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Answer Keys & Explanations of UPSC CSE Prelims 2019

GS - II

items should be based on the passages only

Passage - 1

Political theorists no doubt have to take history of injustice, for example, untouchability, seriously. The concept of historical injustice takes note of a variety of historical wrongs that continue into the present in some form or the other and tend to resist repair. Two reasons might account for resistance to repair. One, not only are the roots of injustice buried deep in history, injustice itself constitutes economic structures of exploitation, ideologies of discrimination and modes of representation. Two, the category of historical injustice generally extends across a number of wrongs such as economic deprivation, social discrimination and lack of recognition. This category is complex, not only because of the overlap between a number of wrongs, but because one or the other wrong, generally discrimination, tends to acquire partial autonomy from others. This is borne out by the history of repair in India.

1. What is the main idea that we can infer from the passage ?
(a) Untouchability in India has not been taken seriously by political theorists.
(b) Historical injustice is inevitable in any society and is always beyond repair.
(c) Social discrimination and deprivation have their roots in bad economies.
(d) It is difficult, if not impossible, to repair every manifestation of historical injustice.

Answer: D
Statement 1 is incorrect: Untouchability is only one aspect of injustice talked about in the passage and it does not form the central idea of the passage.
Statement 2 is incorrect: This is an extreme statement. Inevitability of Historical Injustice is nowhere talked about in the passage.
Statement 3 is incorrect: Though the statement is individually correct, but it does not form the main idea of the passage.
Statement 4 is correct: It is difficult to repair every manifestation of historical injustice because of the overlap between number of wrongs and one or the other wrong attains partial autonomy from others.

2. On the basis of the above passage, the following assumptions have been made :
1. Removal of economic discrimination leads to removal of social discrimination.
2. Democratic polity is the best way to repair historical wrongs.
Which of the above assumptions is/are valid ?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: D
Statement 1 & 2 are incorrect: From the passage social discrimination is caused not just by economic deprivation, and we cannot assume the nature of polity required to repair historical wrongs.

Passage - 2

Education plays a great transformatory role in life, particularly so in this rapidly changing and globalizing world. Universities are the custodians of the intellectual capital and promoters of culture and specialized knowledge. Culture is an activity of thought, and receptiveness to beauty and human feelings. A merely well informed man is only a bore on God's earth. What we should aim at is producing men who possess both culture and expert knowledge. Their expert knowledge will give them a firm ground to start from and their culture will lead them as deep as philosophy and as high as art. Together it will impart meaning to human existence.

3. On the basis of the above passage, the following assumptions have been made :
1. A society without well educated people cannot be transformed into a modern society.
2. Without acquiring culture, a person's education is not complete.
Which of the above assumptions is/are valid ?
(a) 1 only
(b) 2 only
(c) Both 1 and 2

(d) Neither 1 nor 2

Answer: B
Statement 1 is incorrect: As there is no direct relation between education and modernity. The passage talks about divergence between education and culture and intellectual capital for greater human well-being.
Statement 2 is correct: A merely well informed man is only a bore on God's earth. What we should aim at is producing men who possess both culture and expert knowledge.

Passage - 3

Soil, in which nearly all our food grows, is a living resource that takes years to form. Yet it can vanish in minutes. Each year 75 billion tonnes of fertile soil is lost to erosion. That is alarming — and not just for food producers. Soil can trap huge quantities of carbon dioxide in the form of organic carbon and prevent it from escaping into the atmosphere.

4. On the basis of the above passage, the following assumptions have been made :
1. Large scale soil erosion is a major reason for widespread food insecurity in the world.
2. Soil erosion is mainly anthropogenic.
3. Sustainable management of soils helps in combating climate change.
Which of the above assumptions is/are valid ?
(a) 1 and 2 only
(b) 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

Answer: B
Statement 1 is incorrect: Soil erosion is impacting Food Producers is only mentioned in the passage. We cannot assume soil erosion as the major cause behind food insecurity with information given.
Statement 2 is incorrect: Causes for soil erosion are not revealed.
Statement 3 is correct: Soil can trap huge quantities of carbon dioxide in the form of organic carbon and prevent it from escaping into the atmosphere. Hence 3 is correct.

Passage - 4

Inequality is visible, even statistically measurable in many instances, but the economic power that drives it is invisible and not measurable... Like the force of gravity, power is the organising principle of inequality, be it of income, or wealth, gender, race, religion and region. Its effects are seen in a pervasive manner in all spheres, but the ways in which economic power pulls and tilts visible economic variables remain invisibly obscure,

5. On the basis of the above passage, the following assumptions have been made :
1. Economic power is the only reason for the existence of inequality in a society.
2. Inequality of different kinds, income, wealth, etc, reinforces power.
3. Economic power can be analysed more through its effects than by direct empirical methods.
Which of thy above assumptions is/are valid ?
(a) 1 and 2 only
(b) 3 only
(c) 1 and 3 only
(d) 1, 2 and 3
Answer: B
Statement 1 is incorrect: It is an extreme statement and there are other causes for inequality.
Statement 2 & 3 correct: Like the force of gravity, power is the organising principle of inequality, be it of income, or wealth, gender, race, religion and region.

Passage - 5

Climate change may actually benefit some plants by lengthening growing seasons and increasing carbon dioxide. Yet other effects of a warmer world, such as more pests, droughts, and flooding, will be less benign. How will the world adapt ? Researchers project that by 2050, suitable croplands for four commodities — maize, potatoes, rice and wheat — will shift, in some cases pushing farmers to plant new crops. Some farmlands may benefit from warming, but others won't. Climate alone does not dictate yields; political shifts, global demand, and agricultural practices will influence how farms fare in the future.

6. Which one of the following is the most logical and rational inference that can be made from) the above passage ?
(a) Farmers who modernize their methods and diversify their fields will be. in an advantageous position in future.
(b) Climate change will adversely affect the crop diversity.
(c) Shifting major crops to new croplands will lead to a great increase in the total area under cultivation and thus an increase in overall agricultural production.
(d) Climate change is the most important factor affecting the agricultural economy in the future.

Answer: A
Statement 1 is correct: Since the passage says that by 2050 suitable croplands may shift for some commodities, it is better to diversify their crops, as if one fails others will be there.
Statements 2 is incorrect: Climate change may push farmers to take up new crops and thereby increasing diversity
Statement 3 is incorrect: Some farmlands may benefit from warming, but others won't. Climate alone does not dictate yields
Statement 4 is incorrect: Climate alone does not dictate yields; political shifts, global demand, and agricultural practices will influence how farms fare in the future.

Passage - 6
A bat's wings may look like sheets of skin. But underneath, a bat has the same five fingers as an orangutan or a human, as well as a wrist connected to the same cluster of wrist bones connected to the same long bones of the arm. What can be more curious than that the hand of a man, formed for grasping, that of a mole for digging, the leg of the horse, the-paddle of the porpoise, and the wing of the bat, should all be constructed on the some pattern ?

7. Which one of the following is the most logical, scientific and rational inference that can be made from the above passage ?
(a) Different species having similar structure of hands is an example of biodiversity.
(b) Limbs being used by different species for different kinds of work is an example of biodiversity.
(c) Man and the aforementioned animals having similar structure of limbs is an example of coincidence in evolution.
(d) Man and the aforementioned animals have a shared evolutionary history.

Answer: D
Option a is incorrect: Biodiversity is a term used to describe the enormous variety of life on Earth. Whereas the passage entirely deals with evolutionary similarities between different species.
Option b is incorrect: similar logic applied for statement 1
Option c is incorrect: Man and the aforementioned animals having similar structure of limbs is not an example of coincidence in evolution.
Option d is correct: Since the passage says that man and aforementioned animals have similar structure of limbs, we can say that we have a shared evolution history.

