ...salinization of land...' does not clarify that only human activities cause salinization of soil.

Monoculture is mentioned only in the context of Indian Plains.

29. Option (d) is correct.

In the first part of the passage, the author has mentioned that desertification is not unique to tropical areas. Though it can be at a drastic level in humid tropic areas. Desertification is found in all the areas arid, sub arid and subtropic areas. Statement 1 is not correct. Further, the consequence of deformation invariably arise out of site degradation through erosive losses and not leading to floods and desertification. Statement 2 is incorrect in the context of the passage.

30. Option (b) is correct.

The author has suggested several steps to face the threat of climate change. We can find the importance of a wider pool of genetic resources and migration corridors is mentioned in the passage. Conserving migration corridors is essential to the conservation of wildlife heritage. He has also demanded the conservation of natural water resources as a proactive and adaptive step. Statement 1, 2 and 4 are correct. The author is against the present crop practices which are dependent on monoculture and does not support diversity. These farmers led and private sector-led monoculture is not good for ensuring food security. Statement 3 contradicts.

31. Option (c) is correct.

Statement 1 is correct. Diversification of livelihoods through migration corridors are critical for the maintenance of ecological processes including allowing for the movement of animals and the continuation of viable populations. By providing natural area connections between larger areas of habitat, corridors enable migration, colonisation and interbreeding of plants and animals. This can be an efficient way to mitigate the effects of climate change.

Statement 2 is correct. The adverse effects of monocropping are discussed in the passage and the extinction of plant varieties related to wild varieties.

32. Option (c) is correct.

The author finds a connection between human beings' aspirations and the exploitation of our planet. He has no problem with the increasing population in the passage. Option (b) is not correct.

Option (d) is not in alignment with the argument presented in the passage. The understanding biological process will lead us anywhere we have to relate with planet earth and then reduce our aspirations from it.

We have to understand the limitations of biological earth in fulfilling our unending demands from it for more and more resources. As mentioned in the passage, the needs should be frugal as after World War Second, and amount to the basic needs of food and shelter.

Option (c) is the best answer out of the given choices.

33. Option (b) is correct.

The author has mentioned in the second line of the passage that all the theories which link leadership with birth are false. He further explains in the passage that leadership can be acquired and can indeed be taught. Option (b) is the correct answer.

Option (a) is not true. War experience cannot be the only way to learn leadership qualities.

The other two options are distant and divorced in their content with the content of the passage.

34. Option (b) is correct.

Let one's place digit be " x "

\therefore Hundred place digit = $4 - x$

Middle (Ten's) place digit = 0

Number			Number after reversing digits		
$4 - x$	0	x	x	0	$4 - x$
H	T	O	H	T	O

According to condition

Reversed No. - No. = 198

$$100x + 10 \times 0 + 1 \times (4 - x)$$

$$- [100(4 - x) + 10 \times 0 + 1 \times x] = 198$$

$$100x + 4 - x - 400 + 100x - x = 198$$

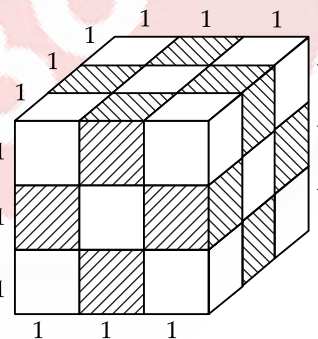
$$198x = 594$$

$$x = \frac{594}{198} = 3$$

One's place digit = 3 and Hundred place digit = $4 - 3 = 1$

Their difference = $3 - 1 = 2$.

35. Option (a) is correct.



Cube after cutting into 27 small cubes.

Cubes with 2 side pointed one shaded.

Each block of 9 small cubes have 4 such cubes.

Total no. of required cubes = $4 + 4 + 4 = 12$.

36. Option (c) is correct.

As per given conditions:

Required numbers between 700 and 800 are:

765

764 754

763 753 743

762 752 742 732

761 751 741 731 721

$$\frac{760}{6} + \frac{750}{5} + \frac{740}{4} + \frac{730}{3} + \frac{720}{2} + \frac{710}{1} = 21$$

Similarly, as per this pattern, required numbers between 800 and 900

$$= 7 + 6 + 5 + 4 + 3 + 2 + 1 = 28$$

Required numbers between 900 and 1000

$$= 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 36$$

Total number of required numbers

$$= 21 + 28 + 36 = 85$$

37. Option (b) is correct.

According to question.

