

UPSC

CIVIL SERVICES
EXAMINATION
(PRELIMS)-CSAT

2017

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.

Direction for the following 8 (eight) items: Read the following eight passages and answer the items (1-8) that follow the passages. Your answers to these items should be based on the passages only.

Passage-1

What climate change will undeniably do is cause or amplify events that hasten the reduction of resources. Competition over these diminishing resources would ensue in the form of political or even violent conflict. Resource-based conflicts have rarely been overt and are thus difficult to isolate. Instead, they take on veneers that appear more politically palatable. Conflicts over resources like water are often cloaked in the guise of identity or ideology.

1. **What does the above passage imply?**
 - (a) Resource-based conflicts are always politically motivated.
 - (b) There are no political solutions to resolve environmental and resource-based conflicts.
 - (c) Environmental issues contribute to resource stresses and political conflict.
 - (d) Political conflict based on identity or ideology cannot be resolved.

Passage-2

The man who is perpetually hesitating about which of the two things he will do first will do neither. The man who resolves, but suffers his resolution to be changed after the first counter-suggestion of a friend—who fluctuates from opinion to opinion and veers from plan to plan—can never accomplish anything. He will at best be stationary and probably retrograde in all. It is only the man—who first consults wisely, then resolves firmly and then executes his purpose with inflexible perseverance, undismayed by those petty difficulties which daunt a weaker spirit—that can advance to eminence in any line.

2. **The keynote that seems to be emerging from the passage is that**
 - (a) we should first consult wisely and then resolve firmly.
 - (b) we should reject suggestions of friends and remain unchanged.
 - (c) we should always remain broad-minded.
 - (d) we should be resolute and achievement-oriented.

Passage-3

During the summer in the Arctic Ocean, sea ice has been melting earlier and faster, and the winter freeze has been coming later. In the last three decades, the extent of summer ice has declined by about 30 per cent. The lengthening period of summer melt threatens to undermine the whole Arctic food web, atop which stand polar bears.

3. **Which among the following is the most crucial message conveyed by the above passage?**

- (a) Climate change has caused Arctic summer to be short but temperature to be high.
- (b) Polar bears can be shifted to the South Pole to ensure their survival.
- (c) Without the presence of polar bears, the food chains in the Arctic region will disappear.
- (d) Climate change poses a threat to the survival of polar bears.

Passage-4

Why do people prefer open defecation and not want toilets or, if they have them, only use them sometimes? Recent research has shown two critical elements: ideas of purity and pollution, and not wanting pits or septic tanks to fill because they have to be emptied. These are the issues that nobody wants to talk about, but if we want to eradicate the practice of open defecation, they have to be confronted and dealt with properly.

4. **Which among the following is the most crucial message conveyed by the above passage?**

- (a) The ideas of purity and pollution are so deep-rooted that they cannot be removed from the minds of the people.
- (b) People have to perceive toilet use and pit-emptying as clean and not polluting.
- (c) People cannot change their old habits.
- (d) People have neither civic sense nor a sense of privacy.

Passage-5

In the last two decades, the world's Gross Domestic Product (GDP) has increased by 50 per cent, whereas inclusive wealth has increased by a mere 6 per cent. In recent decades, GDP-driven economic performance has only harmed inclusive wealth like human capital; and natural capital like forests, land and water. While the world's human capital which stands at 57 per cent of total inclusive wealth grew by only 8 per cent, the natural capital which is 23 per cent of total inclusive wealth declined by 30 per cent worldwide in the last two decades.

5. **Which of the following is the most crucial inference from the above passage?**

- (a) More emphasis should be laid on the development of natural capital.
- (b) The growth driven only by GDP is neither desirable nor sustainable.
- (c) The economic performance of the countries of the world is not satisfactory.
- (d) The world needs more human capital under the present circumstances.

Passage-6

By 2025, when the global economy is expected to run short of 56 million young people, India, with its youth surplus of 47 million, could fill the gap. It is in this context that labour reforms are often cited, as the way to unlock double-digit growth in India. In 2014, India's labour force was estimated to be about 40 per cent of the population, but 93 per cent of this force was in the unorganized sector. Over the last decade, the Compound Annual Growth Rate (CAGR) of employment has slowed to 0.5 per cent, with about 14 million jobs created during last year when the labour force increased by about 15 million.

6. **Which of the following is the most rational inference from the above passage?**

- (a) India must control its population growth so as to reduce its unemployment rate.
- (b) Labour reforms are required in India to make optimum use of its vast labour force productively.
- (c) India is poised to achieve double-digit growth very soon.
- (d) India is capable of supplying skilled young people to other countries.

Passage-7

The very first lesson that should be taught to us when we are old enough to understand it, is that complete freedom from the obligation to work is unnatural, and ought to be illegal, as we can escape our share of the burden of work only by throwing it on someone else's shoulders. Nature ordains that the human race shall perish of famine if it stops working. We cannot escape from this tyranny. The question we have to settle is how much leisure we can afford to allow ourselves.

7. **The main idea of the passage is that**

- (a) it is essential for human beings to work.
- (b) there should be a balance between work and leisure.
- (c) working is a tyranny which we have to face.
- (d) human's understanding of the nature of work is essential.

Passage-8

There is no harm in cultivating habits so long as they are not injurious. Indeed, most of us are little more than bundle of habits. Take away our habits and the residuum would hardly be worth bothering about. We could not get on without them. They simplify the mechanism of life. They enable us to do a multitude of things automatically, which, if we had to give fresh and original thought to them each time, would make existence an impossible confusion.

8. The author suggests that habits

- (a) tend to make our lives difficult
- (b) add precision to our lives
- (c) make it easier for us to live
- (d) tend to mechanize our lives

Direction for the following 2 (two) items: Consider the given information and answer the two items (9-10) that follow.

No supporters of "Party X", who knew Z and supported his campaign strategy, agreed to the alliance with "Party Y", but some of them had friends in 'Party Y'.

9. With reference to the above information, which one among the following statements must be true?

- (a) Some supporters of "Party Y" did not agree to the alliance with 'Party X'.
- (b) There is at least one supporter of 'Party Y' who knew some supporters, of 'Party X' as a friend.
- (c) No supporters of 'Party X' supported Z's campaign strategy.
- (d) No supporters of 'Party X' knew Z.

10. With reference to the above information, consider the following statements:

1. Some supporters of 'Party X' knew Z.
2. Some supporters of 'Party X', who opposed Z's campaign strategy, knew Z.
3. No supporters of 'Party X' supported Z's campaign strategy.

Which of the statements given above is/are not correct?

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

11. If second and fourth Saturdays and all the Sundays are taken as only holidays for an office, what would be the minimum number of possible working days of any month of any year ?

- (a) 23
- (b) 22
- (c) 21
- (d) 20

12. If there is a trend that 1/3rd of a population of a community has migrated every year from one place to some other place, what is the leftover population of that community after the sixth year, if there is no further growth in the population during this period ?

- (a) 16/243rd part of the population
- (b) 32/243rd part of the population
- (c) 32/729th part of the population
- (d) 64/729th part of the population

13. Four tests—Physics, Chemistry, Mathematics and Biology are to be conducted on four consecutive days, not necessarily in the same order. The Physics test is to be held before the test which will be conducted after Biology. Chemistry is to be conducted exactly after two tests are held. Which is the last test to be held ?

- (a) Physics
- (b) Biology
- (c) Mathematics
- (d) Chemistry

14. The sum of income of A and B is more than that of C and D taken together. The sum of income of A and C is the same as that of B and D taken together. Moreover, A earns half as much as the sum of the income of B and D. Whose income is the highest?

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

15. Consider the following:

Statement:

A good voice is a natural gift but one has to keep practising to improve and excel well in the field of music.

Conclusions:

- I. Natural gifts need nurturing and care.
- II. Even though one's voice is not good, one can keep practising.

Which one of the following is correct in respect of the above statement and conclusions?

- (a) Only conclusion I follows from the statement.
- (b) Only conclusion II follows from the statement.
- (c) Either conclusion I or conclusion II follows from the statement.
- (d) Neither conclusion I nor conclusion II follows from the statement.

16. There are three pillars X, Y and Z of different heights. Three spiders A, B and C start to climb on these pillars simultaneously. In one chance, A climbs on X by 6 cm but slips down 1 cm. B climbs on Y by 7 cm but slips down 3

cm. C climbs on Z by 6.5 cm but slips down 2 cm. If each of them requires 40 chances to reach the top of the pillars, what is the height of the shortest pillar?

- (a) 161 cm (b) 163 cm
(c) 182 cm (d) 210 cm

17. "Rights are certain advantageous conditions of social well-being indispensable to the true development of the citizen."

In the light of this statement, which one of the following is the correct understanding of rights?

- (a) Rights aim at individual good only.
(b) Rights aim at social good only.
(c) Rights aim at both individual and social good.
(d) Rights aim at individual good devoid of social well-being.

18. 15 students failed in a class of 52. After removing the names of failed students, a merit order list has been prepared in which the position of Ramesh is 22nd from the top. What is his position from the bottom?

- (a) 18th (b) 17th
(c) 16th (d) 15th

19. Consider the following.

A + B means A is the son of B.

A – B means A is the wife of B.