Passage - 7
Around 56 million years ago, the Atlantic Ocean had not fully opened and animals, perhaps including our primate ancestors, could walk from Asia to North America through Europe and across Greenland. Earth was warmer than it is today, but as the Palaeocene epoch gave way to Eocene, it was about to get much warmer still —rapidly and radically. The cause was a massive geologically sudden release of carbon. During this period called Palaeocene - Eocene Thermal Maximum or PETM, the carbon injected into the atmosphere was roughly the amount that Would be injected today if humans burned all the Earth's reserves of coal, oil and natural gas. The PETM lasted for about 1,50,000 years, until the excess carbon was reabsorbed. It brought on drought, floods, insect plagues and a few extinctions. Life on Earth survived — indeed, it prospered — but it was drastically different.

8. Based on the above passage, the following assumptions have been made :
1. Global warming has a bearing on the planet's biological evolution.

2. Separation of land masses causes the release of huge quantities of carbon into the atmosphere.
3. Increased warming of Earth's atmosphere can change the composition of its flora and fauna.
4. The present man-made global warming will finally lead to conditions similar to those which happened 56 million years ago.

Which of the assumptions given above are valid ?

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

Answer: C

Statement 1 is correct: Geologically sudden release of carbon during 56 million years ago has a bearing on the planet's biological evolution.
Statement 2 is incorrect: Separation of land masses has no bearing on release of carbon
Statement 3 is correct: Similar logic as in statement 1, warming of atmosphere has a bearing species composition.
Statement 4 is incorrect: Anthropogenic global warming may/ may not lead to conditions similar to those which happened 56 million years ago.

9. The number of times the digit 5 will appear while writing the integers from 1 to 1000 is

(a) 269
(b) 271
(c) 300
(d) 302

Answer: C

From 1 to 9, 5 comes 1 time
Similarly, 10 to 49 , 5 comes 4 times
From 50 to 59, 5 comes 11 times
From 60 to 99, 5 comes 4 times.

So from 1 to 100, 5 comes 1+4+11+4=20 times.
The same way from 1 to 1000, 5 comes 200 times (1à100 x 10 – 1 x 1000. The same way 20 x 10 = 200)

But in 500's, 5 comes 100 times more. So total number of times 5 comes from 1 to 1000 = 200+100 = 300

10. A solid cube is painted yellow, blue and black such that opposite faces are of same colour. The cube is then cut into 36 cubes of two different sizes such that 32 cubes are small and the other four cubes are Big. None of the faces of the bigger cubes is painted blue. How many cubes have only one face painted?

(a) 4
(b) 6
(c) 8
(d) 10

Answer: C

Since 4 big cubes do not have blue color painted on them, then smaller cubes might have blue color on them. The 4 big cubes might have in the middle, and there 16 smaller cubes on top and bottom. There will be 4 cubes on top face and 4 cubes on bottom face. So there will be total 8 cubes that are painted one side.

11. A and B are two heavy steel blocks. If B is placed on the top of A, the weight increases by 60%. How much weight will reduce with respect to the total weight of A and B, if B is removed from the top of A?

(a) 60%
(b) 45.5%

(c) 40%
(d) 37.5%

Answer: D
Let us assume the weight of A block to be 100 grams and weight of B block be 60 grams.
Total weight when B is placed on top A = 100 + 60 = 160, which is an increase of 60%.
The percentage reduction in weight when B is removed from the top of A = (160 – 100) x 100/160 = 6000/160 = 300/8 = 37.5%

12. Mr 'X' has three children. The birthday of the first child falls on the 5th Monday of April, that of the second one falls on the 5th Thursday of November. On which day is the birthday of his third child, which falls on 20th December?
(a) Monday
(b) Thursday
(c) Saturday
(d) Sunday

Answer: D
Since April has 30 days, there will be 5 weeks and 2 days. There will be 5^{th} Monday if and only if 1^{st} of April is Sunday or Monday.

If 1st of April is Sunday, then the number of days from 1^{st} April to 31^{st} October = 30+31+30+31+31+30+31 = 214 = 30 weeks and 4 days. So 31^{st} October will be Wednesday and 1^{st} November will be Thursday.

Since 1^{st} November is Thursday, 29^{th} November will again be Thursday.
The number of days from 29^{th} November to 20^{th} December = 2+20 =22 = 3 weeks and 1 day.

So 20^{th} December will also be Thursday.

13. Consider the following Statements and Conclusions:
Statements:
1. Some rats are cats.
2. Some cats are dogs.
3. No dog is a cow.
Conclusions:
I. No cow is a cat.
II. No dog is a rat.
III. Some cats are rats.
Which of the above conclusions is/are drawn from the statements?
(a) I, II and III
(b) Only I and II
(c) Only III
(d) Only II and III

Answer: C
From the above we can clearly say that only conclusion 3 follows.

14. The number of parallelograms that can be formed from a set of four parallel lines intersecting another set of four parallel lines, is
(a) 18
(b) 24
(c) 32
(d) 36

Answer: D
We need to vertical parallel lines and two horizontal parallel lines to form a parallelogram. Since we have 4 vertical parallel lines, we can select 2 parallel lines from 4 parallel lines in $^4C_2$ ways. Similarly, from 4 horizontal parallel lines, we can select 2 parallel lines $^4C_2$ ways.

So the total number of ways in a parallelogram can be formed from a set of four parallel lines intersecting another set of four parallel lines = ${}^4C_2 \times {}^4C_2 = 36$

15. In a school every student is assigned a unique identification number. A student is a football player if and only if the identification number is divisible by 4, whereas a student is a cricketer if and only if the identification number is divisible by 6. If every number from 1 to 100 is assigned to a student, then how many of them play cricket as well as football?
(a) 4
(b) 8
(c) 10
(d) 12

Answer: B
Given that a student is a football player if and only if the identification number is divisible by 4 and a student is a cricketer if and only if the identification number is divisible by 6.
LCM of (4, 6) = 12
Which means the number which is divisible by 12 will be divisible by both 4 and 6.
The greatest number divisible by 12 below 100 is 96, which is 8 times, i.e. 12 x 8 = 96
Therefore, the number of students who play football as well as cricket = 8

16. When a runner was crossing the 12 km mark, she was informed that she had completed only 80% of the race. How many kilometres was the runner supposed to run in this event?
(a) 14
(b) 15
(c) 16
(d) 16.5

Answer: B
Let R be the total length of the race.
From the question, we can write that 12 = 0.8 R è R = 120/8 = 15km
17. Raju has Rs. 9000 with him and he wants to buy a mobile handset; but he finds that he has only 75% of the amount required to buy the handset. Therefore, he borrows 2000 from a friend. Then
(a) Raju still does not have enough amount to buy the handset.
(b) Raju has exactly the same amount as required to buy the handset.
(c) Raju has enough amount to buy the handset and he will have 500 with him after buying the handset.
(d) Raju has enough amount to buy the handset and he will have 1000 with him after buying the handset.

Answer: A
Let the amount required to buy the handset be A.
Since 9000 is only 75% of the amount required to buy handset, we can write
9000 = 0.75 A è A = 12000
The amount required to buy handset A = 12000
Since Raju borrows 2000 more, the total amount with him will be 9000 + 2000 = 11000
So Raju still does not have enough amount to buy the handset.

18. In 2002, Meenu's age was one-third of the age of Meera, whereas in 2010, Meenu's age was half the age of Meera. What is Meenu's year of birth?
(a) 1992
(b) 1994
(c) 1996
(d) 1998

Answer: B
Let the age of Meenu be p and the age of Meera be q.

According to the question in 2002, p = q/3 ... (1)

In 2010, p+8 = (q+8)/2 ...(2)

Substituting (1) in (2),
q/3 + 8 = q/2 + 4 à q/2 – q/3 = 4 àq/6 = 4 à q=24
If q=24, then p=8.