Pen < Pencil < Book

and Cap < Book

\Rightarrow Pen < Book

38. Option (b) is correct.

According to given information.

Subject	No. of books sold	Rate of book	Sale in ₹
Geography	a	x	ax
History	$a + 2$	$x + 2$	$ax + 2a + 2x + 4$
Mathematics	$a - 2$	$x - 2$	$ax - 2a - 2x + 4$
		Total	$3ax + 8$

Total sale in ₹ = $3ax + 8$

39. Option (b) is correct.

Number of ball	Red balls (15)	Black balls (20)
1	40% of 15 = 6	25% of 20 = 5
2	20% of 15 = 3	45% of 20 = 9
3	40% of 15 = 6	30% of 20 = 6

Total number of balls = $15 + 20 = 35$

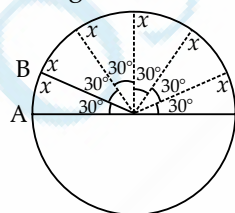
Number of balls to won ($3R + 1B + 2B$)

$$= 6 + 5 + 9 = 20$$

$$\text{Probability (win)} = \frac{20}{35} = \frac{4}{7}$$

40. Option (a) is correct.

We have divided upper semi circle in 6 equal parts subtending 30° each at centre.



Let length of each part be " x " units.

In equal time A covered $6x$ units and B covered $5x$ units.

$$\therefore \text{Ratio of their speeds (A : B)} = 6x : 5x = 6 : 5.$$

41. Option (c) is correct.

Let maximum marks be " x "

$$\therefore \text{Passing marks (40\%)} = \frac{40}{100} \times x = \frac{2x}{5}$$

According to given, passing marks

$$= 30 + 30 = 60$$

$$\therefore \frac{2x}{5} = 60$$

$$\Rightarrow x = \frac{60 \times 5}{2} = 150$$

Maximum marks = 150.

42. Option (c) is correct.

According to question,

Boys wearing hockey shirts, $n(s) = 11$

Boys wearing hockey pants, $n(p) = 14$

Total boys = $n(S \cup P) = 19$

Number of boys wearing full uniform (both shirts and pants)

$$= n(S \cap P) = n(S) + n(P) - n(S \cup P) \\ = 11 + 14 - 19 = 6$$

6 boys wearing full uniform.

For solutions (43 – 48):

We have 4 parameters given information

Students : A, B, C, D

Cities : P, Q, R, S

Colleges : Arts, Commerce, Science, Engg.

States : Guj., Raj., Assam, Kerala.

We will make a 4×4 matrix and fill it by given information, one by one.

A	B	C	D
Comm.	Scien.	Arts	Engg.
P/R	Q	S	P/R
Guj.	Kerala	Raj.	Assam

Now, we can fill shaded boxes (information not given about them) easily.

43. Option (b) is correct.

A is studying in Gujarat.

44. Option (a) is correct.

Science college is located in Q.

45. Option (b) is correct.

C is studying in Rajasthan.

46. Option (a) is correct.

D is not studying in city S.

47. Option (d) is correct.

D is studying in Engineering college.

48. Option (a) is correct.

Engineering college is in Assam.

49. Option (c) is correct.

We shall understand the critical message of the author in the passage. The problem of climate change is not only limited to developing countries but it is also a problem of developed countries. But the problem becomes more complex for developing countries because stopping the development activities that adversely affect climate will cost them economically. They need some funds to support their initiatives for stopping climate change.

Based on the above discussion, statement 1 is not correct. Only statements 2 and 3 find relevance with the matter of the passage.

50. Option (d) is correct.

Option (a) contradicts the facts presented in the passage. It is mentioned in the passage that several houses-holds using biomass as fuel has remained static for a long time. So, it is incorrect to say that rural people are giving up polluting solid fuels to move to cleaner fuels.

The role of subsidies on clean cooking fuels is not discussed in the passage. So, it can be ignored.

Option (c) looks like a feasible and attractive solution but it is out of the scope of the passage.

The author has linked premature deaths with the use of polluting cooking fuels. He says that this household pollution is responsible for lakhs of deaths every year. The only solution to stop these premature deaths is to use clean fuel. The clean fuel can be LPG, natural gas or electricity. Option (d) is the most appropriate answer.

51. Option (a) is correct.

Though science has a dangerous side to it, it is a liberator for human beings. It provides freedom from diseases, poverty and peaceful solutions to our frictions. A happy world is a dream of science. Option (a) captures the essence of the passage. It is the most appropriate implication. There are some words if used in the options make it easy to answer the question. These words are – superlative degrees (best, worst, or most) or definitive adjectives (only, always, never).