What does the expression P + R – Q mean?

- (a) Q is the son of P. (b) Q is the wife of P.
(c) Q is the father of P. (d) None of the above

20. Gopal bought a cell phone and sold it to Ram at 10% profit. Then Ram wanted to sell it back to Gopal at 10% loss. What will be Gopal's position if he agreed?

- (a) Neither loss nor gain
(b) Loss 1%
(c) Gain 1%
(d) Gain 0.5%

Direction for the following 7 (seven) items: Read the following seven passages and answer the items (21-27) that follow the passages. Your answers to these items should be based on the passages only.

Passage-1

We have hard work ahead. There is no resting for any of us till we redeem our pledge in full, till we make all the people of India what destiny intends them to be. We are citizens of a great country, on the verge of bold advance, and we have to live up to that high standard. All of us, to whatever religion we may belong, are equally the children of India with

equal rights, privileges and obligations. We cannot encourage communalism or narrow-mindedness, for no nation can be great whose people are narrow in thought or action.

21. The challenge the author of the above passage throws to the public is to achieve

- (a) a high standard of living, progress and privileges
(b) equal privileges, fulfilment of destiny and political tolerance
(c) spirit of adventure and economic parity
(d) hard work, brotherhood and national unity

Passage-2

"The individual, according to Rousseau, puts his person and all his power in common under the supreme direction of the general will and in our corporate capacity we receive each member as an indivisible part of the whole."

22. In the light of the above passage, the nature of general will is best described as

- (a) the sum total of the private wills of the individuals
(b) what is articulated by the elected representatives of the individuals
(c) the collective good as distinct from private wills of the individuals
(d) the material interests of the community

Passage-3

In a democratic state, where a high degree of political maturity of the people obtains, the conflict between the will of the sovereign law-making body and the organized will of the people seldom occurs.

23. What does the above passage imply?

- (a) In a democracy, force is the main phenomenon in the actual exercise of sovereignty.
(b) In a mature democracy, force to a great extent is the main phenomenon in the actual exercise of sovereignty.
(c) In a mature democracy, the use of force is irrelevant in the actual exercise of sovereignty.
(d) In a mature democracy, force is narrowed down to a marginal phenomenon in the actual exercise of sovereignty.

Passage-4

A successful democracy depends upon widespread interest and participation in politics, in which voting is an essential part. To deliberately refrain from taking such an interest, and from voting, is a kind of implied anarchy if it is to refuse one's political responsibility while enjoying the benefits of a free political society.

24. This passage relates to

- (a) duty to vote
- (b) right to vote
- (c) freedom to vote
- (d) right to participate in politics

Passage-5

In a free country, the man who reaches the position of leader is usually one of outstanding character and ability. Moreover, it is usually possible to foresee that he will reach such a position, since early in life one can see his qualities of character. But this is not always true in the case of a dictator; often he reaches his position of power through chance, very often through the unhappy state of his country.

25. The passage seems to suggest that

- (a) a leader foresees his future position.
- (b) a leader is chosen only by a free country.
- (c) a leader must see that his country is free from despair.
- (d) despair in a country sometimes leads to dictatorship.

Passage-6

The greatest blessing that technological progress has in store for mankind is not, of course, an accumulation of material possessions. The amount of these that can be effectively enjoyed by one individual in one lifetime is not great. But there is not the same narrow limit to the possibilities of the enjoyment of leisure. The gift of leisure may be abused by people who have had no experience of making use of it. Yet the creative use of leisure by a minority in societies has been the mainspring of all human progress beyond the primitive level.

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

1. People always see leisure time as a gift and use it for acquiring more material possessions.
2. Use of leisure by some people to produce new and original things has been the chief source of human progress.

Which of these assumptions is/are valid?

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

Passage-7

There is more than a modicum of truth in the assertion that "a working knowledge of ancient history is necessary to the intelligent interpretation of current events". But the sage who uttered these words of wisdom might well have added something on the benefits of studying particularly the famous battles of history for the lessons they contain for

those of us who lead or aspire to leadership. Such a study will reveal certain qualities and attributes which enabled the winners to win—and certain deficiencies which caused the losers to lose. And the student will see that the same pattern recurs consistently, again and again, throughout the centuries.

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

1. A study of the famous battles of history would help us understand the modern warfare.
2. Studying history is essential for anyone who aspires to be a leader.

Which of these assumptions is/are valid ?

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

28. Suppose the average weight of 9 persons is 50 kg. The average weight of the first 5 persons is 45 kg, whereas the average weight of the last 5 persons is 55 kg. Then the weight of the 5th person will be

- (a) 45 kg
- (b) 47.5 kg
- (c) 50 kg
- (d) 52.5 kg

29. In a group of six women, there are four tennis players, four postgraduates in Sociology, one postgraduate in Commerce and three bank employees. Vimala and Kamla are the bank employees while Amala and Komala are unemployed. Komala and Nirmala are among the tennis players. Amala, Kamla, Komala and Nirmala are postgraduates in Sociology of whom two are bank employees. If Shyamala is a postgraduate in Commerce, who among the following is both a tennis player and a bank employee?

- (a) Amala
- (b) Komala
- (c) Nirmala
- (d) Shyamala

30. $P = \{40\% \text{ of } A\} + \{65\% \text{ of } B\}$ and $Q = \{50\% \text{ of } A\} + \{50\% \text{ of } B\}$, where A is greater than B

In this context, which of the following statements is correct?

- (a) P is greater than Q.
- (b) Q is greater than P.
- (c) P is equal to Q.
- (d) None of the above can be concluded with certainty.

31. A watch loses 2 minutes every 24 hours while another watch gains 2 minutes every 24 hours. At a particular instant, the two watches showed an identical time. Which of

- the following statements is correct if the 24-hour clock is followed?
- (a) The two watches show the identical time again on completion of 30 days.
 (b) The two watches show the identical time again on completion of 90 days.
 (c) The two watches show the identical time again on completion of 120 days.
 (d) None of the above statements is correct.
32. In a city, 12% of households earn less than ₹ 30,000 per year, 6% households earn more than ₹ 2,00,000 per year, 22% households earn more than ₹ 1,00,000 per year and 990 households earn between ₹ 30,000 and ₹ 1,00,000 per year. How many households earn between ₹ 1,00,000 and ₹ 2,00,000 per year?
- (a) 250 (b) 240
 (c) 230 (d) 225
33. A clock strikes once at 1 o'clock, twice at 2 o'clock and thrice at 3 o'clock, and so on. If it takes 12 seconds to strike at 5 o'clock, what is the time taken by it to strike at 10 o'clock?
- (a) 20 seconds (b) 24 seconds
 (c) 28 seconds (d) 30 seconds
34. Consider the given statement and the two conclusions that follow:
Statement:
 Morning walk is good for health.
Conclusions:
 1. All healthy people go for morning walk.
 2. Morning walk is essential for maintaining good health.
- What is/are the valid conclusion/ conclusions?
- (a) 1 only (b) 2 only
 (c) Both 1 and 2 (d) Neither 1 nor 2
35. There are thirteen 2-digit consecutive odd numbers. If 39 is the mean of the first five such numbers, then what is the mean of all the thirteen numbers?
- (a) 47 (b) 49
 (c) 51 (d) 45
36. Six boys A, B, C, D, E and F play a game of cards. Each has a pack of 10 cards. F borrows 2 cards from A and gives away 5 to C who in turn gives 3 to B while B gives 6 to D who passes on 1 to E. Then the number of cards possessed by D and E is equal to the number of cards possessed by
- (a) A, B and C (b) B, C and F
 (c) A, B and F (d) A, C and F
37. There is a milk sample with 50% water in it. If 1/3rd of this milk is added to an equal amount of pure milk, then water in the new mixture will fall down to
- (a) 25% (b) 30%
 (c) 35% (d) 40%
38. There are 4 horizontal and 4 vertical lines, parallel and equidistant to one another on a board. What is the maximum number of rectangles and squares that can be formed?
- (a) 16 (b) 24
 (c) 36 (d) 42
39. A freight train left Delhi for Mumbai at an average speed of 40 km/hr. Two hours later, an express train left Delhi for Mumbai, following the freight train on a parallel track at an average speed of 60 km/hr. How far from Delhi would the express train meet the freight train?
- (a) 480 km (b) 260 km
 (c) 240 km (d) 120 km
40. In a test, Randhir obtained more marks than the total marks obtained by Kunal and Debu. The total marks obtained by Kunal and Shankar are more than those of Randhir. Sonal obtained more marks than Shankar. Neha obtained more marks than Randhir. Who amongst them obtained highest marks?
- (a) Randhir
 (b) Neha
 (c) Sonal
 (d) Data are inadequate
- Direction for the following 8 (eight) item: Read the following seven passages and answer the items (41-48) that follow the passages. Your answers to these items should be based on the passages only.*
- Passage-1**
- Disruption of traditional institutions, identifications and loyalties are likely to lead to ambivalent situations. It is possible that some people may renew their identification with traditional groups whereas others align themselves with new groups and symbols emergent from processes of political development. In addition, political development tends to foster group awareness of a variety of classes, tribes, regions, clans, languages, religions, occupations and others.
41. Which one of the following is the best explanation of the above passage?
- (a) Political development is not a unilinear process for it involves both growth and decay.