So , in 2002 Meenu was 8 years old. Meenu's year of birth = 2002-8 = 1994

19. Rakesh and Rajesh together bought 10 balls and 10 rackets. Rakesh spent 1300 and Rajesh spent 1500. If each racket costs three times a ball does, then what is the price of a racket?
(a) Rs. 70
(b) Rs. 90
(c) Rs. 210
(d) Rs. 240

Answer: C
Total amount spent by Rajesh and Rakesh is 2800.
2800 = 10 ball + 10 racket
280 = ball + racket .... (1)
From the question we can write, racket = 3 ball ....(2)
Substituting (2) in (1)
280 = ball + 3 ball = 4 ball è ball = 280/4 = 70
Then racket = 3 ball = 3 x 70 = 210

20. In a conference, out of a total 100 participants, 70 are Indians. If 60 of the total participants are vegetarian, then which of the following statements is/are correct?
1. At least 30 Indian participants are vegetarian.
2. At least 10 Indian participants are non-vegetarian.
Select the correct answer using the codes given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: C
Given that the total number of participants = 100
70 of them are Indians and 30 are others. 60 are vegetarian.

If we assume that all the 30 others are vegetarians, then remaining number of vegetarians will be Indians. Which means at least 30 Indian participants will be vegetarian.
If we assume that all the 60 vegetarians are Indians, then the remaining 10 of the Indians will be non-vegetarians. So, we can say at least 10 Indian participants are non-vegetarian.

Directions for the following 8 (eight) items:
Read the following six passages and answer the items that follow each passage. Your answers to these items should be based on the passages only.

Passage –1

Low-end IoT (Internet of Things) devices are cheap commodity items: addressing security would add to the cost. This class of items is proliferating with new applications; many home appliances, thermostats, security and monitoring devices and personal convenience devices are part of the IoT. So are fitness trackers, certain medical implants and computer-like devices in automobiles. The IoT is expected to expand exponentially — but new security challenges are daunting.

21. Which one of the following statements is the most logical and rational inference that can be made from the above passage?
(a) Development of enabling technologies in India can be a big boost to its manufacturing sector.

(b) India is not yet fully ready to adopt IoT in view of the imminent security challenges.
(c) Life becomes more comfortable with the development of cheap low-end IoT devices.
(d) As we go digital, we must recognise the huge threat to Internet security from some IoT devices.

Answer: D
Statement 1 is incorrect: Passage does not talk about IoT boosting manufacturing sector
Statement 2 is incorrect: India's readiness with regards to dealing with security challenges is not mentioned.
Statement 3 is incorrect: It is a contradictory statement. The passage is dealing with the issues of enabling technologies whereas statement is talking just opposite of it
Statement 4 is correct: The last sentence of the passage clearly mentions this that there is a huge security threat from the growing digital world.

Passage - 2

With the digital phenomenon restructuring most social sectors, it is little surprise that global trade negotiations are now eyeing the digital area in an attempt to pre-emptively colonise it. Big Data is freely collected or mined from developing countries, and converted into digital intelligence in developed countries. This intelligence begins to control different sectors and extract monopoly rents. A large foreign company providing cab service, for instance, is not a work of cars and drivers, it is digital intelligence about commuting, public transport, roads, traffic, city events, personal behavioural characteristics of commuters and driver and so on.

22. Which one of the following is the most logical and rational corollary to the above passage?
(a) Globalization is not in the interests of India as it undermines its socio-economic structures.
(b) India should be careful to protect its digital sovereignty in global trade talks.
(c) India should charge monopoly rents from multinational companies in exchange for Big Data.
(d) The loss of Big Data from India is proportional to the degree/value of its foreign trade.

Answer: B
Statement 1 is incorrect: Impact of Globalization on India is not given in the passage
Statement 3 is incorrect: Charging monopoly rents wouldn't serve the long term interests of India in the digital sphere, hence 3 is incorrect
Statement 4 is incorrect: The quantum of loss of big data is nowhere mentioned.
Statement 2 is correct: Hence it is in the best interest that India should protect its digital sovereignty.

23. Which of the following is most definitively implied by the above passage?
(a) Big Data is the key resource in the digital space.
(b) Big economies create Big Data.
(c) Access to Big Data is the prerogative of developed countries.
(d) Access to and possession of Big Data is a characteristic of developed countries.

Answer: A
Statement 1 is correct: Big Data is being collected and mined which means it is a key resource to understand people and improve the business of the companies.

Statement 2,3,4 incorrect: Developing economies also create Big Data, and access to big data is not just the prerogative of developed countries, every country has rights over data generated in their territory.

Passage - 3

The rural poor across the world, including India, have contributed little to human-induced climate change, yet they are on the frontline in coping with its effects. Farmers can no longer rely on historical averages for rainfall and temperature, and the more frequent and extreme weather events, such as droughts and floods, can spell disaster. And there are new threats, such as sea level rise and the impact of melting glaciers on water supply. How significant are small farms? As many as two billion people worldwide depend on them for their food and livelihood. Small-holder farmers in India produce 41 percent of the country's food grains, and other

food items that contribute to local and national food security.

24. What is the most logical and rational corollary to the above passage?
(a) Supporting small farmers is an important part of any agenda regarding environmentally sustainable development.
(b) Poor countries have little role to play in the mitigation of global warming.
(c) Due to a large number of farmer households, India will not have food security problem in the foreseeable future.
(d) Only small-holder farmers in India can ensure food security.

Answer: A
Option a is correct: Since small farmers contribute to a large amount of food grains, it is essential to support them for gaining environmentally sustainable development.
Option b is incorrect: As global warming affects the world, even though the countries are rich or poor they have to try to cope with the affects of global warming equally.
Option c is incorrect: India does have large number of farmer households, but that doesn't mean that we will not have food security problems.
Option d is incorrect: Small holder farmers do contribute to 41% of the food grains, but only they cannot ensure food security.

25. The above passage implies that
1. There is a potential problem of food insecurity in India.
2. India will have to strengthen its disaster management capabilities.
Which of the above assumptions is/are valid?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: C
Statement 1 is valid: As there is potential threat due to global warming and rising sea levels, we can say that there is a potential problem of food insecurity in India.

Statement 2 is valid: To cope with the changing climate and ensure food security, India has to strengthen its disaster management capabilities.

Passage – 4

A changing climate, and the eventual efforts of governments (however reluctant) to deal with it, could have a big impact on investors' returns. Companies that produce or use large amounts of fossil fuels will face higher taxes and regulatory burdens. Some energy producers may find it impossible to exploit their known reserves, and be left with "stranded assets" — deposits of oil and coal that have to be left in the ground. Other industries could be affected by the economic damage caused by more extreme weather — storms, floods, heat waves and droughts.

26. On the basis of the above passage, the following assumptions have been made:
1. Governments and companies need to be adequately prepared to face the climate change.
2. Extreme weather events will reduce the economic growth of governments and companies in future.
3. Ignoring climate change is a huge risk for investors.
Which of the above assumptions is/are valid?
(a) 1 and 2 only
(b) 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Answer: C
Statement 1 is correct: The passage says that governments have to deal with climate change and companies have to face higher taxes. So both of these have to be prepared to face climate change.

Statement 2 is incorrect: Nowhere does the passage say that extreme weather events will reduce the economic growth.

Statement 3 is correct: The efforts of government to tackle climate change could have an impact on investors, so investors should keep in mind about climate change.

