

CAT 2013 SOLVED PAPER

(Memory Based)

Section I : QA & DI

1. Arrange the numbers 2^6 , 3^4 and 5^3 in ascending order.

(a) $2^6 > 3^4 > 5^3$

2 3 7

(c) $5^3 > 3^4 > 2^6$

7 3 2

(b) $3^4 > 2^6 > 5^3$

3 7 2

(d) None of these

2. During his trip to England, Mr. Clockilal, a horologist, decided to visit 'The Cuckooland Museum' dedicated to the exhibition of cuckoo clocks. He entered the museum between 12 noon and 1 p.m. The moment he entered the museum, he observed that the angle between the minute hand and the hour hand of one of the clocks was 20° . While leaving the museum, he observed that the angle between the minute hand and the hour hand of the same clock was 220° . If he spent more than 3 hours and less than 4 hours in the museum, then how much time did he exactly spend in the museum?

(a) 3 hours $52\frac{8}{11}$ minutes

(b) 3 hours $53\frac{4}{11}$ minutes

(c) 3 hours $38\frac{2}{11}$ minutes

(d) Either (a) or (c)

3. At how many points do the graphs of $y = \frac{1}{x}$ and $y = x^2 - 4$ intersect each other?

(a) 0

(b) 1

(c) 2

(d) 3

4. Muniram made an investment of 10 lakh in Axim Dynamic Bond. The variation in fund value of the bond with respect to time follows a polynomial with degree 2.

2. Due to precarious market condition, the fund value of the investment becomes 50% of the investment at the end of 2nd year. If the fund value becomes 150% of the investment at the end of 4th year, then what is the absolute difference (in lakh) between the investment and the fund value of the bond at the end of 8th year?

(a) 80

(b) 70

(c) 75

(d) 60

5. If $E = 3 + 8 + 15 + 24 + \dots + 195$, then what is the sum of the prime factors of E?

(a) 29

(b) 31

(c) 33

(d) 23

6. The ratio of alcohol to water in an alcohol-water solution is 9 : 1. The rate of evaporation per hour of alcohol and water on boiling is 20% and 5% respectively. The minimum number of hours for which the solution needs to be boiled so as it contains at least 18% of water?

