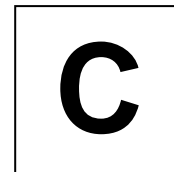


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TEST BOOKLET



CSAT APTITUDE TEST – 3 (3173) – 2020

Time Allowed: Two Hours

Maximum Marks: 200

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## INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C** OR **D** AS THE CASE MAY BE IN THE APPROPRIATE PLACE IN THE ANSWER SHEET.
3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. **DO NOT** write **anything else** on the Test Booklet.
4. This Test Booklet contains **80** items (Questions). Each item is printed in English. Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider most appropriate. In any case, choose **ONLY ONE** response for each item.

5. You have to mark all your responses **ONLY** on the separate Answer Sheet provided. See direction in the answers sheet.
6. All items carry equal marks. Attempt all items. Your total marks will depend only on the number of **correct responses** marked by you in the answer sheet. For **every incorrect** response **one-third** of the allotted **Marks** will be deducted.
7. Before you proceed to mark in the Answer sheet the response to various items in the Test booklet, you have to fill in some particulars in the answer sheets as per the instruction sent to you with your Admission Certificate.
8. After you have completed filling in all responses on the answer sheet and the examination has concluded, you should hand over to Invigilator only the answer sheet. You are permitted to take away with you the Test Booklet.
9. Sheets for rough work are appended in the Test Booklet at the end.

<p><b>DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ASKED TO DO SO</b></p>
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1. Hareesh goes on a college trip to museum by bus. The bus travels 63 km at a certain speed and then travels 72 km at a speed of 6 km/hr more than its original speed. If the bus reached the museum in 3 hours, then what is the original speed of the bus?

- (a) 36 km/hr
- (b) 72 km/hr
- (c) 48 km/hr
- (d) 42 km/hr

2. Five men Rinku, Pinku, Tinku, Mintu and Sintu work in five different cities – Delhi, Pune, Mumbai, Jaipur and Lucknow (not necessarily in the same order).

Consider the following statements:

- 1. Pinku and Tinku do not work in Delhi.
- 2. Pinku and Sintu do not work in Pune and Mumbai.
- 3. Rinku and Tinku do not work in Mumbai, Jaipur and Lucknow.
- 4. Mintu and Sintu do not work in Delhi and Lucknow.

Which of the following is not **correct**?

- (a) Tinku works in Pune.
- (b) Mintu works in Mumbai.
- (c) Rinku works in Delhi.
- (d) Pinku works in Jaipur.

3. A, B and C can do a work in a certain time.

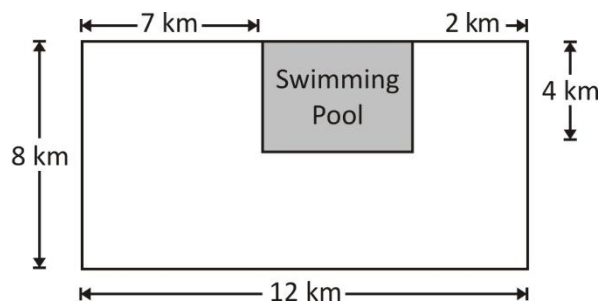
Consider the following statements:

- 1. Either A and B can do the work in same time or A works faster than B.
- 2. Either C and D can do the work in same time or D works faster than C.
- 3. B works faster than C.

Which of the following conclusion can be drawn from above statements?

- (a) A works faster than B.
- (b) B and D can do the work in same time.
- (c) A works faster than C.
- (d) D works faster than C.

4. An asteroid is coming towards earth and is about to fall somewhere in a rectangular field. What is the probability that it will fall outside the swimming pool shown in the figure?



- (a)  $\frac{1}{8}$
- (b)  $\frac{7}{8}$
- (c)  $\frac{1}{12}$
- (d)  $\frac{11}{12}$

5. In a door to door survey conducted in a city, the survey team found that 15% families have one boy child and 25% families have one girl child. 65% families have no children, i.e. neither girl child nor boy child. No family has more than one boy child or more than one girl child. If 1200 families have both girl child and boy child and each family has a maximum of two children, then which of the following conclusions will be **definitely correct**?

1. A total of 24,000 families were surveyed.
2. 35% families have either girl child or boy child or both.
3. 10% families have only boy child.

Select the correct answer using the codes given below:

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

- (c) 1, 2 and 3
- (d) None is correct

6. Raju is making a colourful pencil. He painted 60% of the pencil in saffron and 40% of the remaining part in yellow and thereafter 50% of the remaining part is painted in blue colour. The remaining part of the pencil which is 30 cm long and not coloured, is cut off. What is the length of the coloured part of the pencil after cutting the uncoloured portion?

- (a) 350 cm
- (b) 250 cm
- (c) 220 cm
- (d) 200 cm

7. Anil has three scales of different lengths to measure the length of clothes in his shop. The lengths of scales are 42 cm, 40 cm, and 45 cm. What is the minimum length of cloth that Anil can measure with all the three scales, using the full length of each scale?

- (a) 25.2 m
- (b) 25 m
- (c) 45.5 m
- (d) 30 m

**Directions for the following 3 (three) items:**

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

#### **Passage – 1**

Weber theorizes that the cultural values embroiled in the American Protestant ethic, as embodied by seventh-century Puritans, accelerated the development of modern capitalism. He traces this ethic into the 18th century, when, exemplified by figures like Ben Franklin, the ethic became stripped of its connection to salvation and the striving for money became "understood completely as an end in itself." Finally, in Weber's contemporary times, capitalism manifested itself in a compulsory, socially-rooted system from which no one could escape. The 17th century ascetic protestant, Weber argues, wanted to be a person with a vocational calling; today we are forced to be. Marx's project is similar to Weber's in that, while he does not devote himself to the historical circumstances which have led to capitalism, he

does, like Weber, attempt to understand how modern capitalism has arisen from the capitalism which preceded it. Marx's analysis of capitalism is not extremely historical in nature. He discusses the alienated state of modern man via a historical materialistic analysis, theorizing that, throughout history, "The mode of production of material life conditions the social, political and intellectual process in general." The history of class struggle, further, becomes central to his theory. Marx describes, for instance, the polarization of proletariat, bourgeoisie, and petty bourgeoisie into two distinct groups of workers and capitalists. Under a capitalistic system, "the distinction between capitalist and land-rentier, like that between the tiller of the soil and the factory-worker, disappears and the whole of society must fall into two classes – the property-owners and the property less workers." Thus, Marx, like Weber, contextualizes the origins of modern capitalism, delineating the historical process by which capitalism has manifested itself in its contemporary form.