Passage - 5

Access to schooling for those coming of school age is close to universal, but access to quality exhibits a sharp gradient with socio-economic status. Quotas for the weaker sections in private schools is a provision introduced by the Right of Children to Free and Compulsory Education Act, 2009. The quotas have imposed a debate on issues of social integration and equity in education that private actors had escaped by and large. The idea of egalitarian education system with equality of opportunity as its primary goal appears to be outside the space that private school principals inhabit. Therefore, the imposition of the quotas has led to resistance, sometimes justified.

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

1. Making equality of opportunity a reality is the fundamental goal of the Indian education system.
2. The present Indian school system is unable to provide egalitarian education.
3. Abolition of private schools and establishment of more government schools is the only way to ensure egalitarian education.

Which of the above assumptions is/are valid?

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

Answer: B

Statement 1 is invalid: Though the government is trying to bring equity in education, the passage does not say that it is the fundamental goal of the Indian education system.

Statement 2 is valid: The passage clearly depicts this. As the present Indian school system is unable to provide egalitarian education, quotas for the weaker sections in private schools was introduced by the Right of Children to Free and Compulsory Education Act, 2009.

Statement 3 is invalid: The passage does not say this as a way to ensure egalitarian education.

Passage – 6

A majority of the TB infected in India are poor and lack sufficient nutrition, suitable housing and have little understanding of prevention. TB then devastates families, makes the poor poorer, particularly affects women and children, and leads to ostracisation and loss of employment. The truth is that even if TB does not kill them, hunger and poverty will. Another truth is that deep-seated stigma, lack of
counselling, expensive treatment and lack of adequate support from providers and family, coupled with torturous side-effects demotivate patients to continue treatment — with disastrous health consequences.

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

(a) TB is not a curable disease in Indian circumstances.
(b) Curing TB requires more than diagnosis and medical treatment.
(c) Government's surveillance mechanism is deficient; and poor people have no access to treatment.
(d) India will be free from diseases like TB only when its poverty alleviation programmes are effectively and successfully implemented.

Answer: B

29. A five-storeyed building with floors from I to V is painted using four different colours and only one colour is used to paint a floor.

Consider the following statements:
1. The middle three floors are painted in different colours.
2. The second (II) and the fourth (IV) floors are painted in different colours.
3. The first (I) and the fifth (V) floors are painted red.
To ensure that any two consecutive floors have different colours
(a) Only statement 2 is sufficient
(b) Only statement 3 is sufficient
(c) Statement 1 is not sufficient, but statement 1 along with statement 2 is sufficient
(d) Statement 3 is not sufficient, but statement 3 along with statement 2 is sufficient

Answer: B

30. P, Q and R are three towns. The distance between P and Q is 60 km, whereas the distance between P and R is 80 km. Q is in the West of P and R is in the South of P. What is the distance between Q and R?
(a) 140 km
(b) 130 km
(c) 10 km
(d) 100 km

Answer: D

31. All members of a club went to Mumbai and stayed in a hotel. On the first day, 80% went for shopping and 50% went for sightseeing, whereas 10% took rest in the hotel. Which of the following conclusion(s) can be drawn from the above data?
1. 40% members went for shopping as well as sightseeing.
2. 20% members went for only shopping.
Select the correct answer using the code given below:
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: A
The total number of members are 100%. As 10% people took rest, the remaining persons who went for shopping or sight seeing is 90% of which 80% (0.8 x 90 = 72) went to shopping and 50% (0.5 x 90 = 45) went to sightseeing.
Then we can write 90% = 80% + 50% - (shopping & sightseeing) è shopping & sightseeing =40%
So statement 1 is true.

Since 80% went for shopping and 40% of them went both shopping and sightseeing, 40% of them should go for only shopping. So statement 2 is false.

32. In a school, 60% students play cricket. A student who does not play cricket, plays football. Every football player has got a two-wheeler. Which of the following conclusions cannot be drawn from the above data?
1. 60% of the students do not have two-wheelers.
2. No cricketer has a two-wheeler.
3. Cricket players do not play football.
Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Answer: D
Total students are 100% of which 60% play cricket, so 40% play football. According to the question, the 40%

who play football have 2-wheeler. We have no information about the 60% students who play cricket if they have 2-wheeler or not. So statement 1 & 2 are incorrect.
The question clearly does not state anywhere that cricket players do not play football. So statement 3 is also incorrect.

33. The ratio of a two-digit natural number to a number formed by reversing its digits is 4: 7. The number of such pairs is
(a) 5
(b) 4
(c) 3
(d) 2

Answer: B
Let the original 2-digi natural number be 10x+y. the number formed by reversing the digits will be 10y+x.
The ratio of these numbers is 10x+y/10y+x = 4/7
∴ 70x + 7y = 40y + 4x => 66x = 33y è x/y = ½

So the pair of which satisfy the condition are (1, 2), (2, 4), (3, 6), (4, 8).

34. In an examination, A has scored 20 marks more than B. If B has scored 5% less marks than A, how much has B scored?
(a) 360
(b) 380
(c) 400
(d) 420

Answer: B
From the question, we know that A = 20 + B ....(1)
B = 0.95 A ...(2)
Substituting (2) in (1),
A = 20 + 0.95A è 0.05A = 20 è A = 400
Since A = 20 + B, B = 380

35. Seeta and Geeta go for a swim after a gap of every 2 days and every 3 days respectively. If on 1st January both of them went for a swim together, when will they go together next?
(a) 7th January 8th January
(c) 12th January
(d) 13th January

Answer: A

36. X, Y and Z are three contestants in a race of 1000 m. Assume that all run with different uniform speeds. X gives Y a start of 40 m and X gives Z a start of 64 m. If Y and Z were to compete in a race of 1000 m, how many metres start will Y give to Z?
(a) 20
(b) 25
(c) 30
(d) 35

Answer: B
Since X gives Y a start of 40m , if X has to run 1000m, then Y has to run 960m. Similarly, Z should run, 936m.

In the time Y covers 960m, Z covers 936m.
So in 1000m race, if Y covers 1000m, Z covers = 936x1000/960 = 975
So Y will give Z a start of 25meters.

37. If x is greater than or equal to 25 and y is less than or equal to 40, then which one of the

following is always correct?
(a) x is greater than y
(b) (y - x) is greater than 15
(c) (y - x) is less than or equal to 15
(d) (x - y) is greater than or equal to 65
Answer: C
Given that X > = 25 and Y<=40. X cannot always be greater than Y. So statement 1 is wrong.
If Y=40, X=25, then Y-X = 40-25= 15, so statement 2 is also incorrect as it states that Y-X is greater than 15.
If Y = 39 and X = 26, then Y-X is 13. So we can say statement 3 is correct.

38. Ena was born 4 years after her parents' marriage. Her mother is three years younger than her father and 24 years older than Ena, who is 13 years old. At what age did Ena's father get married?
(a) 22 years
(b) 23 years
(c) 24 years
(d) 25 years

Answer: B
Given that Ena's age is 13 years. From question mother's age = 13 + 24 = 37 years. So the age of father is 40years. Then the age of father when Ena was born = 40-13 =27.
Since Ena was born 4 years after marriage, the age of father at marriage = 27-4 = 23 years.

39. Rakesh had money to buy 8 mobile handsets of a specific company. But the retailer offered very good discount on that particular handset. Rakesh could buy 10 mobile handsets with the amount he had. What was the discount the retailer offered?
(a) 15%
(b) 20%
(c) 25%
(d) 30%

Answer: B

40. The average marks of 100 students are given to be 40. It was found later that marks of one student were 53 which were misread as 83. The corrected mean marks are
(a) 39
(b) 39.7
(c) 40
(d) 40.3

Answer: B
Average marks = Total marks/ number of students
Let T be the total marks.
40 = T/100 è T = 4000
Marks of one student were 53 which were misread as 83.
So, T = 4000-83+53 = 3970
The corrected mean marks = 3970/100 = 39.7

Directions for the following 7 (seven) items:
Read the following six passages and answer the items that follow each passage. Your answers to these items should be based on the passages only.