(a) 3

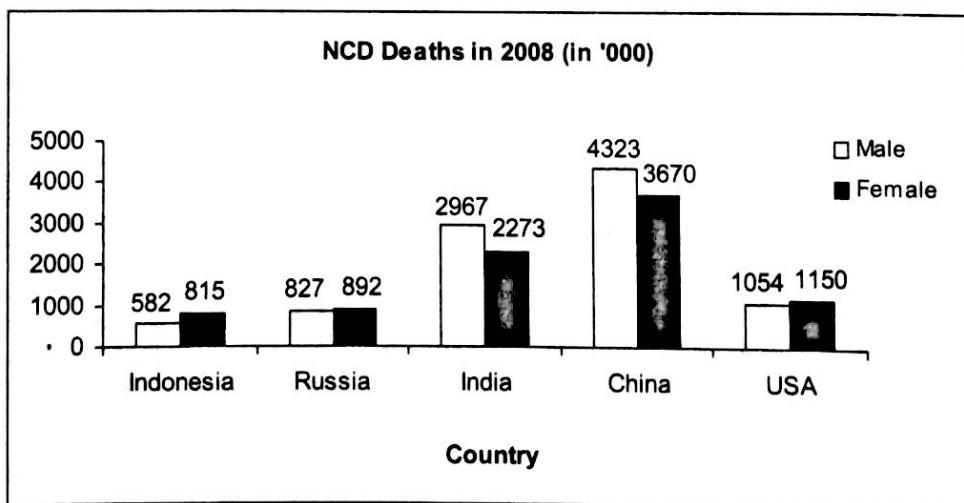
(b) 4

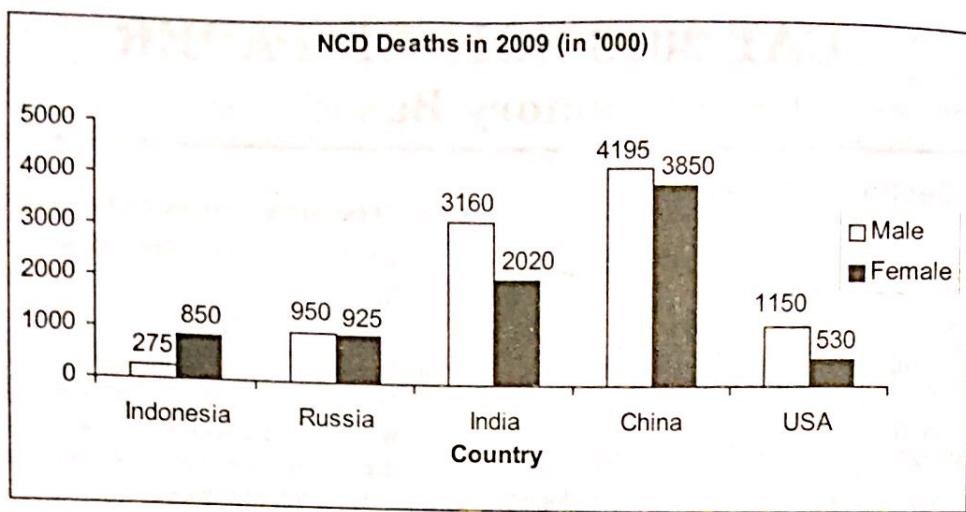
(c) 3.5

(d) 4.5

Directions for questions 7 to 9: Answer the questions on the basis of the information given below.

The bar graphs given below show the gender-wise deaths (in '000) due to NCDs (Non Communicable Diseases) in five countries for the years 2008 and 2009.



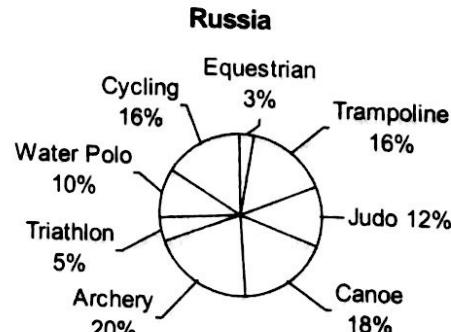
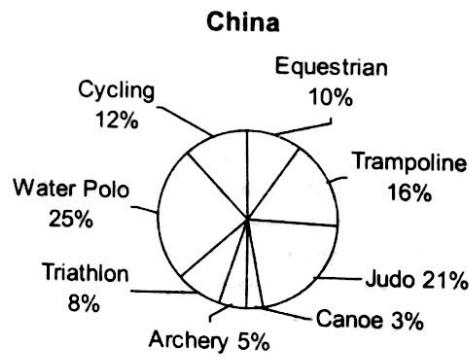
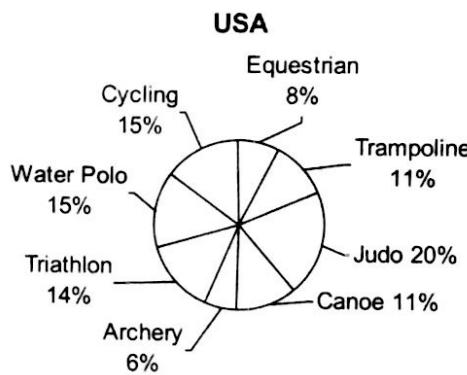