**8. What is the most logical and appropriate conclusion that we can infer from this passage?**

- (a) Both Marx and Weber agree that modern capitalism has historical antecedents.
- (b) While Weber understands the historical origin of modern capitalism, Marx digresses from any such analysis.
- (c) Weber places modern capitalism as one manifesting itself in a socially-rooted system that could be opted out from.
- (d) There is no difference in the historical analyses of modern capitalism put forth by Marx and Weber.

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

- 1. Using history as an empirical tool to understand a modern phenomenon eliminates the differences between the approaches and understanding of various scholars.
- 2. The same tool can be used differently by different scholars to understand a present day phenomenon.

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**

It is not only the untreated sewage water and industrial effluents, but also the solid wastes and construction material discharged by individuals, companies and municipal bodies that have caused the suffocation of the Yamuna. Also, floodplains have been encroached upon by settlements. Hence, ensuring supply of quality drinking water is not only expensive, it also needs improvement in governance. It needs technical knowledge on measurement and regulation of water quality. It is not the fault of the DJB or the Delhi government alone that they have not been able to ensure 100% supply of quality water to the citizens of Delhi, considering the constraints they face, especially those concerning the water resources management and laws in the country.

**10. Which one of the following is the most logical and rational inference that can be made from the above passage?**

- (a) The water quality of Yamuna water can be improved only by clearing the encroachment on the flood plains.
- (b) Many factors are at play that need to be addressed for improving the quality of water of a river.
- (c) Improper management of resources and lack of proper laws have no effect on the water quality of a river.
- (d) Climate change and unplanned development is taking a toll on the quality of water of a river.

**11.** There are 6 members in a family with two married couples. Mohan, who is a scientist has two daughters Seeta and Geeta, who are engineers. Mr. Raj and his father-in-law are scientists. Geeta's husband is a doctor and their daughter Reema is a scientist. What is the relation of doctor with respect to Seeta?

- (a) Husband
- (b) Father-in-law
- (c) Brother-in-law
- (d) Brother

**12.** Mr. X spends 80% of his salary and Mr. Y spends 70% of his salary. Ratio of their savings is 4:3. If the total salary of Mr. X and Mr. Y is Rs. 63000, then how much is X's salary more than that of Y's?

- (a) Rs. 42000
- (b) Rs. 21000
- (c) Rs. 14000
- (d) Rs. 7000

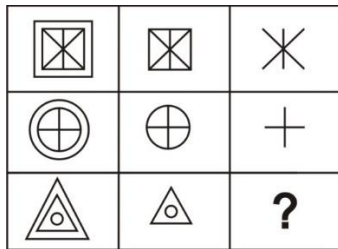
**13.** Find the value of X in the series given below

15, 42, 74, X, 175, 260

- (a) 105
- (b) 95
- (c) 116
- (d) 150



14. Consider the following figure-



Which of the following completes the figure?

(a)

(b)

(c)

(d)

15. Five men- Ambuj, Amit, Sandeep, Pawan and Harshal stand in a row adjacent to one another, not necessarily in the same order. We need to find out which of them is exactly at the middle of the row.

Consider these three statements S1, S2 and S3 followed by a question:

S1: Sandeep stands third to the right to Pawan and to the immediate left of Ambuj.

S2: Amit stands second to the left to Ambuj.

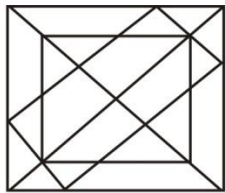
S3: Sandeep stands second to the right to Harshal and to the immediate left of Ambuj.



Which one of the following is correct?

- (a) Statement 1 along with statement 2 is sufficient to answer the question.
- (b) Statement 2 along with statement 3 is sufficient to answer the question.
- (c) Any of the two statements are sufficient to answer the question.
- (d) All the three statements together are not sufficient to answer the question.

**16.** Consider the following figure-



Find the number of triangles in the given figure.

- (a) 15
- (b) 25
- (c) 20
- (d) 38

**17.** Two trains start at the same time from Mumbai and Meerut and proceed towards each other at 70 kmph and 85 kmph respectively. When they meet, it is found that one train has travelled 150 km more than the other. Find the distance between Mumbai and Meerut.

- (a) 1550 km
- (b) 1750 km
- (c) 1250 km
- (d) 1600 km

**18.** A set of a Hollywood movies “*Avengers: Endgame*” has 125 superheroes. Of these superheroes, 40 wear Pink dress, 30 wear Red dress, 20 wear Blue dress, 10 wear Pink and Red dress, 12 wear Red and Blue dress, 5 wear Pink and Blue dress, and 3 wear all the three dresses. If ‘x’ represents those superheroes who do not wear a dress having any of these three colours, then which one of the following is correct about ‘x’?

- (a) x is a multiple of 5
- (b) x is a multiple of 2 and 3 both
- (c) x is a prime number
- (d) x is an odd multiple of 3

**19.** During the Delhi Metro expansion phase, a new Pink line was added. Initially the line had limited number of metro stations. Every station sells tokens for every other station. Token needed for travelling from a particular station A to another station B is considered different from the token needed for travelling from station B to station A. After six months, the pink line is expanded by the addition of few new stations for which 34 sets of additional different tokens were required. How many stations were there initially and how many new stations were added?

- (a) 17 initially, 1 new
- (b) 8 initially, 2 new
- (c) 8 initially, 3 new
- (d) Both (a) and (b) are possible

**Directions for the following 6 (Six) items:**

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

#### **Passage – 1**

Digital technologies are changing the shape of work before our eyes. Yes, they are enabling firms to automate and this will reduce employment in some old, typically low and medium-skill sectors. But they also help firms to increase productivity, to innovate, and subsequently to create new products and sectors. Emerging markets like India stand to gain—but they need to have the right skills at the ready.