- (b) Traditional societies succeed in resisting positive aspects of political development.
- (c) It is impossible for traditional societies to break away from lingering loyalties.
- (d) Sustenance of traditional loyalties is conducive to political development.

Passage-2

There has been a significant trend worldwide towards regionalism in government, resulting in a widespread transfer of powers downwards towards regions and communities since 1990s. This process, which involves the creation of new political entities and bodies at a sub-national level and an increase in their content and powers, is known as devolution. Devolution has been characterized as being made up of three factors—political legitimacy, decentralization of authority and decentralization of resources. Political legitimacy here means a mass demand from below for the decentralization process, which is able to create a political force for it to take place. In many cases, decentralization is initiated by the upper tier of government without sufficient political mobilization for it at the grassroots level, and in such cases the decentralization process often does not fulfil its objectives.

42. Which among the following is the most logical, rational and critical inference that can be made from the above passage?
- (a) Emergence of powerful mass leaders is essential to create sub-national political entities and thus ensure successful devolution and decentralization.
 - (b) The upper tier of government should impose devolution and decentralization on the regional communities by law or otherwise.
 - (c) Devolution, to be successful, requires a democracy in which there is the free expression of the will of the people at the lower level and their active participation at the grassroots level.
 - (d) For devolution to take place, a strong feeling of regionalism in the masses is essential.

Passage-3

We live in digital times. The digital is not just something we use strategically and specifically to do a few tasks. Our very perception of who we are, how we connect to the world around us, and the ways in which we define our domains of life, labour and language are hugely structured by digital technologies. The digital is everywhere and like

air, invisible. We live within digital systems, we live with intimate gadgets, we interact through digital media, and the very presence and imagination of the digital has dramatically restructured our lives. The digital, far from being a tool, is a condition and context that defines the shapes and boundaries of our understanding of the self, the society, and the structure of governance.

43. Which among the following is the most logical and essential message conveyed by the above passage?
- (a) All problems of governance can be solved by using digital technologies.
 - (b) Speaking of digital technologies is speaking of our life and living.
 - (c) Our creativity and imagination cannot be expressed without digital media.
 - (d) Use of digital systems is imperative for the existence of mankind in future.

Passage-4

The IMF has pointed out that the fast-growing economies of Asia face the risk of falling into the 'middle-income trap'. It means that average incomes in these countries, which till now have been growing rapidly, will stop growing beyond a point—a point that is well short of incomes in the developed West. The IMF identifies a number of causes of the middle-income trap—none of which is surprising—from infrastructure to weak institutions, to less than favourable macroeconomic conditions. But the broad, overall cause, says IMF, is a collapse in the growth of productivity.

44. Which among the following is the most logical, rational and critical inference that can be made from the above passage?
- (a) 'Once a country reaches the middle-income stage, it runs the risk of falling productivity which leads to stagnant incomes.
 - (b) Falling into the middle-income trap is a general characteristic of fast-growing economies.
 - (c) There is no hope at all for emerging Asian economies to sustain the growth momentum.
 - (d) As regards the growth of productivity, the performance of Asian economies is not satisfactory.

Passage-5

An innovative India will be inclusive as well as technologically advanced, improving the lives of all Indians. Innovation and R&D can mitigate increases

in social inequality and relieve the pressures created by rapid urbanization. The growing divergence in productivity between agriculture and knowledge-intensive manufacturing and services threatens to increase income inequality. By encouraging India's R&D labs and universities to focus on the needs of poor people and by improving the ability of informal firms to absorb knowledge, an innovation and research agenda can counter this effect. Inclusive innovation can lower the costs of goods and services and create income-earning opportunities for the poor people.

45. Which among the following is the most logical and rational assumption that can be made from the above passage?

- Innovation and R&D is the only way to reduce rural to urban migration.
- Every rapidly growing country needs to minimize the divergence between productivity in agriculture and other sectors.
- Inclusive innovation and R&D can help create an egalitarian society.
- Rapid urbanization takes place only when a country's economic growth is rapid.

Passage-6

Climate change is likely to expose a large number of people to increasing environmental risks forcing them to migrate. The international community is yet to recognize this new category of migrants. There is no consensus on the definition and status of climate refugees owing to the distinct meaning the term refugees carry under international laws. There are still gaps in understanding how climate change will work as the root cause of migration. Even if there is recognition of climate refugees, who is going to provide protection? More emphasis has been given to international migration due to climate change. But there is a need to recognize the migration of such people within the countries also so that their problems can be addressed properly.

46. Which of the following is the most rational inference from the above passage?

- The world will not be able to cope with large-scale migration of climate refugees.
- We must find the ways and means to stop further climate change.
- Climate change will be the most important reason for the migration of people in the future.
- Relation between climate change and migration is not yet properly understood.

Passage-7

Many farmers use synthetic pesticides to kill infesting insects. The consumption of pesticides in some of the developed countries is touching 3000 grams/hectare. Unfortunately, there are reports that these compounds possess inherent toxicities that endanger the health of the farm operators, consumers and the environment. Synthetic pesticides are generally persistent in the environment. Entering in the food chain they destroy the microbial diversity and cause ecological imbalance. Their indiscriminate use has resulted in development of resistance among insects to insecticides, upsetting of balance in nature and resurgence of treated populations. Natural pest control using the botanical pesticides is safer to the user and the environment because they break down into harmless compounds within hours or days in the presence of sunlight. Plants with pesticidal properties have been in nature for millions of years without any ill or adverse effects on the ecosystem. They are easily decomposed by many microbes common in most soils. They help in the maintenance of biological diversity of predators and the reduction of environmental contamination and human health hazards. Botanical pesticides formulated from plants are biodegradable and their use in crop protection is a practical sustainable alternative.

47. On the basis of the above passage, the following assumptions have been made:

- Synthetic pesticides should never be used in modern agriculture.
- One of the aims of sustainable agriculture is to ensure minimal ecological imbalance.
- Botanical pesticides are more effective as compared to synthetic pesticides.

Which of the assumptions given above is/are correct?

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

48. Which of the following statements is/are correct regarding biopesticides?

- They are not hazardous to human health.
- They are persistent in environment.
- They are essential to maintain the biodiversity of any ecosystem.

Select the correct answer using the code given below.

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

49. Certain 3-digit numbers have the following characteristics:
- All the three digits are different.
 - The number is divisible by 7.
 - The number on reversing the digits is also divisible by 7.
- How many such 3-digit numbers are there?
- (a) 2 (b) 4
(c) 6 (d) 8
50. Examine the following statements:
- All colours are pleasant.
 - Some colours are pleasant.
 - No colour is pleasant.
 - Some colours are not pleasant.
- Given that statement 4 is true, what can be definitely concluded?
- (a) 1 and 2 are true. (b) 3 is true.
(c) 2 is false. (d) 1 is false.
51. How many numbers are there between 99 and 1000 such that the digit 8 occupies the units place?
- (a) 64 (b) 80
(c) 90 (d) 104
52. If for a sample data
Mean < Median < Mode, then the distribution is
- (a) symmetric
(b) skewed to the right
(c) neither symmetric nor skewed
(d) skewed to the left
53. The age of Mr. X last year was the square of a number, and it would be the cube of a number next year. What is the least number of years he must wait for his age to become the cube of a number again ?
- (a) 42 (b) 38
(c) 25 (d) 16
54. P works thrice as fast as Q, whereas P and Q together can work four times as fast as R. If P, Q and R together work on a job, in what ratio should they share the earnings?
- (a) 3 : 1 : 1 (b) 3 : 2 : 4
(c) 4 : 3 : 4 (d) 3 : 1 : 4
55. Consider the following relationships among members of a family of six persons A, B, C, D, E and F:
- The number of males equals that of females.
 - A and E are sons of F.
 - D is the mother of two, one boy and one girl.
 - B is the son of A.
 - There is only one married couple in the family at present
- Which one of the following inferences can be drawn from the above?
- (a) A, B and C are all females.
(b) A is the husband of D.
(c) E and F are children of D.
(d) D is the daughter of F.
56. A bag contains 20 balls. 8 balls are green, 7 are white and 5 are red. What is the minimum number of balls that must be picked up from the bag blindfolded (without replacing any of it) to be assured of picking at least one ball of each colour?
- (a) 17 (b) 16
(c) 13 (d) 11
57. If 2 boys and 2 girls are to be arranged in a row so that the girls are not next to each other, how many possible arrangements are there?
- (a) 3 (b) 6
(c) 12 (d) 24
58. The outer surface of a 4 cm × 4 cm × 4 cm cube is painted completely in red. It is sliced parallel to the faces to yield sixty four 1 cm × 1 cm × 1 cm small cubes. How many small cubes do not have painted faces?
- (a) 8 (b) 16
(c) 24 (d) 36
59. Consider the following:
A, B, C, D, E, F, G and H are standing in a row facing North.
B is not neighbour of G.
F is to the immediate right of G and neighbour of E.
G is not at the extreme end.
A is sixth to the left of E.
H is sixth to the right of C.
Which one of the following is correct in respect of the above?
- (a) C is to the immediate left of A.
(b) D is immediate neighbour of B and F.
(c) G is to the immediate right of D.
(d) A and E are at the extreme ends.
60. In a certain code, '256' means 'red colour chalk', '589' means 'green colour flower' and

'254' means 'white colour chalk'. The digit in the code that indicates 'white' is

- (a) 2 (b) 4
(c) 5 (d) 8

Direction for the following 7 (seven) items: Read the following seven passages and answer the items (61-67) that follow the passages. Your answers to these items should be based on the passages only.