See the use of the word 'only' in option (b). If we remove this word from the sentence. This will become the answer. As it is mentioned by the author that science can build a happy world but it is also a major threat. But the author has not noted it as the 'only' solution or 'only' threat to the world. Hence, this option can be discarded.

52. Option (b) is correct.

The question is asking about the most important implication. Any country can indeed make claim on the open for all Arctic region. India can also do so. But it is not the most important implication. Option (a) is incorrect.

Option (c) is not even discussed in the passage. Hence, it cannot be the correct answer.

Option (d) is also incorrect as the Arctic and Antarctica are not compared on this parameter.

The passage just says that the Antarctica region has a legal provision for saving the region but the Arctic region is not having such legislation.

As there are no defined rights of any country in the Arctic region, all the countries vie for more chunks in the resourceful Arctic. Geopolitics is the influence of such factors as geography, economics and demography on the politics and especially the foreign policy of a state. The melting of ice in the Arctic certainly leads to changes in geopolitics.

53. Option (c) is correct.

Option (a) is not appropriate answer. It is an off-topic option.

Option (b) looks like a very absurd suggestion. It is important to maintain the spirit of competition in the world by limiting subsidies. This does not seem to be a valid reason for leaving an international organisation.

Option (c) is an inference and it is based on the passage. The passage convey the message that , for India, food securities collide with trade.

Option (d) is not discussed in the passage.

54. Option (b) is correct.

Statement 1 does not make any sense. If the educational system of India is so backward it could have not sustained to be a progressing country. Developing means showing growth. Growth is a positive thing. So, the educational system of India is not so much bad. It has not evolved and we have to upgrade it to make it compatible with the modern demands in

employment and skillsets. Hence, Statement 2 is very logical and rational in the context.

Statement 3 is not in the scope of the passage. This statement is very true in the real world but there is not a single link in the passage to certify it. Option (b) is correct it.

55. Option (d) is correct.

Option (c) is the first one to be ignored. The last line of the passage provides a cure for obesity with some conditions. So, incurability is out of the question.

Option (a) is wrong as the passage says that 'dieting' has become the epidemic, not the obesity.

It is important to understand the difference between a fact and an inference.

Facts, which deal with the pieces of information that one has seen, heard or read, and which are known matters of direct observation or existing reality. Also, a fact is something open to verification or discovery. Inferences are conclusions or logical deductions drawn about the unknown, based on the known i.e., based on the facts.

Out of option (b) and option (d), statement of (b) is a fact presented in the passage and only statement (d) qualifies as an inference based on the facts presented in the passage

56. Option (a) is correct.

In the first sentence of the passage, the author has warned against monoculture. He has justified this warning in the subsequent sentences. Option (b) contradicts the viewpoint of the author. Hence, it is not the rational or the crucial message of the author.

The author has not discussed Genetically Modified crops in any part of the sentence. So, option (c) is the correct option.

It is suggested to exam takers to read each of the options carefully to find special words that make the option statements wrong. Some examples are - greatest, most, best, worst, only, all, except, last, first, etc.

See in option (d), just because of the word 'worst' the whole sentence took a different meaning and become out of the context of the passage. The passage does not state that Asia and North America would be the worst affected by food scarcity.

Due to climate change, natural calamities will be frequent and widespread. Some areas will see floods and some will have to face droughts. This capricious nature of weather will bring havoc for the monocultural crops and biodiversity. To maintain this biodiversity and ensure the supply of food, the monoculture has to give way to multicultural farming options, this is insurance against the rapidly changing climate. Option (a) is the correct inference.

57. Option (c) is correct.

Let original cost of article be "₹ a"

$$\text{S.P. with } x\% \text{ profit} = \frac{100+x}{100} \times a = 40$$

$$\Rightarrow 100a + ax = 4000 \quad \dots(i)$$

$$\text{S.P. with } x\% \text{ Loss} = \frac{100-x}{100} \times a = 20$$

$$\Rightarrow 100a - ax = 2000 \quad \dots(ii)$$

On adding both equations, we get

$$200a = 6000$$

$$\Rightarrow a = 30$$

So, original cost = ₹ 30.

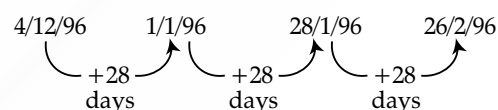
58. Option (c) is correct.