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

- (a) Effective digital skill oriented policy can help India reap the benefits of emerging digital space.
- (b) Digital technologies have disrupted only the low and medium-skill sectors of the economy.
- (c) With the emergence of digital technology widespread job losses are imminent.
- (d) Emerging markets like India have gained from digital technologies.

### Passage – 2

Hindu Kush is Asia's water tower, providing a vital regional lifeline to over two billion people through 10 main rivers that originate from the glaciers. Increasing glacial melts could destabilize these rivers by changing their stream flow. The Indus could witness more stream flow due to high glacial melt till 2050, after which the flow would start reducing due to decreasing glacial melt. The Ganga and the Brahmaputra, which are mainly monsoon-fed rivers, will also see variations, as pre-monsoon flows may decline. This will hamper agriculture that accounts for the largest share of water usage.

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

- 1. Glacial melt, at an optimum rate, is an ecologically desirable phenomenon.
- 2. Melting of glaciers in the Hindu Kush region will lead to variation in the stream flow of many rivers.
- 3. Rapid melting of glaciers would temporarily increase food production.

Which of the above assumptions is/are valid?

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

### Passage – 3

In a rainforest like the Amazon, massive forest fires are a disaster. They irretrievably destroy the habitat of tens of thousands of plant and animal species. Despite the lush vegetation and the unique biodiversity, the soils are particularly barren and poor in nutrients. Thanks to the year-round warm and humid climate, fungi and bacteria immediately decompose fallen leaves or branches and the nutrients released are reabsorbed by the roots — not the soil. The thin humus layer is quickly washed out after a forest fire, and within three years of the fire nothing will grow in the exhausted soil. As devastating as forest fires are in the rainforest, the destructive power of fire is necessary for the preservation of other ecosystems, where parts of the natural fauna and flora develop only thanks to the fires.

**22.** Which of the following is the **most logical corollary** to the above passage?

- (a) Early intervention to prevent all such fires is vital to reduce the long-term damage inflicted by forest fires.
- (b) Intervening in these ecosystems, for instance by preventing small fires in order to protect the population, can have fatal consequences.
- (c) Amazon fires are not disastrous because of the sheer size of this forest.
- (d) Amazon forest has huge biodiversity, yet its soil is largely nutrient deficient.

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

1. The ash left after forest fires helps forest soil address its nutrient deficiency.
2. Forest fires predominantly occur in rainforests like Amazon.

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 – 4**

The indigenous Indian tradition of scent is evident as early as 3000 BC in the cities of the Indus Valley, where archaeologists have recently excavated distillation stills. In the centuries that followed, an extraordinary profusion of Sanskrit texts on the art of perfumery were written and, as the historian James McHugh, author of a book on the history of perfume and smell in South Asia titled *Sandalwood and Carrion: Smell In Indian Religion And Culture* (2016), puts it, “The elaborate use of aromatics was a major feature of religious, royal and erotic practices.” A good perfume, according to these texts, “should be like a well-run kingdom, with the correct balance of allies (mild materials), neutrals, and enemies (pungent materials). A good perfume should also be harmonious with incense and garlands, the season, the humoral character of the person wearing it. The skilled use of perfumes delighted the gods, appeased kings, and excited lovers.”

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

1. Excavations offer an insight into the socio-cultural practices of historical times.
2. We know about the presence of indigenous Indian traditions of scents only through western scholars.

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 – 5

The structure of India's population—that has been famously described as a "pyramid"—is changing to that of an "unhealthy middle-aged man with a big head and fat belly". The heavy belly comes from a dramatic increase in the size of the lower middle class and the big head comes from rising income inequality. The richest 1% of India now hold 58% of wealth, and the richest 10% over 80%. This structural shift will have profound consequences for politics and economics, with an aspiring class that is very large and growing, and with abject poverty declining to a much smaller percentage of the population.

**25.** The terms '**big head**' and '**fat belly**', as used in the passage, refer to:

- (a) Changing lifestyle of Indian people and the ensuing physical and mental health issues.
- (b) Uneven patterns of income distribution across different strata of population.
- (c) Change in population profile of Indian population.
- (d) Unhealthy dietary habits leading to an increase in average waist size of Indians.

**26.** An investigation agency arrested five teachers (Pawan, Upendra, Vikas, Tanuj and Waqar) for XYZ exam scam in ABC state, one of whom is responsible for leaking the question paper of XYZ entrance examination. Every suspected teacher gives one statement. After investigation it is found that only three of the statements are correct.

These are the statements given by suspected teachers:

**Pawan:** Vikas committed this crime.

**Tanuj:** I did not commit this crime.

**Upendra:** It was not Waqar.

**Vikas:** Pawan is lying when he says that I committed this crime.

**Waqar:** Tanuj is speaking the truth.

Who is responsible for leaking the question paper?

- (a) Either Waqar or Vikas
- (b) Tanuj
- (c) Upendra

(d) Waqar

**27.** Consider the following Statements and Conclusions:

**Statements:**

1. Some A are B.
2. Some C are E.
3. No D are C.
4. All D are B.

**Conclusions:**

- I. Some D are E.
- II. All A are D.
- III. Some B are C is a possibility.
- IV. No D are E.

Which of the above conclusion(s) can be drawn from the given statements?

- (a) I, II and III
- (b) Either (I or IV) and III
- (c) Only I and III
- (d) Only II and III

**28.** Digi-Locker is the national Digital Locker System launched by Govt. of India which securely stores residents' documents. A resident is provided with a unique 3-digit code to access his digi-locker. If a resident enters the wrong code, he is provided with hints to help him enter the right code. Following are the codes entered by a resident and the hints provided:

**(i)** 192 - one digit is right as well as placed at the correct place.

**(ii)** 135 - one digit is right but is placed at wrong place.

**(iii)** 201 - two digits are right but are placed at wrong place.

**(iv)** 739 - neither digit is right.

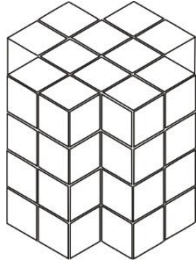
**(v)** 790 - one digit is right but is placed at wrong place.