Passage-1

An Air Quality Index (AQI) is a way to combine measurements of multiple air pollutants into a single number or rating. This index is ideally kept constantly updated and available in different places. The AQI is most useful when lots of pollution data are being gathered and when pollution levels are normally, but not always, low. In such cases, if pollution levels spike for a few days, the public can quickly take preventive action (like staying indoors) in response to an air quality warning. Unfortunately, that is not urban India. Pollution levels in many large Indian cities are so high that they remain well above any health or regulatory standard for large part of the year. If our index stays in the Red/Dangerous region day after day, there is not much any one can do, other than getting used to ignoring it.

61. Which among the following is the *most logical and rational inference* that can be made from the above passage?
- (a) Our governments are not responsible enough to keep our cities pollution free.
(b) There is absolutely no need for air quality indices in our country.
(c) Air quality index is not helpful to the residents of many of our large cities.
(d) In every city, public awareness about pollution problems should increase.

Passage-2

Productive jobs are vital for growth and a good job is the best form of inclusion. More than half of our population depends on agriculture, but the experience of other countries suggests that the number of people dependent on agriculture will have to shrink if per capita incomes in agriculture are to go up substantially. While industry is creating jobs, too many such jobs are low-productivity non-contractual jobs in the unorganized sector, offering low incomes, little protection, and no benefits. Service jobs are relatively of high productivity, but employment growth in services has been slow in recent years.

62. Which among the following is the *most logical and rational inference* that can be made from the above passage?

- (a) We must create conditions for the faster growth of highly productive service jobs to ensure employment growth and inclusion.
(b) We must shift the farm workers to the highly productive manufacturing and service sectors to ensure the economic growth and inclusion.
(c) We must create conditions for the faster growth of productive jobs outside of agriculture even while improving the productivity of agriculture.
(d) We must emphasize the cultivation of high-yielding hybrid varieties; and genetically modified crops to increase the per capita income in agriculture.

Passage-3

A landscape-scale approach to land use can encourage greater biodiversity outside protected areas. During hurricane 'Mitch' in 1998, farms using ecoagricultural practices suffered 58 per cent, 70 per cent and 99 per cent less damage in Honduras, Nicaragua and Guatemala, respectively, than farms using conventional techniques. In Costa Rica, vegetative windbreaks and fencerows boosted farmers' income from pasture and coffee while also increasing bird diversity. Bee pollination is more effective when agricultural fields are closer to natural or seminatural habitat, a finding that matters because 87 per cent of the world's 107 leading crops depend on animal pollinators. In Costa Rica, Nicaragua and Colombia silvopastoral systems that integrate trees with pastureland are improving the sustainability of cattle production, and diversifying and increasing farmers' income.

63. Which among the following is the *most logical and rational inference* that can be made from the above passage?

- (a) Agricultural practices that enhance biodiversity can often increase farm output and reduce the vulnerability to disasters.
(b) All the countries of the world should be encouraged to replace ecoagriculture with conventional agriculture.
(c) Ecoagriculture should be permitted in protected areas without destroying the biodiversity there.
(d) The yield of food crops will be very high if ecoagricultural practices are adopted to cultivate them.

Passage-4

The medium term challenge for Indian manufacturing is to move from lower to higher tech sectors, from lower to higher value-added sectors, and from lower to higher productivity sectors. Medium-tech industries are primarily capital intensive and resource processing; and high tech industries are mainly capital and technology intensive. In order to push the share of manufacturing in overall GDP to the projected 25 per cent, Indian manufacturing needs to capture the global market in sectors showing a rising trend in demand. These sectors are largely high technology and capital intensive.

64. Which among the following is the *most logical and rational inference that can be made from the above passage?*
- India's GDP displays high value-added and high productivity levels in medium tech and resource processing industries.
 - Promotion of capital and technology intensive manufacturing is not possible in India.
 - India should push up the public, investments and encourage the private investments in research and development, technology upgradation and skill development.
 - India has already gained a great share in global markets in sectors showing a rising trend in demand.

Passage-5

Over the last decade, Indian agriculture has become more robust with record production of food grains and oilseeds. Increased procurement, consequently, has added huge stocks of food grains in the granaries, India is one of the world's top producers of rice, wheat, milk, fruits and vegetables. India is still home to a quarter of all undernourished people in the world. On an average, almost half of the total expenditure of nearly half of the households is on food.

65. Which among the following is the *most logical corollary to the above passage?*
- Increasing the efficiency of farm-to-fork value chain is necessary to reduce the poverty and malnutrition.
 - Increasing the agricultural productivity will automatically eliminate the poverty and malnutrition in India.
 - India's agricultural productivity is already great and it is not necessary to increase it further.

- Allocation of more funds for social welfare and poverty alleviation programmes will ultimately eliminate the poverty and malnutrition in India

Passage-6

The states are like pearls and the centre is the thread which turns them into a necklace; if the thread snaps, the pearls are scattered.

66. Which one of the following views corroborates the above statement?
- A strong centre and strong states make the federation strong.
 - A strong centre is a binding force for national integrity.
 - A strong centre is a hindrance to state autonomy.
 - State autonomy is a prerequisite for a federation.

Passage-7

Really I think that the poorest he that is in England has a life to live, as the greatest he, and therefore truly, I think it is clear that every man that is to live under a government ought first by his own consent to put himself under the government, and I do think that the poorest man in England is not at all bound in a strict sense to that government that he has not had a voice to put himself under.

67. The above statement argues for
- distribution of wealth equally to all
 - rule according to the consent of the governed
 - rule of the poor
 - expropriation of the rich
68. The average rainfall in a city for the first four days was recorded to be 0.40 inch. The rainfall on the last two days was in the ratio of 4 : 3. The average of six days was 0.50 inch. What was the rainfall on the fifth day?
- 0.60 inch
 - 0.70 inch
 - 0.80 inch
 - 0.90 inch

Direction for the following 3 (three) items: Consider the given information and answer the three items (69-71) that follow.

A, B, C, D, E, F and G are Lecturers from different cities—Hyderabad, Delhi, Shillong, Kanpur, Chennai, Mumbai and Srinagar (not necessarily in the same order) who participated in a conference. Each one of them is specialized in a different subject, viz. Economics, Commerce, History, Sociology, Geography, Mathematics and Statistics (not necessarily in the same order). Further

1. Lecturer from Kanpur is specialized in Geography.
 2. Lecturer D is from Shillong.
 3. Lecturer C from Delhi is specialized in Sociology.
 4. Lecturer B is specialized in neither History nor Mathematics.
 5. Lecturer A who is specialized in Economics does not belong to Hyderabad.
 6. Lecturer F who is specialized in Commerce belongs to Srinagar.
 7. Lecturer G who is specialized in Statistics belongs to Chennai.
69. Who is specialized in Geography?
- (a) B
 - (b) D
 - (c) E
 - (d) Cannot be determined as data are inadequate
70. To which city does the Lecturer specialized in Economics belong?
- (a) Hyderabad
 - (b) Mumbai
 - (c) Neither Hyderabad nor Mumbai
 - (d) Cannot be determined as data are inadequate
71. Who of the following belongs to Hyderabad?
- (a) B
 - (b) E
 - (c) Neither B nor E
 - (d) Cannot be determined as data are inadequate
72. In a school, there are five teachers A, B, C, D and E. A and B teach Hindi and English. C and B teach English and Geography. D and A teach Mathematics and Hindi. E and B teach History and French. Who teaches maximum number of subjects?
- (a) A
 - (b) B
 - (c) D
 - (d) E
73. A 2-digit number is reversed. The larger of the two numbers is divided by the smaller one, What is the largest possible remainder?
- (a) 9
 - (b) 27
 - (c) 36
 - (d) 45
74. The monthly incomes of X and Y are in the ratio of 4 : 3 and their monthly expenses are in the ratio of 3 : 2. However, each saves ₹ 6,000 per month. What is their total monthly income?
- (a) ₹ 28,000
 - (b) ₹ 42,000
 - (c) ₹ 56,000
 - (d) ₹ 84,000
75. Two walls and a ceiling of a room meet at right angles at a point P. A fly is in the air 1 m from one wall, 8 m from the other wall and 9 m from the point P. How many meters is the fly from the ceiling?
- (a) 4
 - (b) 6
 - (c) 12
 - (d) 15
- Direction for the following 3 (three) items: Consider the given information and answer the three items (76-78) that follow.*
- Eight railway stations A, B, C, D, E, F, G and H are connected either by two-way passages or one-way passages. One-way passages are from C to A, E to G, B to F, D to H, G to C, E to C and H to G. Two-way passages are between A and E, G and B, F and D and E and D.
76. While travelling from C to H, which one of the following stations must be passed through?
- (a) G
 - (b) E
 - (c) D
 - (d) F
77. In how many different ways can a train travel from F to A without passing through any station more than once?
- (a) 1
 - (b) 2
 - (c) 3
 - (d) 4
78. If the route between G and C is closed, which one of the following stations need not be passed through while travelling from H to C?
- (a) E
 - (b) D
 - (c) A
 - (d) B
79. There are certain 2-digit numbers. The difference between the number and the one obtained on reversing it is always 27. How many such maximum 2-digit numbers are there?
- (a) 3
 - (b) 4
 - (c) 5
 - (d) None of the above
80. What is the total number of digits printed, if a book containing 150 pages is to be numbered from 1 to 150?
- (a) 262
 - (b) 342
 - (c) 360
 - (d) 450

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 (c) is correct.