Passage — 1

What stands in the way of the widespread and careful adoption of 'Genetic Modification (GM)' technology is an `Intellectual Property Rights' regime that seeks to create private monopolies for such technologies. If GM technology is largely corporate driven, it seeks to maximize profits and that too in the short run. That is why corporations make major investments for herbicide-tolerant and pest-resistant crops. Such properties have only a short window, as soon enough, pests and weeds will evolve to overcome such resistance. This suits the corporations. The National Farmers Commission pointed out that priority must be given in genetic modification to the incorporation of genes that can help impart resistance to drought, salinity and other

stresses.

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

(a) Public research institutions should take the lead in GM technology and prioritise the technology agenda.
(b) Developing countries should raise this issue in WTO and ensure the abolition of Intellectual Property Rights.
(c) Private corporations should not be allowed to do agribusiness in India, particularly the seed business.
(d) Present Indian circumstances do not favour the cultivation of genetically modified crops.

Answer: A

Option a is correct: Since private institutions seek to maximise profits they make major investments for herbicide-tolerant and pest-resistant crops. Whereas public research institutions will prioritize on incorporation of genes that can help impart resistance to drought, salinity and other stresses.

Option b is incorrect: The passage nowhere talks about abolition of Intellectual Property Rights or raising the issue in WTO.

Option c is incorrect: It is not that private corporations should not be allowed to do agri-business, it is that they should be put under control.

Option d is incorrect: The passage states that "The National Farmers Commission pointed out that priority must be given in genetic modification to the incorporation of genes that can help impart resistance to drought, salinity and other stresses." Option d is contradictory to this sentence which means that India is favouring GM crops.

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

1. The issue of effects of natural calamities on agriculture is not given due consideration by GM technology companies.
2. In the long run, GM technology will not be able to solve agricultural problems arising due to global warming.

Which of the above assumptions is/are valid?

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

Answer: A

Statement 1 is valid: The GM technology companies are mostly focused on developing herbicide-tolerant and pest-resistant crops. So, the issue of effects of natural calamities on agriculture is not given due consideration by these companies.

Statement 2 is invalid: Presently, GM technology may not be focusing on global warming affects on agriculture. But we cannot say that GM technology will not be able to solve agricultural problems arising due to global warming as National Farmers Commission is prioritizing on developing drought and salinity resistance crops.

Passage - 2

Most invasive species are neither terribly successful nor very harmful. Britain's invasive plants are not widespread, not spreading especially quickly, and often less of a nuisance than vigorous natives such as bracken. The arrival of new species almost always increases biological diversity in a region; in many cases, a flood of newcomers drives no native species to extinction. One reason is that invaders tend to colonise disturbed habitats like polluted lakes and post-industrial wasteland, where little else lives. They are nature's opportunists.

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

(a) Invasive species should be used to rehabilitate desert areas and wastelands of a country.

(b) Laws against the introduction of foreign plants are unnecessary.
(c) Sometimes, the campaigns against foreign plants are pointless.
(d) Foreign plants should be used to increase the biodiversity of a country.

Answer: C
Option a is incorrect: Native species can also be used to rehabilitate desert area and wastelands.

Option b is incorrect: The passage does not talk anything about laws against foreign plants.

Option c is correct: Campaigns against foreign plants may be pointless because most of the times newcomers drive no native species to extinction and they mostly tend to colonise disturbed habitats.

Option d is incorrect: To increase biodiversity it is not necessary that we use only foreign plants.

Passage - 3

Diarrhoeal deaths among Indian children are mostly due to food and water contamination. Use of contaminated groundwater and unsafe chemicals in agriculture, poor hygiene in storage and handling of food items to food cooked and distributed in unhygienic surroundings; there are myriad factors that need regulation and monitoring. People need to have awareness of adulteration and ways of complaining to the relevant authorities. Surveillance of food-borne diseases involves a number of government agencies and entails good training of inspection staff. Considering the proportion of the urban population that depends on street food for its daily meals, investing in training and education of street vendors is of great significance.

44. On the basis of the above passage, the following assumptions have been made:
1. Food safety is a complex issue that calls for a multipronged solution.
2. Great investments need to be made in developing the manpower for surveillance and training.
3. India needs to make sufficient legislation for governing food processing industry.
Which of the above assumptions is/are valid?
(a) 1 and 2 only
(b) 3 only
(c) 1 and 3 only 1, 2 and 3

Answer: A
Statement 1 is valid: For food to be safe for consumption, crops should not be raised with contaminated water, there should be hygiene in storage and handling of food items, adulteration should be checked, street vendors should be trained and educated of its significance. All this makes food safety a complex issue.

Statement 2 is valid: As a good proportion of the urban population depends on street food for its daily meals, great investments should be made in training and educating street vendors as well surveillance staff.

Statement 3 is invalid: The passage does not talk any laws to govern food processing industry. It talks about how plants are raised and how they are stored.

Passage - 4

The interests of working and poor people have historically been neglected in the planning of our cities. Our cities are increasingly intolerant,', unsafe and unlivable places for large numbers of citizens and yet we continue to plan via the old ways — the static Development Plan — that draws exclusively from technical expertise, distanced from people's live experiences and needs, and actively excluding large number of people, places, activities and practices that are an integral part of the city.

45. The passage seems to argue
(a) against the monopoly of builders and the interests of elite groups.
(b) against the need for global and smart cities.
(c) in favour of planning cities mainly for working class and poor people.
(d) in favour of participation of peoples' groups in city planning.

Answer: D

Option a, b & c are incorrect and d is correct: The passage does not argue against the interests of builders or elite groups nor does it argue for smart cities. It also does not argue in favour of planning cities for working class and poor people. The passage argues in favour of people's groups in city planning, i. e. against excluding large number of people, places, activities and practices.

Passage - 5

A vast majority of Indians are poor, with barely 10 percent employed in the organised sector. We are being convinced that vigorous economic growth is generating substantial employment. But this is not so. When our economy was growing at 3 percent per year, employment in the organised sector was growing at 2 percent per year. As the economy began to grow at 7 - 8 percent per year, the rate of growth of employment in the organised sector actually declined to 1 percent per year.

46. The above passage seems to imply that

1. most of modern economic growth is based on technological progress.
2. much of modern Indian economy does not nurture sufficient symbiotic relationship with labour-intensive, natural resource-based livelihoods.
3. service sector in India is not very labour-intensive.
4. literate rural population is not willing to enter organised sector.

Which of the statements given above are correct?

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

Answer: C

Statement 1 is true: As most of the modern economic growth is based on technological advancement, there is no growth of jobs in the organised sector.

Statement 2 & 3 are true: Much of the modern growth is not labour intensive as most of the growth is based on services sector and is not in symbiotic relationship between natural resource-based livelihoods.

Statement 4 is false: Literate rural population will be willing to enter organised sector. The passage does not say anywhere that they do not want to.

Passage — 6

India has banking correspondents, who help bring people in the hinterland into the banking fold. For them to succeed, banks cannot crimp on costs. They also cannot afford to ignore investing in financial education and literacy. Banking correspondents are way too small to be viewed as a systemic risk. Yet India's banking regulator has restricted them to serving only one bank, perhaps to prevent arbitrage. 'Efforts at banking outreach may succeed only if there are better incentives at work for such last-mile workers and also those providers who ensure not just basic bank accounts but also products such as accident and life insurance and micro pension schemes.

47. Which one of the following is the most logical, rational and crucial inference that can be derived from the above passage?