The correct code of the resident's Digi-Locker must be -

- (a) 052
- (b) 025
- (c) 205

(d) 502

**29.** 64 small cubes of same size are arranged in the form of a cube. The cube hence formed is painted in red, blue and green such that opposite faces are of same colour. Then a column of four cubes is removed from each of the four vertical edges.



How many cubes have two different coloured faces?

(a) 16

(b) 8

(c) 24

(d) 32

**30.** A postman leaves office to deliver letters. He walks 5 km towards east and then turns towards north and walks 10 km and delivers first letter. After that he turns towards his right and walks 5 km and then moves towards his left and walks 10 km and delivers second letter. Then he turns  $90^\circ$  clockwise and walks 5 km and then turns  $270^\circ$  clockwise and walks 10 km and delivers third letter. Then he walks 20 km towards west and finally he turns towards south and walks 30 km and reaches his home. How far is his home from his office and in which direction?

(a) 35 km, west

(b) 20 km, west

(c) 5 km, east

(d) 5 km, west

**Directions for the following 7 (seven) items:**

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

### Passage – 1

On the imposition of the death penalty, the government went against what the Verma report had suggested — that seeking such a punishment “would be a regressive step in the field of sentencing and reformation”. Now, repeat offenders in rape cases, even those that unlike the Nirbhaya case did not involve murder, can be awarded the death sentence. The Verma Committee had argued instead for rigorous imprisonment of a convict for life. It is a fact that sexual crimes against women have not come down since the Delhi case. The death penalty could actually encourage the rapist to kill the victim.

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

1. The purpose of the punishment is to reform and not retribution.
2. As per the view of the government, strict punishments help reduce crime rates by sending a wider message to the society.

Which of the above assumptions are valid?

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

### Passage – 2

Authentic Dhurrie rugs are hand woven in India. Today, they are usually made of wool, but they are descendants of cotton floor and bed coverings. In fact, the name Dhurrie comes from the Indian word dari, which means threads of cotton. The rugs are noted for their soft colours, their varieties of design, and they make a stunning focal point for any living room or dining room.

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

- (a) Dhurrie rugs are not made of cotton anymore because the price of cotton has soared high.
- (b) Dhurrie derives its name from an Indian word, however, the practice did not start in India.
- (c) Hand woven products can also have varieties in design, and can attract the attention of visitors.
- (d) Indian Dhurrie industry is in crisis because of cheap import of rugs from China.

### Passage – 3

As the coronavirus continues its march around the world, governments have turned to proven public health measures, such as social distancing, to physically disrupt the contagion. Yet, doing so has severed the flow of goods and people, stalled economies, and is in the process of delivering a global recession. Economic contagion is now spreading as fast as the disease itself. This didn't look plausible even a few weeks ago. As the virus began to spread, politicians, policy makers, and markets, informed by the pattern of historical outbreaks, looked on while the early window for social distancing closed. Now, much further along the disease trajectory, the economic costs are much higher, and predicting the path ahead has become nearly impossible, as multiple dimensions of the crisis are unprecedented and unknowable. In this uncharted territory, naming a global recession adds little clarity beyond setting the



expectation of negative growth. Pressing questions include the path of the shock and recovery, whether economies will be able to return to their pre-shock output levels and growth rates, and whether there will be any structural legacy from the coronavirus crisis.

**33.** What is the **most logical and appropriate conclusion** that we can infer from this passage?

- (a) There is no clarity regarding the timing of measures like social distancing in terms of avoiding an economic crisis.
- (b) Countries that looked past measures like social distancing witnessed lesser fatalities, but worse economic contagion effect.
- (c) Historical patterns of disease outbreaks effectively guided the policy response of countries affected by coronavirus.
- (d) Lack of timely response has further added to the confusion regarding the overall impact of coronavirus.

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

1. Coronavirus outbreak will not have long-term impact on the structural aspects of the world economy.
2. Timely response could have averted, partly if not fully, the economic costs associated with the spread of coronavirus.

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 – 4**

A watershed moment for women's participation in revolt and resistance was the Swadeshi movement in the early 1900s. It was made possible because the movement did not contest women's 'femininity' or their traditional role in society, at a time when most women were still restricted to the zenana or were behind the ghonghat. Then, with Gandhi's call to Satyagraha, more women broke social constraints to get actively involved in the struggle against the British Raj. While Gandhi still upheld the traditional perception of women as somehow being innately endowed with humility and as being subservient, he nonetheless encouraged women to join the freedom movement in large numbers. "So long as women in India do not take equal part with men in the affairs of the world, and in religious and political matters, we shall not see India's star rising," he said at a women's meeting in Bombay. Women soon became an active part of Gandhi's protests and pickets, and by 1932, more than 3,000 had also been incarcerated for their activities.

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

1. Participation of women in mass movements was rare before the Swadeshi movement.
2. The participation of women in outdoor activities like protests and picketing affects their 'femininity.'

Which of the assumptions given above is/are valid?

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

### Passage – 5

Sunspots are relatively cooler spots on the Sun's surface. Their number waxes and wanes in cycles that last 11 years approximately. We are currently at the minimum of one such cycle. Amidst claims that the Sun would "go silent" and not give out sunspots for an extended period, a group from IISER Kolkata has shown that the next sunspot cycle has begun and the Sun has indeed spoken. Their results were published in Research Notes of the American Astronomical Society. From our safe distance of about 148 million km, the Sun appears to be sedate and constant. However, huge solar flares and coronal mass ejections spew material from its surface into outer space. They originate from sunspots, an important phenomenon that people have been following for hundreds of years. Sunspots occur in pairs, with a leader and a follower. They originate deep within the Sun and become visible when they pop out. Their number is not constant but shows a minimum and then rises up to a maximum and then falls again in what is called the solar cycle. So far, astronomers have documented 24 such cycles, the last one ended in 2019.

**36.** What is the meaning of the term "go silent" as mentioned in the passage?

- (a) No sound will be emitted from the sun.
- (b) There will not be coronal mass ejection or solar flares from the surface of the sun for an extended period of time.
- (c) The observation of the sun from earth will not be possible.
- (d) The Sun will cease to appear to be sedate and constant when viewed from earth.