There are 24 points at equal distance we need 3 of them to form an equilateral triangle.

$$\therefore \text{Total number of equilateral triangles} = \frac{24}{3} = 8$$

59. Option (b) is correct.

Given numbers are dates of calendar of 1996.

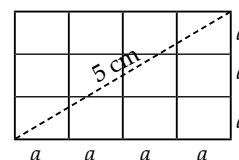


\therefore 96 is leap year, so Feb has 29 days

$$26/2/96 + 28 \text{ days} = 25/3/96.$$

60. Option (c) is correct.

Arrangement of squares in rectangle is



Let side of a square be "a" cm

\therefore By Pythagoras Theorem

$$5^2 = (3a)^2 + (4a)^2$$

$$\Rightarrow 25 = 9a^2 + 16a^2 = 25a^2$$

$$\Rightarrow a^2 = 1$$

$$\Rightarrow a = 1 \text{ cm}$$

So, area of each square = $a^2 = 1^2 = 1 \text{ cm}^2$.

61. Option (d) is correct.

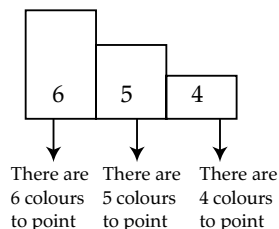
As we can see from graph, during August

Actual progress was more than expected progress.

So, we can conclude that statement in option (d) is not correct.

62. Option (a) is correct.

According to question,



Total number of ways = $6 \times 5 \times 4 = 120$

[In this way no two of them has same colour]

63. Option (d) is correct.

As we observe from graph (1990 – 2010)

Birth rate is decreasing but death rate is also decreasing then increased slightly.

Growth rate = B.R. – D.R.

There is nothing can be said about growth rate during 1990 – 2010.

64. Option (d) is correct.

(i) It is wrong to say that population is stabilized.

(ii) Since, both B.R. and D.R. is constant after 35 years *i.e.*, after 2005.

So, growth rate is stabilized.

(iii) D.R. has fallen from 25 to 21 (approx.) in first 10 years. D.R. fallen by 4 points that is more than $10\% \frac{4}{25} \times 100 = 16\%$.

(iv) Yes, B.R. has stabilized after 35 years *i.e.*, from 2005.

65. Option (c) is correct.

From figure, we can see

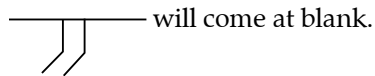
→ Value of E is same in both graphs (20 – 40)

→ Ranges are also same in both graphs

→ As we can see, angles of line with x -axis is same. Therefore, slopes are equal.

66. Option (a) is correct.

One line having shaded square on left end is missing and two tilted lines also missing.



will come at blank.

67. Option (a) is correct.

We know that

To avoid loss,

Cost of production = Selling (Revenue)

(i) If they are making 1000 places

$$\text{Cost} = 6 \text{ lakhs} = ₹ 6,00,000$$

$$\text{Revenue} = 1000 \times 400 = 4,00,000$$

$$\text{Cost} > \text{Revenue.}$$

(ii) If they are making 2000 pieces

$$\text{Cost} = ₹ 7,00,000$$

$$\text{Revenue} = 2000 \times 350 = ₹ 7,00,000$$

$$\text{Cost} = \text{Revenue}$$

They should make 2000 pieces to avoid loss.

68. Option (b) is correct.

According to question,

Weight of 18 Adults = Weight of 30 Children

Weight of 1 Adults = Weight of $\frac{30}{18}$ Children

Capacity of lift = Weight of 18 Adults

= Weight of (12 Adults + 6 Adults)

= Weight of 12 Adults

+ Weight of $6 \times \frac{30}{18}$ Children

= Weight of (12 Adults + 10 Children)

10 Children can board with 12 Adults.

69. Option (d) is correct.

Amount for refrigerator after 1 year

$$= 22800 \left[1 + \frac{12.5}{100} \right] = ₹ 25650$$

Amount after first repayment

$$= 25650 - 8650 = ₹ 17000$$

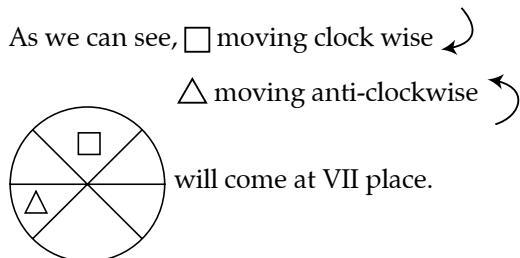
Amount after 2nd year and 2nd repayment

$$= 17000 + 2125 [12.5\% \text{ of } 17000] - 9125 = 10000$$

Amount to be paid after 3rd year

$$= 10000 + \frac{10000 \times 12.5}{100} = ₹ 11,250$$

70. Option (b) is correct.



71. Option (c) is correct.

Last two and half decades means 2025 to 2050
 Dependent population
 = Population below 15 years + Above 64 years
 Working population
 = Population between 15 – 64 years.