(a) Efforts to bring people in India's hinterland into the banking system are not successful.
(b) For meaningful financial inclusion, India's banking system needs more number of banking correspondents and other such last-mile workers.
(c) Meaningful financial inclusion in India requires that banking correspondents have diverse skills
(d) Better banking outreach would be impossible unless each banking correspondent is allowed to serve a number of banks

Answer: C

Option a is wrong: The passage does not say that efforts to bring people in India's hinterland into the banking system are not successful.

Option b is wrong & c is correct: Just more banking correspondents does not mean meaning financial inclusion. Meaningful financial inclusion will be possible when investment is done in financial education and

literacy of the banking correspondents. They should also be imparted the skills of marketing.

Option d is wrong: It is better for banking correspondents to serve only one bank to prevent arbitrage.

48. What is X in the sequence 132, 129, 124, 117, 106, 93, X ?
(a) 74
(b) 75
(c) 76
(d) 77

Answer: C
Subtract prime number from each number.
132 – 3 = 129
129 – 5 = 124
124 – 7 = 117
117 – 11 = 106
106 – 13 = 93
93 – 17 = 76

49. A wall clock moves 10 minutes fast in every 24 hours. The clock was set right to show the correct time at 8:00 a.m. on Monday. When the clock shows the time 6:00 p.m. on Wednesday, what is the correct time ?
(a) 5:36 p.m.
(b) 5:30 p.m.
(c) 5:24 p.m.
(d) 5:18 p.m.

Answer: A
From 8:00am on Monday to 8:00am on Wednesday, 48hours have passed. So in these 48 hours, the clock moves 20 minutes fast. There are 10 hours from 8:00am on Wednesday to 6:00pm on Wednesday.

In 24 hours the clock moves 10 minutes fast.
In 10 hours the clock moves = 10 x 10/6 = 25/6 minutes fast

So the total time the clock moved fast = 20 + 25/6 = 24.1minutes
So the correct time is 5:36pm

50. If the numerator and denominator of a proper fraction are increased by the same positive quantity which is greater than zero, the resulting fraction is
(a)always less than the original fraction
(b) always greater than the original fraction
(c) always equal to the original fraction
(d) such that nothing can .be claimed definitely

Answer: A
Suppose the proper fraction be ½ = 0.5
If 3 is added to numerator and denominator 1+3/2+3 = 4/5 = 0.8
So the resulting fraction is always greater than the original fraction.

51. What is X in the sequence 4, 196, 16, 144, 36, 100, 64, X ?
(a) 48
(b) 64
(c) 125
(d) 256

Answer: B
4 -> 2^2

196 -> 14^2
16 -> 4^2
144 -> 12^2
36 -> 6^6
100 -> 10^2
64 -> 8^2

This is alternate series so the next term will be $(10-2)^2 = 8^2$

52. In a group of 15 people; 7 can read French, 8 can read English while 3 of them can read neither of these two languages. The number of people who can read exactly one language is
(a) 10
(b) 9
(c) 5
(d) 4

Answer: B
Since 3 of them can read neither of the two languages, 12 people can read French or English or both of them. 7 can read French, 8 can read English, total 15 can read French or English, which means 3 of them can read both English and French. So, 7-3 = 4 people can read only French. 8-3= 5 people can read only English.

53. A printer numbers the pages of a book starting with 1 and uses 3089 digits in all. How many pages does the book have ?
(a) 1040
(b) 1048
(c) 1049
(d) 1050

Answer: C
The number of digits used from 1 to 9 = 9
The number of digits used from 10 to 99 = total of 90 numbers x 2 digits per each number = 180 digits
The number of digits used from 100 to 999 = total of 900 number x 3 digits per each number = 2700 digits
The number of digits used from 1000 to 1049 = total of 50 number x 4 digits per each number = 200 digits

The total number of digits used = 9 + 180+ 2700 + 200 = 3089

54. Consider the following sequence that follows some arrangement :
c_accaa_aa_bc_b
The letters that appear in the gaps are
(a) abba
(b) cbbb
(c) bbbb
(d) cccc

Answer: B
ccacc aabaa bbcbb

55. A family has two children along with their parents. The average of the weights of the children and their mother is 50 kg. The average of the weights of the children and their father is 52 kg. If the weight of the father is 60 kg, then what is the weight of the mother ?
(a) 48 kg
(b) 50 kg
(c) 52 kg
(d) 54 kg

Answer: D
Let us assume the weight of mother be m, father be f, two children be c1 and c2.

C1 +C2 + m = 50 x 3 = 150
C1 + C2 + f = 52 x 3 = 156
We know that weight of father is 60. So, C1 + C2 + 60 = 156 è C1 + C2 = 96
So 96 + m = 150 => m = 150 -96 = 54

56. Suppose you have sufficient amount of rupee currency in three denominations : Rs. 1, Rs. 10 and Rs. 50. In how many different ways can you pay a bill of Rs. 107 ?
(a) 16
(b) 17
(c) 18
(d) 19

Answer: C
There will be three cases to find the number of ways.
Case 1: there are zero 50 rupee notes
Way 1: Rs. 107 is paid using 107 Rs 1 coins
Way 2: There is one 10 rupee note + 97 rupees in Rs1 coins
Way 3: There are two 10 rupee notes + 87 rupees in Rs1 coins
Way 4: There are three 10 rupee notes + 77 rupees in Rs1 coins
Way 5: There are four 10 rupee notes + 67 rupees in Rs1 coins
Way 6: There are five 10 rupee notes + 57 rupees in Rs1 coins
Way 7: There are six 10 rupee notes + 47 rupees in Rs1 coins
Way 8: There are seven 10 rupee notes + 37 rupees in Rs1 coins
Way 9: There are eight 10 rupee notes + 27 rupees in Rs1 coins
Way 10: There are nine 10 rupee notes + 17 rupees in Rs1 coins
Way 11: There are ten 10 rupee notes + 7 rupees in Rs1 coins

Case 2: there is one 50 rupee notes
Way 12: one Rs 50 note + 57 Rs 1 coins
Way 13: one Rs 50 note + one Rs 10 note + 47 Rs 1 coins
Way 14: one Rs 50 note + two Rs 10 note + 37 Rs 1 coins
Way 15: one Rs 50 note + three Rs 10 note + 27 Rs 1 coins
Way 16: one Rs 50 note + four Rs 10 note + 17 Rs 1 coins
Way 17: one Rs 50 note + five Rs 10 note + 7 Rs 1 coins
Case 3: there are two 50 rupee notes
Way 18: two Rs 50 notes + seven Rs 1 coins

57. 'A' started from his house and walked 20 m towards East, where his friend 13' joined him. They together walked 10 m in the same direction. Then 'A' turned left while 'B' turned right and travelled 2 m and 8 m respectively. Again 'B' turned left to travel 4 m followed by 5 m to his right to reach his office. 'A' turned right and travelled 12 m to reach his office. What is the shortest distance between the two offices ?
(a) 15 m
(b) 17 m
(c) 19 m
(d) 20 m

Answer: B

58. Consider two statements S1 and S2 followed by a question:
S1: p and q both are prime numbers.
S2: p + q is an odd integer.
Question: Is pq an odd integer?
Which one of the following is correct ?
(a) S1 alone is sufficient to answer the question
(b) S2 alone is sufficient to answer the question
(c) Both S1 and S2 taken together are not sufficient to answer the question

(d) Both S1 and S2 are necessary to answer the question

Answer:

59. Which year has the same calendar as that of 2009 ?
(a) 2018
(b) 2017
(c) 2016
(d) 2015

Answer: D
2009 will have 1 odd day. 2010 will have 1 odd day. 2011 will have 1 odd day. 2012 will have 2 odd days. 2013 will have 1 odd day. 2014 will have 1 odd day. Total number of odd days from 2009 to 2014 = 7. So 2015 will be the same calendar year as that of 2009.