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

1. The surface temperature of the Sun's surface is not uniform.
2. Observation of sunspots is a relatively new phenomenon for solar observers.

Which of the above assumptions is/are valid?

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

**38.** Ram and Shyam stand on west and east of a pillar respectively. Ram stands 100 meter away from the pillar. A falcon stands on the top of the pillar and the angles of elevation of the top of the pillar from Ram and Shyam are  $60^\circ$  and  $30^\circ$  respectively. Suddenly the falcon flew away and Ram shot it down at an angle of  $30^\circ$  and it fell down vertically downward on the ground 200 metres towards the east of Shyam. At what height was the falcon flying when it was shot?

- (a) 300 metres
- (b) 200 metres
- (c)  $200\sqrt{3}$  metres
- (d)  $100\sqrt{3}$  metres

**39.** If every alphabet is written as the square of the place value it possesses. For example - A is written as 1 and J is written as 100. Then how will the word "MOTION" be written?

- (a) 16922544181225194
- (b) 16922540081225196
- (c) 19622540081225196
- (d) 16912540081225196

**40.** How many triplets (x, y, z) satisfy the equation  $(x + y + z) = 7$ , where x, y and z are natural numbers?

- (a) 15
- (b) 9
- (c) 10
- (d) 12

**41.** If a symbol means multiply, alphabet means division and '+' means subtraction, '-' means addition, then the value of '64 B 8 - 2 @ 6 G 3 + 5 + 1 \$ 7' is:

- (a) 0
- (b) 1
- (c) 2
- (d) 9

**42.** P, Q and R are whole numbers. What could be the maximum possible value of 'Q' in the given expression -

$$3P8 + 5Q7 + 2R9 = 1104$$

- (a) 4
- (b) 8
- (c) 9
- (d) 5

**Direction for the following 4 (four) items:**

**Read the information given below and answer the items that follow.**

Six persons A, B, C, D, E and F are sitting around a hexagonal table facing center, not necessarily in the same order. The eldest and the youngest member are not sitting near to each other and neither of them

is F. B is elder than two members and two people are sitting between B and the youngest person. C is the 3<sup>rd</sup> eldest person. F is sitting opposite to C, who is the neighbour of B. A is younger than F and elder to E. F is sitting on the immediate left of the eldest person.

**43.** Who is the eldest member?

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

**44.** In the hexagonal table, who is the neighbour of the youngest member?

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

**45.** If the age of second eldest member is 51 years, then what is the possible age of C?

- (a) 34 years
- (b) 59 years
- (c) 50 years
- (d) Either 34 years or 50 years

**46.** What is the position of B with respect to A in anticlockwise direction?

- (a) Second to the right
- (b) Third to the left
- (c) Fourth to the left
- (d) Fourth to the right

**47.** Raghu's mother gave him a packet of toffees on his birthday and asked him to put them equally in small pouches. First he put 3 toffees in each pouch but 1 toffee is left. So he put 4 toffees in each pouch but once again 1 toffee is left. Then he tried 5 toffees and 6 toffees in each pouch but the result was the

same, that is, 1 toffee was left. His mother advised him to put 7 toffees in each pouch. Surprisingly, this time, none was left over. How many toffees did his mother give him?

- (a) 307
- (b) 411
- (c) 489
- (d) 301

**Directions for the following 4 (four) items:**

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

**Passage – 1**

The #MeToo movement was kicked off in 2006 by activist Tarana Burke as a battle against traumatic, widespread and under-reported incidents of assault on women, in many — but not all — cases in the workplace. While it began in Hollywood and mostly in the U.S., it spread like wildfire and reverberated through India too. Soon, social media platforms became the means for women to tell their stories about high-profile men, specifically allegations of sexual impropriety detailing the alleged acts, and naming the men involved publicly. The outpouring of stories of abuse — often by multiple accusers for one man — centred on men of considerable professional standing in India. In many cases the accused person was fired or resigned, or, less often, has filed a lawsuit alleging defamation. If anything, the Weinstein conviction and the #MeToo movement have unearthed the seamy workplace culture of sexual abuse and harassment. Regardless of the shape that the movement now takes, that very act of shining a light on a dark social reality has given pause for thought to a generation of men who might have earlier adopted a more cavalier attitude about consent.

**48.** Which one of the following is the **most logical and rational inference** that can be made from the above passage?

- (a) #MeToo movement has not changed the attitude of the male workers towards their female colleagues.
- (b) Sexual harassment at workplace would be a thing of past in the post-‘#MeToo’ world.
- (c) The perception about the workplace before #MeToo movement was not as bad as it was after it.
- (d) People will now have the courage to talk about the wrong practices going on in the society.

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

1. Strict laws and ethical infrastructure ought to be put in place to avoid such unethical acts at the workplace.
2. Sexual harassment at workplace is a way to confine women at home for mother-housewife role.

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

Consumption and waste management in the food sector is considered to have climate implications as well. A shift towards a more plant-based diet is considered a healthy sustainable dietary option in the IPCC report. The UN estimates that the world's population could reach 9.7 billion by 2050, so the need to augment food supplies per unit availability of land and water is a necessary target. The shift is even more pertinent for India as its yet largely poor population will be one of the first to be affected by constrained food supplies. Diversification of the food system, balanced diets, low meat diets are all identified with health benefits, adaptation, mitigation and sustainable development benefits. Livestock sector management with crop management is necessary for multiple benefits.

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

- (a) Population control measures should be undertaken at right earnest.
- (b) Implementation of sustainable dietary habits with more weightage to plant-based diet is the need of the hour to combat climate change.
- (c) Conservation of water resources can offset the need to shift to plant-based diets.
- (d) Only plant-based diets should be consumed to prevent climate change.

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

1. High consumption of animal-based diets results in an increase of release of greenhouse gases in the environment.
2. Threat of climate change is real.

Which of the above assumptions is/are valid?