Option (a) is out of the question as it does not find support in the passage.

Option (b) is incorrect because it misread the facts presented in the passage which is not talking about political solutions rather than it is talking about political conflicts.

Option (d) is a judgement that is not in agreement with the views expressed in the passage. The author has expressed ideology and identity as the façade for resource-based conflicts.

Option (c) is the most logical and nearest in addressing the same concern as expressed by the author. It is a suitable answer to the question.

The author has expressed his concern about the potential political conflicts arising out of shortages of resources due to climate change. The diminishing resources will lead to competition and even political conflicts in nations. Right now, these resource-based conflicts have the political mask and look as if arising out due to ideology or identity differences. The author has given the example of water conflicts to reflect this.

2. Option (a) is correct.

The author is very clear in his objective and message.

Success is everyone's dream. But it is a common habit to lose focus and interest if someone close discourages us. This tendency is strongly opposed by the author in the passage; he says that a man should always be resolute and achievement-oriented ignoring all the opinions after taking the first step. Consult only before setting a goal and consult wisely. But do not let a weaker spirit stop you from achieving the target. The gist that seems to be emerging from the passage is that we should first consult wisely and then resolve firmly.

Option (a) follows the intent of the passage correctly.

The passage is not about broad-mindedness. option (c) is incorrect.

The author does not say that one should not consult friends at all, instead he emphasises

on wise consultation. This makes option (b) incorrect.

3. Option (d) is correct.

Option (b) is illogical and thus, can be concluded as the incorrect option.

Option (a) is false as the Arctic summers have now become long and the temperature too remains unprecedentedly high. But this is not the crucial message of the passage.

Option (c) cannot be deduced from the passage. The disturbance in the food chain can be understood but the disappearance of the complete food chain is beyond logic.

Option (d) is correct in raising the concern regarding the survival of polar bears due to such a drastic climate change. According to the passage, the food chain will get disturbed in the Arctic region due to climate change and the species which will get most affected will be polar bears, the main inhabitants of the region.

4. Option (b) is correct.

People prefer open defecation to have underground septic tanks in homes. They have a wrong idea of cleaning; they think that pit cleaning is a polluting dirty thing. The author states in the passage that this perception of people has to be confronted and dealt with properly.

The idea of purity of people is misplaced. It can be corrected under proper guidance as per the author. The author is hopeful of it. So, options (a), (c) and (d) are wrong.

5. Option (b) is correct.

The passage support the statement that the GDP driven growth in only one way which does not encourage the growth of natural capital. It is correct to say that GDP driven growth is undesirable or unsustainable. This is supported by the passage. Option (b) is correct.

Option (c) is a vague statement. If we measure the growth in terms of GDP then, 50% growth in two decades is a very encouraging figure. It is not clear from the passage how this growth is divided among the countries of the world.

The passage does not support option (d). This is an incomplete statement. The world not only requires more human capital but more natural capital as well.

The inference that can be derived from the passage is that growth in natural capital including human capital is important is not a valid inference. Thus, option (a) is the incorrect answer.

6. Option (b) is correct.

The global economy is expected to run short of 56 million young people, and India, with its youth surplus of 47 million, could fill the gap. This is the opening part of the passage. Therefore, option (d) is correct.

Option (a) is incorrect. Population control is not discussed as a measure to address the problem.

It has been mentioned in the passage that labour reforms are needed to unlock double-digit growth in India. It is not certain whether it will happen or not in the future. This statement makes option (c) incorrect.

Option (b) is about labour reforms would help to unlock labour force from single digit to double digit, but the crux of the passage is about India successfully fill the gap in the global labour supply. It supports option d, as the correct answer.

7. Option (a) is correct.

Work is essential for the human race. It is unnatural and illegal to escape from work and throw the responsibility on others. Any type of engagement is essential for human beings. Complete absence of labour will eventually lead to the complete destruction of the human race. The *most crucial inference* expressed in passage is reflect in option (a), which is the correct answer.

Leisure is also important for human beings. Recreational activities increase the productivity and interest of human beings. Recreation is need based and it is not the essence of the passage, so option (b) is incorrect.

Option (c) is not correct because work is not tyrannical but the need to work is pre-eminent and has been compared to tyranny.

Option (d) is a wayward representation of the idea presented in the passage. The author's focus is not on the nature of work but the essentiality of both work and leisure for human beings.

8. Option (c) is correct.

Option (c) is correct because according to the author, habits simplify the mechanism of life. Habits are so important to human personality that without them human life cannot be imagined. We are servants of our habits; they automate our actions.

Without habits, our life will remain in confusion. We can conclude on the basis of our reading of the passage that habits make human life easier.

Option (a) contradicts the facts presented in the passage. Option (b) is out of the scope of habits. The passage does not link habits with precision.

Option (d) is partially correct. Due to habits, some actions become repetitive and predictable and hence, these actions look mechanised.

9. Option (b) is correct.

(a) Nowhere, it is given that supporters of 'Party Y' agreed for alliance with 'Party X'.

(b) It is given that some supporters of 'Party X' had friends in 'Party Y'.

So, atleast one supporter of 'Party Y' was there who knew some supporters of 'Party X'.

Option (c) and (d) are also wrong from the given information.

10. Option (c) is correct.

It is given that some supporters of 'Party X' knew Z and supported his campaign.

So, statement 3 is wrong and statement 1 and 2 are correct.

11. Option (b) is correct.

We take February as it has minimum days (28 days). There are 4 complete weeks in February. So, it will have 4 Sundays and 2 Saturdays. Total holidays will be 6.

\therefore Minimum working days = $28 - 6 = 22$.

12. Option (d) is correct.

Let the initial population = P

\therefore Population after 6 years = $P \left(1 - \frac{1}{3}\right)^6$

$$= P \left(\frac{2}{3}\right)^6$$

$$= \frac{64}{729} P$$

13. Option (c) is correct.

According to given information, order of exams is

$$\frac{\text{Biology}}{1^{\text{st}}}, \frac{\text{Physics}}{2^{\text{nd}}}, \frac{\text{Chemistry}}{3^{\text{rd}}}, \frac{\text{Mathematics}}{4^{\text{th}}}$$

14. Option (b) is correct.

$$\therefore A + B > C + D \quad \dots(\text{i})$$

$$A + C = B + D \quad \dots(\text{ii})$$

$$A = \frac{B + D}{2} \quad \dots(\text{iii})$$

$$\Rightarrow 2A = B + D = A + C \quad [\text{Using (ii) \& (iii)}]$$

$$\Rightarrow A = C$$

$$A + B > A + D \quad [\text{Using (i)}]$$

$$B > D$$

Now, we can conclude that B's income is highest.

15. Option (a) is correct.

Nowhere it is given out that person with a bad voice can practice music. But we can conclude that person with natural gift needs nurturing and care.

16. Option (b) is correct.

Spider on pillar X climbs in 39 chances

$$= (6 - 1) \times 39 = 195 \text{ cm}$$

Spider on pillar Y climbs in 39 chances

$$= (7 - 3) \times 39 = 156 \text{ cm}$$

Spider on pillar Z climbs in 39 chances

$$= (6.5 - 2) \times 39 = 175.5 \text{ cm}$$

Since, spiders need 40 chances. The means, they won't slide downs in 40th chance.

$$\text{So, height of pillar X} = 195 + 6 = 201 \text{ cm}$$

$$\text{Height of pillar Y} = 156 + 7 = 163 \text{ cm}$$

$$\text{Height of pillar Z} = 175.5 + 6.5 = 182 \text{ cm}$$

pillar Y is the shortest one.

17. Option (c) is correct.

Rights are fundamental and everyone is entitled to, purely on the basis that they are a human being. Rights give dignity and equality to humans. "Rights aim at both individual and social well-being. They are certain advantageous conditions of social well-being indispensable to the true development of the citizen." Hence option (c) is correct.

18. Option (c) is correct.

$$\text{Total students in merit list} = 52 - 15 = 37$$

$$\text{Ramesh position from top} = 22^{\text{nd}}$$

$$\begin{aligned} \text{So, his position from bottom} &= 37 - 22 + 1 \\ &= 16^{\text{th}}. \end{aligned}$$

19. Option (c) is correct.

$P + R - Q = P$ is son of R and R is wife of Q. We can see, that Q and R are parents of P and Q is father of P.

20. Option (c) is correct.

Let the cost price of cell phone be ₹ 100

Gopal sold to Ram (10% profit) at S.P.

$$= 100 + 10\% \text{ of } 100 = ₹ 110$$

Ram sold to Gopal (10% loss) at S.P.

$$= 110 - 10\% \text{ of } 110 = 110 - 11 = ₹ 99$$

$$\text{Final gain of Gopal} = ₹ 100 - ₹ 99 = ₹ 1$$

So, Gopal gains 1%.