1. As we see, working population is increasing in country B from 2025 – 2050. So dependency is decreasing.
2. As per the trend, working population of country – A is decreasing where as working population is increasing in country – B in 2025 – 2050. So, we cannot say that dependency ratio of A will be much less than of B in 2050 – 2075.
3. Yes, workforce will increase in country – B as compared to country – A.
 So, only 1 and 3 are correct.

72. Option (a) is correct.

According to given information, we can draw arrangement as:

(Best)	(Worst)
Brother	Laxmi
Daughter	Son

So, best player is Laxmi's Brother.

73. Option (d) is correct.

As per the graph, in last once year

Repo rate	Increasing
CRR	Constant
Reverse RR	Increasing

This kind of policy is taken to curb inflation.

74. Option (c) is correct.

As per the given data,

1. Most of higher per capita income states have higher tele-density.
2. As we see data of state-1 and state-3 then we can say higher GDP growth does not ensure higher per capita income always.
3. Compare data for state B and state II, we can see higher GDP has lower tele-density.

So, only statement 1 and 3 are correct.

75. Option (d) is correct.

- (i) Here, cannot is stressed much and as per data it is not correct.
- (ii) Here, most essential is given, which is not correct for every state (state 7 and 5)
 Both are wrong statements.

76. Option (a) is correct.

Direct taxes → Corporate and Income tax

Indirect taxes → Excise, customs and service tax.

1. During the given period.

Excise tax	Decreasing
Customs tax	Decreasing
Service tax	Increasing (But less)
Corporate tax	Increasing highly
Income tax	Increasing

So, statement 1 is correct.

2. We receive excise tax from non-manufactured things like Tobacco. So, less excise tax does not mean decrease in manufacturing.

So, statement 2 is incorrect.

77. Option (d) is correct.

Given that, $X - Y = 8$

- (i) If $x = 4$ and $y = -4$
 $x - y = 4 - (-4) = 8$
- (ii) If $x = 10$ and $y = 2$
 $x - y = 10 - 2 = 8$
- (iii) $x = -2, y = -10$
 $x - y = -2 - (-10) = -2 + 10 = 8$

∴ All statements are wrong.

78. Option (d) is correct.

Cheap mass production through industrial farming is shown in a negative sense in the passage. While option (a) gives the positive side of it. So, option (a) is not in coherence with the passage. It is an inference based on the abject conditions of livestock depicted in the passage. This is not the message of the author in the passage. Option (b) is incorrect.

Mass production of meat is done to meet the demand, if demand will not be there, mass production will automatically stop. It is not suggested in the passage that mass production of meat shall be stopped.

The main message of the author in the passage is to highlight the requirement of a huge quantity of water to produce one kg of meat through industrial farming, it means the wastage of a very critical resource the potable water. This unjustified quantity of water extracted from the ecosystem can disturb the environment of geographical areas. Hence, option (d) is the best answer.

79. Option (b) is correct.

Option (a) is out of the scope of the passage.

It is incorrect to assume that Tiger reserves are managed unprofessionally in India. The passage is silent on this. Option (d) is incorrect. Eliminate (a) and (d).

The author has mentioned that one-third of the tigers supposed to be living in tiger reserves live outside it and wander for different reasons in the thickly populated human areas. In this scenario, more tiger reserves are not justified. Rather, efforts shall be to put the tigers in

existing reserves efficiently. Option (c) is not correct.

A tiger corridor is a stretch of land linking tiger habitats, allowing the movement of tigers, prey and other wildlife. Without corridors, tiger habitat can become fragmented and tiger populations isolated leaving the tigers vulnerable to localised extinction. Safe wildlife corridors between protected areas are an essential aspect of conservation efforts.

80. Option (a) is correct.

Option (b) is not related to the concern shown in the passage. The author has not criticised Indian efforts to save the tigers. The reason given in this option for the movement of tigers out of reserves is not in agreement with what the author has noted in the passage.

In absence of recognized corridors for movement between protected reserves, the strategy of conservation of wildlife by relocating them from one protected area to another is not often successful. Statement 2 is correct.

OSWAAL