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

**52.** There are two streams in ABC College – Mathematics and Biology. If 10 students left Mathematics and join Biology, then the number of students in both streams is same. If 20 students left Biology and join Mathematics, then the number of students in Mathematics becomes twice the number of students in Biology. The number of students in Mathematics and Biology is -

- (a) 70, 90
- (b) 100, 120
- (c) 100, 80
- (d) 80, 120

**53.** Ravi deposited his Rs. 25,000 in his bank in year 1995. He debited Rs.500 at the end of 2005 and 2015. His total amount doubles in every 10 years. What amount will he get at the end of the year 2035?

- (a) Rs.4,95,000
- (b) Rs.197,000
- (c) Rs.137,000
- (d) None of these

**54.** Sundar purchased 12 avocados, 18 kiwis and 5 apples for a certain amount. With 40% less amount he could purchase 6 avocados, 9 kiwis and 4 apples. What percentage of the total amount did Sundar spend on the 5 apples?

- (a) 33.33%
- (b) 25%
- (c) 50%
- (d) 20%

**55.** In T-20 world cup, Rohit Sharma played 20 matches. In two innings he scored century (100), in three innings he got out at zero, in four innings he scored half century (50) and in rest of the matches his average score was 40 runs. What was the average runs of Rohit Sharma in whole T-20 tournament?

- (a) 40
- (b) 32
- (c) 50
- (d) 42

**56.** A mathematics teacher was teaching Average chapter to her students. She wrote 18 distinct numbers on blackboard and told the students to calculate the average. The students calculated and

informed the teacher that the average of those numbers was 15. Aarohan was sitting at the backbench and he saw only 17 numbers and his calculated average was 0.5 more than that of the rest of the class. If the number he could not see was the least of the numbers given, then what was that number?

- (a) 6
- (b) 6.5
- (c) 5
- (d) 5.5

**57.** Rohan's school teacher told him to deposit fee for class group photograph. Rohan told this to his mother and asked 30% more than the actual fee. His mother told this to his father and asked 20% more amount than what Rohan asked from her. His father understood the trick that Rohan's mother was asking more money. So he gave 10% less money than what Rohan's mother asked for. If Rohan's father gave Rohan's mother Rs. 280.8, then what was the actual fee?

- (a) Rs.200
- (b) Rs.100
- (c) Rs.150
- (d) Rs.250

**58.** Amar sold an article to Akbar for Rs.520 and sold a similar article to Anthony for Rs.320. Later Amar realized that twice of the profit he got by selling the article to Akbar is equal to thrice the loss he incurred in selling it to Anthony. What is the cost price of the article for Amar?

- (a) Rs.200
- (b) Rs.400
- (c) Rs.500
- (d) Rs.350

***Directions for the following 5 (five) items:***

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

**Passage – 1**

Although many lines of evidence indicate that birds evolved from ground-dwelling theropod dinosaurs, some scientists remain unconvinced. They argue that theropods appeared too late to have given rise to birds, noting that *Archaeopteryx lithographica*—the oldest known bird—appears in the fossil record about 150 million years ago, whereas the fossil remains of various non-avian maniraptor theropods—the closest known relatives of birds—date only to about 115 million years ago. But investigators have now uncovered bones that evidently belong to non-avian maniraptors dating to the time of *Archaeopteryx*. In any case, failure to find fossils of a predicted kind does not rule out their existence in an undiscovered deposit. Skeptics also argue that the fused clavicles (the “wishbone”) of birds differ



from the unfused clavicles of theropods. This objection was reasonable when only early theropod clavicles had been discovered, but fossilized theropod clavicles that look just like the wishbone of Archaeopteryx have now been unearthed.

**59.** What is the **most logical and appropriate purpose** of this passage?

- (a) To compare the development of two hypotheses concerning the evolutionary origin of birds.
- (b) To suggest revisions to the standard theory of the evolutionary history of birds.
- (c) To evaluate the usefulness of fossil evidence in determining the evolutionary history of birds.
- (d) To have a constructive discussion around evolution of birds, driven by empirical evidence.

**60.** On the basis of the above passage, following assumptions have been made by scientists who are unconvinced that birds evolved from theropod dinosaurs:

1. Theropod dinosaurs had certain bones that looked just like those of Archaeopteryx.
2. Theropod dinosaurs did not have fused clavicles.

Which of the above assumptions is/are valid?

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

### **Passage – 2**

In the early days of the COVID-19 pandemic, South Korea had the most number of infections outside China. Beyond the high number of cases reported from South Korea, what was indeed alarming was the rate of viral spread. From just 51 cases and no deaths on February 20, the number of cases had grown rapidly each day during the next seven days. Many of the cases in the country were linked to a religious cult group. At their services in the south-eastern city of Daegu, the virus spread to many in the group, who in turn fanned out around the country, aiding viral transmission. As on February 23, the number of cases traced to the Daegu church was more than half the nation's total infected people. What had made it arduous for South Korea in containing the spread is the difficulty in tracing the contacts of cult members as they prefer not to disclose their affiliation to the church.

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

1. The infection of COVID-19 came to South Korea directly from China.
2. The cult associated with the Daegu church was involved in activities against the government.

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

An ecosystem is a group of animals and plants living in a specific region and interacting with one another and with their physical environment. Ecosystems include physical and chemical components, such as soils, water, and nutrients that support the organisms living there. These organisms may range from large animals to microscopic bacteria. Ecosystems can also be thought of as the interactions among all organisms in a given habitat, and may result in adaptations for mutual benefit; for instance, the relationship of flowering plants and associated pollinators. People are part of the ecosystems where they live and work. Human activities can harm or destroy local ecosystems unless actions such as land development for housing or businesses are carefully planned to conserve and sustain the ecology of the area. An important part of ecosystem management involves finding ways to protect and enhance economic and social well-being while protecting local ecosystems.

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

1. An ecosystem is a community within which members are interrelated.
2. The process of coevolution occurs within an ecosystem.

Which of the above assumptions is/are valid?

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

**63.** Which one of the following is the **most logical, rational and crucial message** conveyed by the above passage?

- (a) An ecosystem is a geographically defined community of living and non-living things.
- (b) Societies inhabited by human beings grow at the cost of ecological well-being.
- (c) In order to ensure sustainability of ecological system, equal value and recognition of the roles of all elements of the ecosystem is important.
- (d) Human life cannot be imagined without considering the demands of ecosystem.