21. Option (d) is correct.

The passage motivates its readers to live up to the standards of their great country and shun vices like communalism and narrow mindedness. It accepts the role of equal privileges and obligations for all the citizens of India. The author demands hard work, brotherhood from citizens of India to achieve unity of the nation and reach the destination where its destiny intends it to be.

The author is not particularly concerned about the high standard of living or economic parity or political tolerance. He demands parity in all ventures. Other options are somewhat correct in the context but they fail to give a clear picture of the challenge author is putting the public of India too.

22. Option (c) is correct.

Each individual can, as a man, have a private will contrary to or differing from the general will he has as a citizen. His private interest can speak to him quite differently from the common interest but yet, for collective good he puts his person and all his power under General Will.

Material interests and political representatives are not discussed here. Option (b) and Option (d) are out of the scope of the passage. Option (a) is incorrect in interpreting that General Will is a bigger set of individual wills.

23. Option (d) is correct.

The passage states that with a high degree of maturity in a democratic form of governance, conflicts between authorities deployed for enforcement of laws and organized will (in any form protests /demonstrations for demands,

etc.) of the general public are rare. This leads to a peaceful resolution without the use of force.

On this basis, option (a) and option (b) are incorrect to the context. Option (c) outrightly rejects force as a useful entity. This is not the intent of the author in the passage.

24. Option (a) is correct.

We enjoy the benefits of democracy which preserves our rights of equality, justice and freedom as the citizens of the country. In a democracy, voting is a tool to register one's choice for governance. Every vote undoubtedly matters when it comes to electoral results in democracy. Every citizen must vote. It is our political responsibility.

The author is clear in the passage that to cast the vote and not willingly refrain from it, is the paramount responsibility of every citizen. Option (a) is the most appropriate answer.

Other options do not express the right intent of the author in the passage.

25. Option (d) is correct.

In general, leaders gain their position in society by their character and ability which is very evident from their early life. This is not true in a country with disturbing affairs. An unhappy state of affairs allows dictators to rise in the political hierarchy. Option (d) is the obvious choice out of the given choices, as it conveys the message of the author in the passage.

Option (a) and option (b) are out of the scope of the passage. The author has not discussed them. Option (c) is hypothetical and not based on the passage.

26. Option (b) is correct.

The passage discusses both the use and misuse of leisure time. The author, in very few words, has highlighted the use of leisure time by different people in different ways.

The passage discusses both the use and misuse of leisure time. The author, in very few words, has highlighted the use of leisure time by different people in different ways. Some people waste it in enjoying the material benefits of technology while other sagacious people use it to produce new things for use of human progress. But the core inference of the above passage is the use of leisure by some people to produce new and original things has been the chief source of human progress. Hence only statement 2 is correct.

27. Option (d) is correct.

As the author has mentioned that same pattern recurs consistently, again and again, throughout

the centuries. An event of the past can teach us a lot. We can avoid mistakes that were done in history.

Here both statements are invalid. From the opening statement of the passage, we asserted that "a working knowledge of ancient history is necessary to the intelligent interpretation of current events".

Hence the statement, studying history is essential for anyone who aspires to be a leader is also not valid statement.

28. Option (c) is correct.

Total weight of 9 persons = $9 \times 50 = 450$ kg

Total weight of first 5 persons (1st – 5th)

= $5 \times 45 = 225$ kg

Total weight of last 5 persons (5th – 9th)

= $5 \times 55 = 275$ kg

On adding weight of first and last 5 persons

= $225 + 275 = 500$ kg

Weight of 5th person = $500 - 450 = 50$ kg

(As 500 kg is weight of all 9 and 5th. Since 5th person is counted twice).

29. Option (c) is correct.

As per given information

	Vimla	Kamla	Amala	Komala	Nirmala	Shyamala
Bank Emp.	✓	✓			✓	
P.G. in Soci.		✓	✓	✓	✓	
P.G. in Comm.						✓
Tennis player				✓	✓	
Unemployed			✓	✓		

Nirmala is both bank employee and tennis player.

30. Option (d) is correct.

Let A = 100 and B = 50

$P = 40\% \text{ of } 100 + 65\% \text{ of } 50 = 40 + 32.5 = 72.5$

$Q = 50\% \text{ of } 100 + 50\% \text{ of } 50 = 50 + 25 = 75$

$\therefore P < Q$

Again

Let A = 100 and B = 90

$P = 40\% \text{ of } 100 + 65\% \text{ of } 90 = 40 + 58.5 = 98.5$

$Q = 50\% \text{ of } 100 + 50\% \text{ of } 90 = 50 + 45 = 95$

$\therefore P > Q$

Therefore, none can be said.

31. Option (d) is correct.

Time difference between clocks in 24 hours

$$= 4 \text{ min} = \frac{4}{60} \text{ hr}$$

Both clocks show identical time when time difference is 24 hr.

Time difference of $\frac{4}{60}$ hr in 24 hr

Time difference of 1 hr in $24 \times \frac{60}{4}$ hr

Time difference of 24 hr in $24 \times \frac{60}{4} \times 24$ hr
 $= 8640$ hr $= \frac{8640}{24}$ days = 360 days

32. Option (b) is correct.

Let total no. of household is "x"

6% of x's income > ₹ 200000

22% of x's income > ₹ 100000

(22 - 6) 16% of x's income is between ₹ 100000 to ₹ 200000

12% of x's income < ₹ 30000

990 household is between ₹ 30000 to ₹ 100000

So, 12% of x + 990 + 16% of x + 6% of x = x

$$990 = 66\% \text{ of } x$$

$$990 = \frac{66}{100}x$$

$$x = 1500$$

$$16\% \text{ of } x = \frac{16}{100} \times 1500 = 240$$

240 household earn between ₹ 100000 to ₹ 200000.

33. Option (b) is correct.

At 5 O'clock, clock strikes 5 times in 12 sec

So, at 10 O'clock, clock will strike 10 times in

$$12 \times 2 = 24 \text{ sec}$$

34. Option (d) is correct.

I. It is not given that all healthy people go for walk.

II. In statement-2 word "essential" is making statement work.

So, none of the statement is correct.

35. Option (a) is correct.

Let 13 consecutive 2 digit numbers be

$x, x + 2, x + 4, x + 6, \dots$ upto 13 terms

$$\text{Mean of first 5} = \frac{x + x + 2 + x + 4 + x + 6 + x + 8}{5}$$

$$= 39$$

$$5x + 20 = 39 \times 5 = 195$$

$$5x = 175$$

$$x = 35$$

So, numbers are 35, 37, 39, ... upto 13 terms

Mean of all 13 members

$$= \frac{35 + 37 + 39 + \dots + \text{upto 13 terms}}{13}$$

$$= \frac{13}{2} [2 \times 35 + (13 - 1) \times 2]$$

$$= 13$$

$$= 35 + 12 = 47$$

36. Option (b) is correct.

Each member has 10 cards at the start.

No. of cards with each boy after transferring cards.

$$A = 10 - 2 = 8 \quad F = 10 + 2 - 5 = 7$$

$$C = 10 + 5 - 3 = 12 \quad B = 10 + 3 - 6 = 7$$

$$D = 10 + 6 - 1 = 15 \quad E = 10 + 1 = 11$$

$$D \text{ and } E \text{ possessed, cards} = 15 + 11 = 26$$

$$B, C \text{ and } F \text{ possessed, cards} = 7 + 12 + 7 = 26$$

37. Option (a) is correct.

Let we have 90/litre mixture

$$\frac{1}{3} \text{rd of mixture} = \frac{1}{3} \times 90$$

$$= 30/\text{liter} \begin{cases} \swarrow 50\% \text{ water} = 15/\text{litre} \\ \searrow 50\% \text{ milk} = 15/\text{litre} \end{cases}$$

30/litre mixture is added with 30/litre of pure milk

$$\text{Total volume of mixture} = 30 + 30 = 60/\text{litre}$$

$$\text{Water in this mixture} = 15/\text{litre}$$

$$\% \text{ of water} = \frac{15}{60} \times 100 = 25\%$$

38. Option (c) is correct.

The grid from by line has 3×3 pattern

So, $n = 3$

$$\text{So, total no. of square} = 3^2 + 2^2 + 1^2 = 14$$

$$\text{Total no. of rectangles} = 12 + 6 + 4 = 22$$

So, total no. of 36.

39. Option (c) is correct.

Let both trains meet at "d" km from Delhi.

Time taken by freight train for "d" km

$$= \frac{d}{40} \text{ hr}$$

Time taken by express train for "d" km = $\frac{d}{60}$ hr

According to the question

$$\frac{d}{40} - \frac{d}{60} = 2$$

$$d \left[\frac{3-2}{120} \right] = 2$$

$$d = 240 \text{ km}$$

They will meet at the distance of 240 km from Delhi.

40. Option (d) is correct.

As per question,

- Randhir > Kunal + Debu
- Randhir < Kunal + Shankar
- Neha > Randhir
- Sonal > Shankar

We cannot say anything based on the given data as it is incomplete.