60. Number 136 is added to 5B7 and the sum obtained is 7A3, where A and B are integers. It is given that 7A3 is exactly divisible by 3. The only possible value of B is
(a) 2
(b) 5
(c) 7
(d) 8

Answer: D
136 + 5B7 = 7A3
For 7A3 to be divisible by 3, the sum of its digits must be divisible by 3. If A=2, then sum of digits will be 12 which is divisible by 3. If A = 5, then sum of digits will be 15 which is divisible by 3. If A = 8, then sum of digits will be 18 which is divisible by 3.

When A=2, 7A3 is 723. Then B should be 8.
When A = 5, 7A3 is 753. 753-136= 617 which is not equal to 5B7.
When A=8, 7A3 is 783. 783-136=647 which is not equal to 5B7.

So the only possible value is B=8

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

India's economic footprint, given its population, still remains small compared to the US, the European Union or China. It has much to learn from other economies, yet must implement solutions that fit its unique circumstances. India especially needs an effective long-term regulatory system based on collaboration rather than the ' current top-down approach. Regulations seek desirable outcomes yet are repeatedly used as political tools to push one agenda or another. Often, regulations fail to consider impacts on jobs and economic growth — or less restrictive alternatives. Regulations may be used to protect local markets at the expense of more widely shared prosperity in the future. Additionally, regulations inevitably result in numerous unintended consequences. In today's hyper competitive global economy, regulations need to be viewed as "weapons" that seek cost-justified social and environmental benefits while improving the economic well-being of most citizens.

61. Which one of the following is the most logical, rational and crucial inference that can be derived from the above passage ?
(a) A better regulatory system will help India achieve the size of economy appropriate to its population.
(b) In a competitive global economy, India must use regulations strategically.
(c) Regulations in India do not favour its integration with today's hyper competitive global economy.
(d) Job creation and economic growth should be dominant considerations in developing India's regulatory system.

Answer: B

Option a is wrong: A better regulatory system may or may not help India achieve the size of economy appropriate to its population. We cannot infer that it will help India grow its size of economy.

Option b is correct: Regulations also bring unintended consequences, so they should be used strategically.

Option c is incorrect: Regulations favour its integration with hyper competitive global economy as they are used as political tools.

Option d is incorrect: Job creation and economic growth should not be the dominant considerations in developing India's regulatory system, India should use regulations strategically.

62. On the basis of the above passage, the following assumptions have been made :
In today's global economy,
1. regulations are not effectively used to protect local markets.
2. social and environmental concerns are generally ignored by the governments across the world while implementing the regulations.
Which of the above assumptions is/are valid ?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: C

Passage — 2

In a study, scientists compared the microbiomes of poorly nourished and well nourished infants and young children. Gut microbes were isolated from faecal samples of malnourished and healthy children. The microbiome was "immature" and less diverse in malnourished children compared to the better developed "mature" microbiome found in healthy children of the same age. According to some studies, the chemical composition of mother's milk has shown the presence of a modified sugar (sialylated oligosaccharides). This is not utilized by the baby for its own nutrition. However, the bacteria constituting the infant's microbiome thrive on this sugar which serves as their food. Malnourished mothers have low levels of this sugar in their milk. Consequently, the microbiomes of their infants fail to mature. That in turn, leads to malnourished babies.

63. Which one of the following is the most logical, rational and crucial inference that can be derived from the above passage ?
(a) If malnourished condition in children is caused by gut bacteria, it cannot be treated.
(b) The guts of malnourished babies should be inoculated with mature microbiomes.
(c) Babies of malnourished mothers should be fed with dairy milk fortified with sialylated oligosaccharides instead of mother's milk.
(d) Research on benign effects of gut bacteria on nutrition has policy implications.

Answer: C

64. On the basis of the above passage, the following assumptions have been made :
1. Processed probiotic foods are a solution to treat the children suffering from malnutrition due to immature gut bacteria composition.
2. The babies of malnourished mothers generally tend to be' malnourished. Which of the above assumptions is/are valid?
(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: C

Passage – 3

Temperatures have risen nearly five times as rapidly on the Western Antarctic Peninsula than the global average over the past five decades. Researchers have now found that melting glaciers are causing a loss of species diversity among benthos in the coastal waters off the Antarctic Peninsula, impacting an entire seafloor ecosystem. They believe increased levels of suspended sediment in water to be the cause of the dwindling biodiversity in the coastal region.

65. On the basis of the above passage, the following assumptions have been Made :
1. Regions of glaciers warm faster than other regions due to global warming.
2. Global warming can lead to seafloor sedimentation in some areas.
3. Melting glaciers can reduce marine biodiversity in some areas.
Which of the above assumptions is/are valid?
(a) 1 and 2 only
(b) 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

Answer: D

Passage - 4

A research team examined a long-term owl roost. Owls prey on small mammals and the excreted remains of those meals that accumulated over the time, provide us an insight into the composition and structure of small mammals over the past 'millennia. The research suggested that when the Earth went through a period of rapid warming about 13,000 years ago, the small mammal community was stable and resilient. But, from the last quarter of the nineteenth century, human-made changes to the environment had caused an enormous drop in biomass and energy flow. This dramatic decline in energy flow means modern ecosystems are not adapting as easily as they did in the past.

66. On the basis of the above passage, the following assumptions have been made :
1. Global warming is a frequently occurring natural phenomenon.
2. The impending global warming will not adversely affect small mammals.
3. Humans are responsible for the loss of the Earth's natural resilience.
Which of the above assumptions is/are valid ?
(a) 1 and 2 only
(b) 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

Answer: B
Statement 1 is invalid: The passage says that earth went through a rapid period of warming 13000 years ago. But it does not say that global warming is a frequently occurring natural phenomenon.
Statement 2 is invalid: The last sentence of the passage states that modern ecosystems are not easily adapting to the changes occurring in environment for which man is the reason. That means that small mammals will be affected by the changes.
Statement 3 is valid: The passage says that when earth underwent rapid warming 13000 years ago, the small mammal community was stable and resilient. But since the last quarter of 19th century, mammals are unable to adapt to the changes which are caused by humans.

Passage — 5

Food varieties extinction is happening all over the world --- and it is happening fast. For example, of the 7,000 apple varieties that were grown during the nineteenth century, fewer than a hundred remain. In the Philippines, thousands of varieties of rice once thrived; now only up to a hundred are grown there. In China, 90 percent of the wheat varieties cultivated just a century ago have disappeared. Farmers in the past painstakingly bred and developed crops well suited to the peculiarities of their local climate and environment.

In the recent past, our heavy dependence on a few high yielding varieties and technology-driven production and distribution of food is causing the dwindling of diversity in food crops. If some mutating crop disease or future climate change decimates the few crop plants we have come to depend on to feed our growing population, we might desperately need some of those varieties we have let go extinct.

67. On the basis of the above passage, the following assumptions have been made :
1. Humans have been the main reason for the large scale extinction of plant species.
2. Consumption of food mainly from locally cultivated crops ensures crop diversity.
3. The present style of production and distribution of food will finally lead to the problem of food scarcity in the near future.
4. Our food security may depend on our ability to preserve the locally cultivated varieties of crops.
Which of the above assumptions are valid ?
(a) 1 and 3
(b) 2 and 4
(c) 2 and 3
(d) 1 and 4

Answer: D
Statement 1 is invalid: The passage does not say that humans are the main reason for large scale extinction of species though it says that heavy dependence on high yielding varieties have caused dwindling of diversity in food crops.
Statement 2 is valid: The passage says that "Farmers in the past painstakingly bred and developed crops well suited to the peculiarities of their local climate and environment". From this sentence, we can understand that consumption of local foods will ensure crop diversity.

Statement 3 is invalid: The last sentence of the passage says that if some crop disease decimates few crop plants, then we might need those varieties that have gone extinct but it does not say that there will be food scarcity due to this.