**64.** Ajatshatru can do  $\frac{1}{2}$  of a work in 8 days. Bimbisar can do 25% of the same work in 5 days. Kalashok can do  $\frac{1}{4}$  of the same work in 4 days and Shishunag can do the same work in 12 days.

Consider the following statements -

1. Bimbisar works faster than Shishunag.

2. Shishunag completes the work the fastest.
3. Ajatshatru and Kalashok will complete the work in same time.
4. Kalashok works faster than Bimbisar.

Which of the given statements is/are correct?

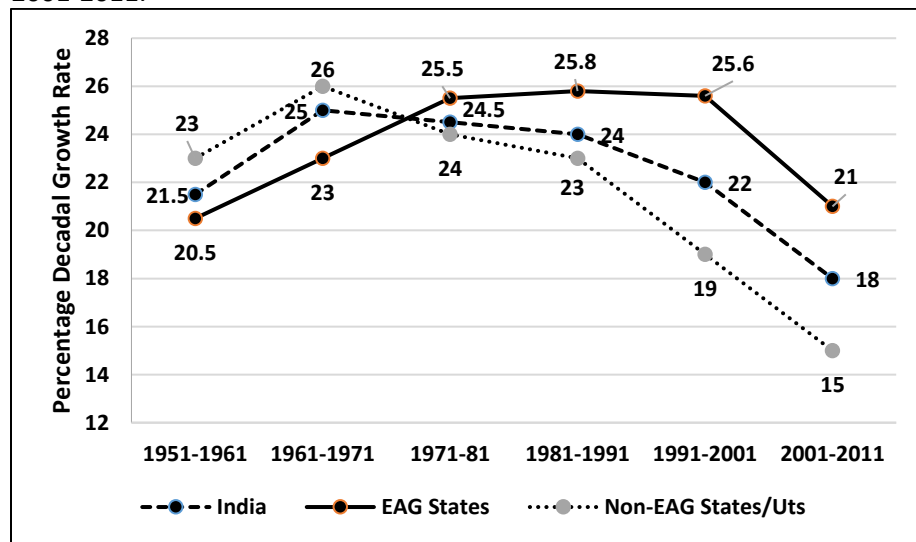
- (a) Only 1
- (b) Only 1 and 2
- (c) Only 2 and 3
- (d) 2, 3 and 4

**65.** Two trains, Tejas express and Goa express, start simultaneously from Mumbai and Goa towards each other with speeds of 90 km/hr and 70 km/hr respectively. They meet each other in 5 hours. What is the distance between Mumbai and Goa?

- (a) 800 km
- (b) 200 km
- (c) 700 km
- (d) 400 km

**Consider the following graph and answer the question that follows:**

The curves in the graph indicate population growth of India, Empowered Action Group (EAG) States and Non- Empowered Action Group (Non-EAG) States & Union Territories during the decades 1951-1961 to 2001-2011.



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

1. Between 1951 and 1971, the growth rate for the Non-EAG States & Union Territories was more than that of the EAG States.
2. Continuous reduction in the growth rate of Non-EAG States & Union Territories was primarily responsible to bring about a significant fall of growth rate of the country as a whole, during 1991-2001 as compared to the previous decade.
3. During 2001-2011, for the first time, the growth momentum for the EAG States has given a clear signal of slowing down sharply.

Select the correct answer using the codes given below:

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

**67.** In a race, Rahul touches the finish line in 30 seconds and beats Kunal by 10 seconds. If Rahul gives a start of 5 seconds to Kunal, then in how much time will he again beat Kunal in the race?

- (a) 15 seconds
- (b) 30 seconds
- (c) 25 seconds
- (d) 5 seconds

**68.** In 2005, Dashrath's age was 11 times as that of his son. In 2020, his age becomes 14 times as that of his son's age in 2005. By how many years was Dashrath elder to his son in 2005?

- (a) 30 years
- (b) 50 years
- (c) 25 years
- (d) 5 years

**69.** Chandra started her boutique in January and make dresses which cost her Rs. 200 each. She sells some dresses at fixed price till August. Then she realises that she had to sell off all her dresses by the end of December. So, she offered a monsoon sale, in which she offered a discount of 50% on the fixed price. Chandra, hence, successfully sold all her dresses in December and made a net profit of 20%. If she sold equal number of dresses in each month then what was the initial selling price fixed by Chandra?

- (a) Rs. 180
- (b) Rs. 144
- (c) Rs. 288
- (d) Rs. 576

**70.** A vessel contains mixture of petrol and diesel in the ratio 13: 5. 72 litres of the mixture is taken out of the vessel and replaced with 51 litres of diesel such that the ratio of the petrol to diesel in the vessel becomes 8: 7, respectively, then find the initial quantity of diesel in the vessel?

- (a) 55 litres
- (b) 60 litres
- (c) 30 litres
- (d) 40 litres

**Directions for the following 5 (five) items:**

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

#### **Passage – 1**

Researchers studying how genes control animal behaviour have had to deal with many uncertainties. In the first place, most behaviours are governed by more than one gene, and until recently geneticists had no method for identifying the multiple genes involved. In addition, even when a single gene is found to control a behaviour, researchers in different fields do not necessarily agree that it is a “behavioural gene.” Neuroscientists, who understand the nervous system which generates behaviour, define the term broadly. But ethologists— specialists in animal behaviour—are interested in evolution, so they define the term narrowly. They insist that mutations in a behavioural gene must alter a specific normal behaviour and not merely make the organism ill, so that the genetically induced behavioural change will provide variation that natural selection can act upon, possibly leading to the evolution of a new species.

**71.** Which of the following statements, if true, **would most likely influence** ‘ethologists’ opinions about whether a particular gene in a species is a behavioural gene?

- (a) The gene is found only in that species.
- (b) The only effect of mutations in the gene is to make the organism ill.
- (c) Neuroscientists consider the gene to be a behavioural gene.
- (d) Geneticists consider the gene to be a behavioural gene.

**72.** What is the **most logical and appropriate conclusion** that we can infer from this passage?

- (a) There cannot be any competing arguments on a scientific question.
- (b) There can still arise different perspectives on a scientific question.
- (c) The usefulness of varied perspectives on a scientific question is itself questionable.
- (d) The difference between two definitions of a term need to be reconciled.