41. Option (a) is correct.

Option (a) is correct, The best explanation of the above passage is that Political development is not a unilinear or unidirectional process for it involves both growth and decay.

Option (b) is a wayward assumption not linked with the passage. According to the passage, political development increases group awareness. This sentence is against the facts of the passage.

The author is talking about the realignment of people with traditional groups or newly formed groups. So, we can see there is a detachment of people from their old groups.

There is nothing like fixed loyalties discussed in the passage. The use of the word 'impossible' is important here. So, option (c) is also not true.

Option (d) seems to be partially correct. The very first sentence of the passage says that shifting of loyalties from traditional institutions and identifications can confuse the mind of people. While political development demands the presence of such group-specific loyalties as mentioned in the last part of the passage.

42. Option (c) is correct.

The importance and necessity of powerful mass leaders are not discussed in the passage. Hence, option (a) can also be discarded.

Option (b) is not correct devolution means the transfer or delegation of power to a lower level, especially by the central government to the local or regional administration. The author is in favour of devolution. But he

has not recommended the use of law for decentralisation of power.

Option (d) is not correct because nowhere in the passage the author has mentioned the need for a strong feeling of masses for effective devolution.

The author has conspicuously mentioned that the mobilization on the grassroots level is essential for the success of devolution or decentralization of political power. Devolution, to be successful, requires a democracy in which there is a free expression of the will of the people at a lower level and their active participation at the basic level. Hence, option (c) is the most appropriate answer to the question.

43. Option (b) is correct.

It is a digital world. All domains of life are structured by digital infrastructure and devices. Digital devices are shaping the world and defining the boundaries of self, society and governance. These are the facts presented in the passage. But nowhere, it is written that digital technologies can solve all the problems of governance. option (a) is not in coherence with the facts of the passage.

Option (b) is most logical and correct inference drawn from the passage. According to the passage, we live within the digital environment, where presence of digital system has drastically restructured our lives. Hence most essential message conveyed by the passage is that speaking of digital technologies is speaking of our life and living.

Option (c) is based on the wrong assumption that creativity is dependent on digital media. It is out of the context of the passage.

Option (d) is incorrect as it is not logical based on the author's view points.

44. Option (a) is correct.

The author says that the fast-growing economies of Asia are experiencing the 'middle-income trap'. The per capita income of people of these countries has become stagnant after reaching a particular income level. The most logical, rational and critical inference that can be made from the above passage is that, 'Once a country reaches the middle income stage, it runs the risk of falling productivity which leads to stagnant incomes.

Hence, option (b) can be discarded. On the same logic, we can discard option (d). Both of these

statements generalise the facts presented in the passage with regards to the Asian economies and incorrectly apply them to all the countries.

The gloomy picture presented in option (c) for Asian economies does not find support from the passage. The author has not mentioned that there is 'no hope' for Asian countries.

Option (d) is not very specific to Asian economies it is in sync with the last statement of the passage.

45. Option (c) is correct.

Migration is not discussed in the passage. Even if we assume that migration from rural to urban areas is happening in search of equal earning opportunity. The passage cannot validate if R&D is the 'only solution for reducing this'.

Option (b) is incorrect assumption. The author has not specified that minimizing divergence in productivity in agriculture and other sectors is mandatory for every country. He is concerned about the innovative ways to increase the productivity of rural people to become a fruitful part of the economy and hence, can find more earning opportunities.

Option (d) is out of the context of the passage.

Option (c) is the most logical and rational assumption. An egalitarian society is one in which all individuals are born equal, and all members of society are said to have a right to equal opportunities.

The first part of the passage mentions the objective of making India an egalitarian society. In the next few lines of the passage, the author presents R&D as the way to achieve this objective. Inclusive innovation can lower the cost of goods and services and simultaneously create earning opportunities for the poor people of India.

46. Option (d) is correct.

One of the adverse effects of climate change will be the shifting of a large population from the affected areas to non-affected areas. This is a new type of migration that has been discussed in the passage. The scale and nature of migration are still not clear, even the impact of migration is not properly understood. The international community has still not recognized these types of migrants. The relationship of climate change as the root cause of this new type of migration is full of gaps.

These are the facts presented in the passage. So, we can say that option (d) is the most rational inference based on the facts expressed in the passage.

If we analyse other options, option (a) is a far-fetched fantasy that has no relevance with the passage. Climate change will force people to migrate, as mentioned in the first sentence of the passage, but it is not clear if this will be the 'most prominent reason for migration. Option (c) is not correct.

Option (b) is a general statement and not an inference based on the passage. The main emphasis of the author in the passage is not climate change but the problem of migration due to climate change.

Based on the above given explanations, option (d) is the best answer.

47. Option (b) is correct.

'Never' is an undesirable word in Statement 1. The author is against the indiscriminate use of synthetic pesticides. However, it is not logical that synthetic pesticides will never be used in modern agriculture which is done on a large and professional scale. Moreover, the statement is not supported by the passage.

Botanical pesticides have multiple benefits from being environmentally friendly to being suitable for human health. But they are not compared with synthetic pesticides for efficiency. So, Statement 3 can also be discarded.

The author has advocated the maintenance of natural biodiversity and ecological balance which can be disturbed due to the entry of persistent synthetic pesticides into the food chain. Sustainable agriculture shall use botanical biodegradable pesticides as alternatives.

48. Option (a) is correct.

Statement 1 is correct. It is mentioned in the passage that biopesticides are not hazardous for human health.

Statement 2 is not correct. Biopesticides are biodegradable and do not disturb the food chain by entering them.

Statement 3 is not relevant in the context. Biopesticides are helping in ecological balance and biodiversity.

49. Option (b) is correct.

There are only 4 such numbers:
168, 861, 952, 259

50. Option (d) is correct.

Statement 4 is true, some colours are not pleasant.
∴ All colours cannot be pleasant. So, statement-1 is false.

51. Option (c) is correct.

Numbers between 99 and 1000 are of 3 digits.

Hundreds	Ten's	One's
		8

Fixed (as we need 8 on unit place)

No. of ways to fill hundred place digit (excluding 0) = 9

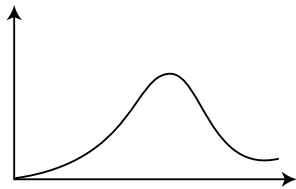
No. of ways to fill Ten's place digit (including 0) = 10

No. of ways to fill one's place digit (only 8) = 1

Total such numbers = $9 \times 10 \times 1 = 90$

52. Option (d) is correct.

∴ Mean < Median < Mode



So, distribution will be skewed to the left.

53. Option (b) is correct.

Let present age of Mr. X is 'a' years.

As per problem

$$a - 1 = m^2 \quad (\text{any square number})$$

$$a + 1 = n^3 \quad (\text{any cube number})$$

$$\Rightarrow m^2 + 1 = n^3 - 1$$

$$n^3 - m^2 = 2$$

If we take, $n = 3$ and $m = 5$ ($3^3 - 5^2 = 2$)

∴ Present age of X = $5^2 + 1 = 26$ years

Now, next cube number after 27 is 64 (4^3)

So, Mr. X has to wait $64 - 26 = 38$ years to become cube of a number again.

54. Option (a) is correct.

$$\therefore P = 3Q \quad \dots(i)$$

$$P + Q = 4R$$

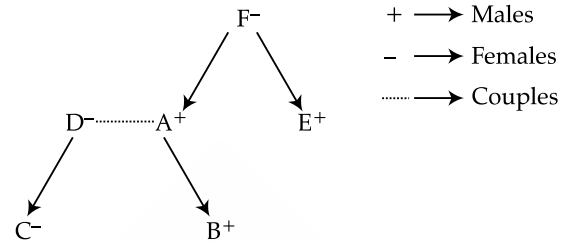
$$3Q + Q = 4R \quad (\text{Using } \dots(i))$$

$$Q = R$$

$$P : Q : R = 3Q : Q : Q = 3 : 1 : 1$$

Ratio of their share is 3 : 1 : 1

55. Option (b) is correct.



Clearly, A is husband of D.

56. Option (b) is correct.

Take out 8 green and 7 white balls, i.e., total 15 balls. Next 16th ball is definitely red. This pattern to draw out balls ensure that we will have balls of each colour.

57. Option (c) is correct.

Total number of ways to arrange 4 people = $4! = 24$

Make 2 girls as one unit i.e., $[G_1, G_2], B_1, B_2$

Number of ways where 2 girls are always together

$$= 3! \times 2 = 6 \times 2 = 12$$

Number of ways when 2 girls never together

$$= 24 - 12 = 12$$

58. Option (a) is correct.

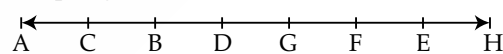
Total number of unpainted cube = $(n - 2)^3$

$n \rightarrow$ no. of cube at one edge here, $n = 4$.

No. of unpainted cube = $(4 - 2)^3 = 2^3 = 8$

59. Option (c) is correct.

As per given information, order is



G is immediate right of D.