Statement 4 is valid: From the passage we can say that even if some plants decimate due to some disease, the remaining will be there to ensure us with food security.

68. If every alternative letter of the English alphabet from B onwards (including B) is written in lower case (small letters) and the remaining letters are capitalized, then how is the first month of the second half of the year written?
(a) JuLY
(b) jULy
(c) jUly
(d) jUlY

Answer: D

The series written as follows:

A b C d E f G h I j K l M n O p Q r S t U v W x Y z

So July will be written as jUlY

69. Sunita cuts a sheet of paper into three pieces. Length of first piece is equal to the average of the three single digit odd prime numbers. Length of the second piece is equal to that of the first plus one-third the length of the third. The third piece is as long as the other two pieces together. The length of the original sheet of paper is
(a) 13 units
(b) 15 units
(c) 16 units
(d) 30 units

Answer: D

Given that length of first piece is equal to average of 3 single digit odd prime numbers f= 3+5+7/3 = 15/3 = 5
Length of second piece s= 5 + t/3 ...(1)
The length of the third piece is t = f + s è t = 5 + s....(2)
Solving (1) and (2),
t=5+s=5+5+t/3 è 2t/3 = 10 è t= 15
s=10
So the length of the original sheet = 5+15+10=30 units

70. In the sequence 1, 5, 7, 3, 5, 7, 4, 3, 5, 7, how many such 5s are there which are not immediately preceded by 3 but are immediately followed by 7?
(a) 1
(b) 2
(c) 3
(d) None

Answer: A
The given sequence is 1, **5**, 7, 3, 5, 7, 4, 3, 5, 7. The number of 5s which are not immediately preceded by 3 but are immediately followed by 7 is one as bolded here.

71. A joint family consists of seven members A, B, C, D, E, F and G with three females. G is a widow and sister-in-law of D's father F. B and D are siblings and A is daughter of B. C is cousin of B. Who is E?
1. Wife of F
2. Grandmother of A
3. Aunt of C
Select the correct answer using the code given below:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Answer: D

Since D is the Father of F, F must have a wife whom we do not know right now. Since G is the sister-in-law of F who is a widow, G is female who does not have a husband but is married.

B and D are siblings. A is the daughter of B, which means B is married. C is the cousin of B means that C is the son/daughter of G.

So, E could be spouse of F or B. Since the options do not match for E to be spouse of B, we can say that E is the wife of F.

Then, E will be the grandmother of A and aunt of C.

72. Each face of a cube can be painted in black or white colours. In how many different ways can the cube be painted?
(a) 9
(b) 10
(c) 11
(d) 12

Answer: B
The following would be the ways in which the cube can be painted:

All black, all white, 1 black and 5 white, 1 white and 5 black, 2 black face which are opposite and 4 white faces, 2 white face which are opposite and 4 black faces, 2 black face which are adjacent and 4 white faces, 2 white face which are adjacent and 4 black faces, 3 black faces on a common edge, 3 black which are opposite to each other.
In total there are 10 ways.

73. How many triplets (x, y, z) satisfy the equation x + y + z = 6, where x, y and z are natural numbers?
(a) 4
(b) 5
(c) 9
(d) 10

Answer: D
Natural numbers start from 1.
The triplets which satisfy the equation x+y+z=6 are (2,2,2), (1,1,4), (3, 2, 1).
The triplet (1, 1, 4) can be arranged in 3 ways. The triplet (3, 2, 1) can be arranged in 3! = 6 ways
The total number of ways = 1+3+ 6 = 10

74. If $ means 'divided by'; @ means 'multiplied by'; # means 'minus', then the value of 10#5@1$5 is
(a) 0
(b) 1
(c) 2
(d) 9

Answer: D

$ = /
@ = x
# = -
10#5@1$5 = 10-5x1/5 = 10-1 = 9

75. An 8-digit number 4252746B leaves remainder 0 when divided by 3. How many values of B are possible?
(a) 2
(b) 3
(c) 4
(d) 6

Answer: C
A number is divisible by 3, when the sum of its digits is a multiple of 3.
Sum of the digits of the number = 4+2+5+2+7+4+6+B = 30+B = (30, 33, 36, 39)
30, 33, 36 & 39 are divisible by 3. So, B can be 0 or 3 or 6 or 9.

Directions for the following 3 (three) items:
Read the following information and answer the three items that follow:

Six students A, B, C, D, E and F appeared in several tests. Either C or F scores the highest. Whenever C scores the highest, then E scores the least. Whenever F scores the highest, B scores the least. In all the tests they got different marks; D scores higher than A, but they are close competitors; A scores higher than B; C scores higher than A.

76. If F stands second in the ranking, then the position of B is
(a) Third
(b) Fourth

(c) Fifth
(d) Sixth

Answer: C

When C scores the highest, then E scores the least.
C _ _ _ _ E ..... case (1)
1st 2nd 3rd 4th 5th 6th

Whenever F scores the highest, B scores the least.
F _ _ _ _ B .....case (2)
1st 2nd 3rd 4th 5th 6th

Since D scores higher than A, but they are close competitors, D>A and D must be the next highest scorer to A.
A scores higher than B à D > A > B ...(3)
C scores higher than A. à C > D> A .... (4)
That means, C > A > B
For F to stand 2nd in the ranking, it must be the case (1) and from (3)
C F D A B E
1st 2nd 3rd 4th 5th 6th

So, the position of B is 5th.

77. If B scores the least, the rank of C will be
(a) Second
(b) Third
(c) Fourth
(d) Second or third

Answer: D
B scoring least must be 2nd case

F _ _ _ _ B
1st 2nd 3rd 4th 5th 6th

D>A

So we can place C, E, D and A in the following ways.

F C D A E B
1st 2nd 3rd 4th 5th 6th

F C E D A B
1st 2nd 3rd 4th 5th 6th

F E C D A B
1st 2nd 3rd 4th 5th 6th

So C will be in 2nd or 3rd positions.

78. If E is ranked third, then which one of the following is correct?
(a) E gets more marks than C
(b) C gets more marks than E
(c) A is ranked fourth
(d) D is ranked fifth

Answer: B
From the above we can see that, if E is ranked 3rd
F C E D A B
1st 2nd 3rd 4th 5th 6th
C gets more marks than E

Directions for the following 2 (two) items:
Read the following statements SI and S2 and answer the two items that follow:
S1: Twice the weight of Sohan is less than the weight of Mohan or that of Rohan.
S2: Twice the weight of Rohan is greater than the weight of Mohan or that of Sohan.

79. Which one of the following statements is correct?
(a) Weight of Mohan is greatest
(b) Weight of Sohan is greatest
(c) Weight of Rohan is greatest
(d) 'Whose weight is greatest' cannot be determined

Answer: D
From statement 1, since twice the weight of Sohan is less than the weight of Mohan or that of Rohan means that the weight of Mohan is greater than Sohan or the weight of Rohan is greater than that of Sohan. M> S or R > S

From statement 2, 2R > M, 2R > S. We cannot say anything conclusively whose weight is greatest.

So from both the statements together we can say that Sohan is the lightest but we cannot determine whose weight is greatest.

80. Which one of the following statements is correct?
(a) Weight of Mohan is least
(b) Weight of Sohan is least
(c) Weight of Rohan is least
(d) 'Whose weight is least' cannot be determined

Answer: B
From statement 1, since twice the weight of Sohan is less than the weight of Mohan or that of Rohan means that the weight of Mohan is greater than Sohan or the weight of Rohan is greater than that of Sohan. M> S or R > S

From statement 2, 2R > M, 2R > S. We cannot say anything conclusively whose weight is greatest.

So from both the statements together we can say that weight of Sohan is least.