#### **Passage – 2**

Those who heard the address to the United Nations climate change summit by the teenager Greta Thunberg earlier this month may not be as worried about economic growth as the government is. Globally, industrial growth driven by mindless consumption is the cause of climate change, now unmistakably upon us. But India does need some growth as income levels here are still very low. The problem of low incomes can, however, be tackled even with less growth so long as it is of the appropriate type.

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

- (a) Conspicuous consumption driven economy at the global level has resulted in climate change, but not in low income countries.
- (b) On the economic front, India is facing a slowdown which can lead to recession and job losses.
- (c) Economic growth has trickle down effects.
- (d) Low income levels of India would be favourable to shield itself from any global recession.

### **Passage – 3**

Internet has become a lifeline of the modern world. Both our public and personal lives are heavily dependent on this technology. Every industry whether its transport, tourism, medical, education utilizes the internet on a daily basis. Personally, we use the internet for entertainment, communication, learning, and for social interactions. The benefits of digital life that the internet provides us have been undeniably comprehensive. However, Internet, like any other technology, has a dark side. It has given rise to many human concerns that can potentially threaten our well-being. For our personal communications we are becoming heavily dependent on internet enabled electronic gadgets, and we are doing it at the cost of natural human interactions which are spontaneous and more meaningful. Internet is also instrumental in distracting us from our real lives and its real concerns. Research suggests that individuals, particularly young ones, are spending more and more time in front of screens. There are other issues associated with cyber space like data privacy and security issues, proliferation of fake news, cyber thefts, child abuse and cyber hacking etc. But the fact remains that the internet has become indispensable and it is here to stay with us.

**74.** Which one of the following is **the most logical and rational inference** that can be made from the above passage?

- a) Internet is used by people who appreciate its latent power and potential.
- b) Internet has enabled us to live a digital life while ensuring minimal opportunity costs.
- c) In contemporary context, it is difficult to imagine a life without internet and internet-based applications.
- d) Digital communication offers a sustainable alternative to real life personal communication.

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

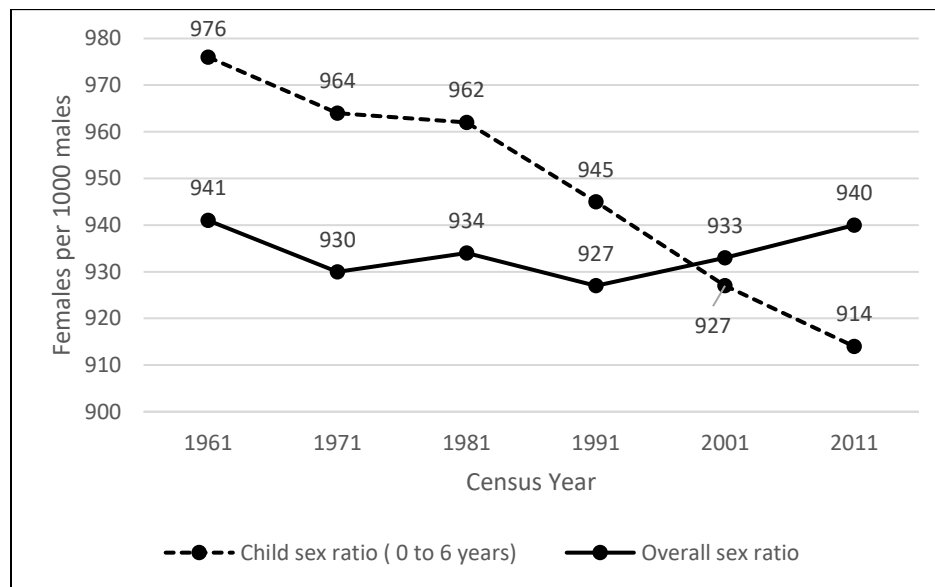
1. Youths on the other side of digital divide lead a more productive life.
2. Issues like fake news and child abuse did not exist in the pre-internet era.

Which of the above assumptions is/are valid?

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

**Directions for the following 2 (two) items:**

Consider the following graph in which Child sex ratio (0-6 years) and overall sex ratio of a country during 1961 to 2011 are given, and answer the two items that follow.



**76.** Looking at the graph, it can be inferred that:

- (a) After 1971, there has been a consistent rise in overall sex ratio of a country.
- (b) After 1991, there has been a consistent fall in overall sex ratio of a country.
- (c) The fall in child sex ratio has been unabated since 1961.
- (d) The rise in child sex ratio has been unabated since 1961.

**77.** With reference to the above graph, consider the following statements **taking 1961 as base year**:

1. There is no time period from 1961 to 2011, where child sex ratio (0-6 years) and overall sex ratio of a country are equal.

2. The percentage change in overall sex ratio is more than that of child sex ratio (0-6 years) in the given 50 years.
3. The overall sex ratio in 1991 and child sex ratio in 2001 are equal.
4. The average of child sex ratio (0-6 years) and overall sex ratio in the year 1971 and 1981 is same.

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

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

**78.** Milkha completes one round of circular track in 11 seconds. If the diameter of circular track is 1400 meters which is equal to the side of a square track, then in how many seconds will Milkha complete one round of the square track?

- (a) 30 seconds
- (b) 50 seconds
- (c) 20 seconds
- (d) 14 seconds

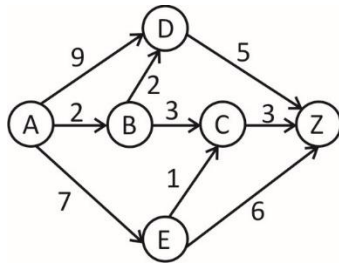
**79.** What is the value of '?'

C	H	O
E	K	S
H	O	?

- (a) W
- (b) Y
- (c) X
- (d) V

**80.** Following diagram shows the different routes to reach point Z from point A. Points B, C, D and E are junctions in the network, and the arrows mark the direction of traffic flow (all of which are one-way). At every junction there will be 5 minutes waiting time. The time taken to travel between points is given by number adjacent to the arrow in minutes.





In how many ways can a person reach to point Z in minimum possible time?

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