60. Option (b) is correct.

256 = Red colour chalk

589 = Green colour flower

254 = White colour chalk

We can see '5' and 'colour' is common to all and also "colour"

5 = Colour (On comparing all 3)

2 = Chalk (On comparing first and third)

6 = Red (On comparing first)

4 = White (On comparing third)

61. Option (c) is correct.

Air Quality Index (AQI) is a measurement of the quality of air. It gives the pollution level of a place at a specific time. This was designed to help people to inform them about the air quality outside of their homes so that they can plan their visit accordingly. It was based on the premise that the air quality remains below poor sometimes not always.

Unfortunately, the air quality remains below poor all around the year in major Indian cities hence, the utility of AQI is under doubt. It has become a useless indicator for the general public and they are ignoring it. As residents have to come out of their homes for multiple purposes despite below poor or unhealthy AQI ratings.

Option (a) and option (b) are statements of extreme nature and not supported by the passage.

Option (d) is a general statement that is not based on the passage.

62. Option (c) is correct.

First of all, remove (d) as a prospective answer. Genetically Modified (GM) crops and hybrid qualities of crops are not discussed in the passage.

It is not feasible to transfer the workforce from the agriculture to service sector without increasing their skill sets hence productivity. Option (b) does not provide a logical solution.

Statement (c) captures the gist of the passage. The author considers a productive job as a form of inclusion. He also wants to see less but efficient people working in agriculture to increase the per capita income. There is a need to create productive jobs outside agriculture to accommodate a larger workforce. Productive jobs can only uplift the income status of people. They shall come from service, manufacturing and agriculture as well.

Statement (a) is incorrect as the author is not demanding job creation not only in the service sector but also in other sectors as well.

63. Option (a) is correct.

It is directly expressed in the passage that eco-agriculture activities are better than conventional techniques. It is specially mentioned regarding the disasters. Example of their sustainability during hurricane 'mitch' is given in the first part of the passage. Option (a) is a correct inference

that output and vulnerability are directly related to agricultural techniques.

Option (b) is against the views expressed in the passage.

As mentioned in the passage, eco-agriculture increases bio-diversity especially in favour of the birds. Option (c) is incorrect.

Eco agricultural activities increase biodiversity and sustainability, hence leads to better income but their relation with high crop yields is not discussed in the passage. Option (d) is not a correct inference.

64. Option (c) is correct.

According to the passage, India needs to gain more share in the global market. It does not have sufficient representation in the global market. Option (d) is incorrect.

Option (a) is illogical. It links GDP with irrelevant parameters that are out of the context of the passage.

Option (b) unnecessarily underestimates the power of India to set up the high capital-intensive industries.

It is easy to infer high capital-intensive industries are high tech and job creators they need the support of both government and private investors. India should push up public investments and encourage private investments in research and development, technology up-gradation and skill development.

65. Option (a) is correct.

Agricultural production is record-breaking; procurement from other countries has also increased. Indian granaries are full. There is no shortage of essential grains, vegetables or fruits. Still, people are malnourished due to the lack of proper food in their homes. Any logic will lead us to a poor distribution system. This is a deficiency of our value supply chain. If we can improve our farm to fork value chain, we can reduce poverty and related malnourishment in this class of people.

Option (a) is the most logical and rational solution.

Options (b) and (c) incorrectly emphasize increasing the production. While the problem lies in poor distribution, not with the production or productivity in agriculture.

Option (d) is absolutely out of the scope of the passage as poverty alleviation programmes are not even mentioned in the passage.

66. Option (b) is correct.

The author has shown the roles of states and centre as pearls and threads respectively in a necklace. A necklace does not have existed without thread or pearls. Option (a) is partially correct.

Option (b) is the best statement as this question shall be answered by the use of the elimination method. The states are like pearls and the centre is the thread which turns them into a necklace; if the thread snaps, the pearls are scattered. The views corroborates from the above statement A strong as the centre is a binding force for national integrity.

Statement (c) is against the spirit of the passage. The passage does not show a conflict between the Centre and the State.

Statement (d) misunderstands the intent of the passage and gives an upper hand to States over the Centre. This is not the intent of the author in the passage.

67. Option (b) is correct.

Poor people have equal rights similar to other better-placed citizens of England. They must decide who will rule them. They must have a say in the government. Their consent is required. Option (b) is the most appropriate answer.

Wealth is not discussed in the passage. Option (a) is incorrect.

The author has only demanded representation and consent of the poor in the selection of government, not the rule by the poor. Hence, option (c) is incorrect.

Expropriation is the action of dispossessing someone of property. The author has not recommended the expropriation of the rich.

68. Option (c) is correct.

Total rainfall on first 4 days = $4 \times 0.4 = 1.6$ inch

Total rainfall on 6 days = $6 \times 0.5 = 3$ inch

Rainfall of 5th and 6th days = $3 - 1.6 = 1.4$ inch

Let 5th day rainfall = $4x$ inch

[as their ratio is 4:3]

and 6th days rainfall = $3x$ inch

$$\therefore \text{Rainfall on 5}^{\text{th}} \text{ day} = \frac{4x}{4x + 3x} \times 1.4 = \frac{4}{7} \times 1.4 = 0.8 \text{ inch}$$

For solutions 69, 70 and 71

Here, we have three parameters lecturers, cities and subject

B	D	C	E	A	F	G
Kanpur	Shillong	Delhi	Hyderabad	Mumbai	Srinagar	Chennai
Geography	History or Maths	Sociology	History or Maths	Economics	Commerce	Statistics

Shaded information has been filled after analysing all given information.

69. Option (a) is correct.

B's specialized in Geography.

70. Option (b) is correct.

Lecturer of Economics belongs to Mumbai.

71. Option (b) is correct.

E belongs to Hyderabad.

72. Option (b) is correct.

As per given information

A → English, Hindi, Maths

B → English, Hindi, History, Geography, French

C → Geography, English

D → Hindi, Maths

E → History, French

B teaches maximum subjects.

73. Option (d) is correct.

Let number is = 49

Number after reversing digit = 94

$94 \div 49$ gives remainder = 45

[To have largest remainder, one digit must be 9 and after number 49 you will get less value of remainder. So we need to check remainder for 19, 29, 39 and 49 only]

74. Option (b) is correct.

Let incomes of X and Y are $4x$ and $3x$ respectively and expenses are in ratio $3y$ and $2y$ respectively.

Saving = Income – Expense

For X; $4x - 3y = 6000$... (i)

For Y; $3x - 2y = 6000$... (ii)

On solving both equations

$$8x - 6y = 12000 \quad (\text{Multiplying e.g., (i) by 2})$$

$$9x - 6y = 18000 \quad (\text{Multiplying e.g. (ii) by 3})$$

$$x = 6000 \quad (\text{On subtracting})$$

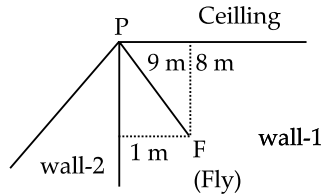
Total income of both

$$X \text{ and } Y = 4x + 3x = 7x$$

$$= 7 \times 6000 = ₹ 42000$$

75. Option (a) is correct.

Fly is at distance $PF = 9$ m from P

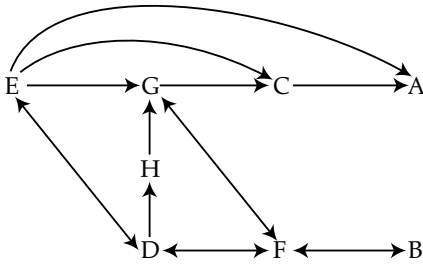


Distance of fly from ceiling

$$= \sqrt{9^2 - (8^2 + 1^2)} \quad (\text{Using pythagoras})$$

$$= \sqrt{81 - 65} = \sqrt{16} = 4 \text{ m}$$

For solution 76, 77 and 78



76. Option (b) is correct.

To travel $C \rightarrow H$, the path will be

$C \rightarrow A \rightarrow E \rightarrow D \rightarrow H$

Among the given options, E must be passed.

77. Option (d) is correct.

Possible paths to travel from F to A

$F \rightarrow D \rightarrow H \rightarrow G \rightarrow C \rightarrow A$

$F \rightarrow D \rightarrow E \rightarrow G \rightarrow C \rightarrow A$

$F \rightarrow D \rightarrow E \rightarrow A$

$F \rightarrow D \rightarrow E \rightarrow C \rightarrow A$

There are four different paths.

78. Option (c) is correct.

When route from G to C has been closed. The path to travel from H to C is

$H \rightarrow G \rightarrow B \rightarrow F \rightarrow D \rightarrow E \rightarrow C$

A situation is need not to pass.

79. Option (d) is correct.

Let one's place digit of number = x

Ten's place digit of number = y

\therefore Number = $10y + x$

Number after reversing the digits = $10x + y$

$10y + x - (10x + y) = 10y + x - 10x - y = 9(y - x)$

According to question

$$\Rightarrow 9(y - x) = 27$$

$$\Rightarrow y - x = 3$$

So numbers can be

14, 41, 25, 52, 36, 63, 47, 74, 58, 85, 69, 96, 12 such numbers are possible.

80. Option (b) is correct.

Digits need to print $(1 - 9) = 1 \times 9 = 9$

Digits need to print $(10 - 99) = 2 \times 90 = 180$

Digits need to print $(100 - 150) = 3 \times 51 = 153$

Total digits need to print $(1 - 150) = 9 + 180$

$$+ 153 = 342$$