7. In how many countries was the number of deaths due to NCDs in 2009 less than that in 2008?
- 1
 - 2
 - 3
 - 4
8. By what percent was the total number of female deaths due to NCDs in the five countries put together in 2009 more/less than that in 2008?
- 7.10
 - 6.40
 - 8.60
 - 7.90
9. What was the absolute difference between the total number of male deaths due to NCDs in the five countries put together in 2008 and 2009?
- 22500
 - 23000
 - 24000
 - None of these
10. If $f(x) = (\sec x + \operatorname{cosec} x)(\tan x - \cot x)$ and $\frac{\pi}{4} < x < \frac{\pi}{2}$, then $f(x)$ lies in the range of
- $[0, \infty)$
 - $(0, \infty)$
 - $(-\infty, 0]$
 - None of these
11. How many triangles can be drawn by joining any three vertices of a pentagon?
- 8
 - 9
 - 11
 - 10
12. In the figure given below, AB is a diameter of the circle. If $AB \parallel CD$, $AC \parallel BE$ and $\angle BAE = 35^\circ$, then the absolute difference between $\angle CDB$ and $\angle ABD$ is
- (a) 90°
 (b) 70°
 (c) 55°
 (d) 125°
13. Let $S = \{1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12\}$. The number of subsets of S comprising composite number(s) only and that of those comprising prime number(s) only are N_1 and N_2 respectively. What is the absolute difference between N_1 and N_2 ?
- 0
 - 32
 - 48
 - 24
14. E is a point on the side AB of a rectangle ABCD, the adjacent sides of which are in the ratio 2 : 1. If $\angle AED = \angle DEC$, then what is the measure of $\angle AED$?
- 15°
 - 45°
 - 75°
 - Either (a) or (c)
- Directions for questions 15 to 17:** Answer the questions on the basis of the information given below.
- The table given below shows the data related to a few key financial indicators for fourteen European countries in the FY 2011-12.
- | Country | Inflation (%) | Long-term interest rate (% p.a.) | Debt to GDP ratio (in %) | Fiscal-deficit (as a % of GDP) |
|-------------|---------------|----------------------------------|--------------------------|--------------------------------|
| Austria | 2.2 | 3.4 | 70.2 | 4.8 |
| Belgium | 3.4 | 3.9 | 100.8 | 4.8 |
| Cyprus | 2.2 | 4.6 | 61.1 | 5.7 |
| Denmark | 2.2 | 3 | 46.6 | 4.6 |
| Estonia | 2.4 | 5.7 | 7.7 | 1.7 |
| Finland | 1.1 | 3.1 | 45.4 | 3.4 |
| France | 1.5 | 3.3 | 83.5 | 8 |
| Germany | 1.9 | 2.9 | 74.8 | 4.5 |
| Italy | 1.4 | 4.6 | 118 | 5.1 |
| Latvia | 1.2 | 7.5 | 48 | 8.6 |
| Malta | 1.7 | 4.4 | 72 | 3.8 |
| Netherlands | 1.1 | 3.1 | 64.6 | 5.6 |
| Poland | 2.4 | 5.9 | 53.9 | 7.3 |
| Portugal | 1.1 | 6.5 | 83.2 | 7.3 |
15. If the Fiscal-deficit of France was x Euros, which was 50% more than that of Belgium, then what was the Debt (in Euros) of Belgium in FY 2011-12?
- $13x$
 - $7x$
 - $14x$
 - $6.5x$

16. The countries with the Long-term interest rate less than 4% per annum, Debt to GDP ratio less than 60% and Fiscal-deficit not more than 4.6% were given a AAA rating. The number of countries rated AAA among the fourteen in FY 2011-12 was
(a) 0 (b) 1
(c) 2 (d) None of these
17. If the GDP (in Euros) of Finland was 50% more than that of Italy, then by what percent was the Fiscal-deficit (in Euros) of Italy more/less than that of Finland in FY 2011-12?
(a) 0
(b) 1.5
(c) 0.5
(d) Cannot be determined
18. 'ab' is a two-digit prime number such that one of its digits is 3. If the absolute difference between the digits of the number is not a factor of 2, then how many values can 'ab' assume?
(a) 5 (b) 3
(c) 6 (d) 8
19. A spherical ball of the maximum possible volume is placed inside a right-circular cone of height 'h' units. If the radius of the base of the cone is equal to $h/\sqrt{3}$ units, then the ratio of the volume of the sphere to that of the cone is
(a) 4 : 9 (b) 5 : 9
(c) $1 : \sqrt{3}$ (d) $2 : 3\sqrt{3}$
20. Let $f(x) = ax^2 + bx + c$, where a, b and c are real numbers and $a \neq 0$. If $f(x)$ attains its maximum value at $x = 2$, then what is the sum of the roots of $f(x) = 0$?
(a) 4 (b) -2
(c) 8 (d) -4
21. In how many ways can 18 identical candies be distributed among 8 children such that the number of candies received by each child is a prime number?
(a) 4 (b) 8
(c) 28 (d) 12
22. Anushka and Anirudh working together can complete a piece of work in 20 days. They started the work together, but Anushka left after x days and Anirudh finished the remaining work in the next $x/2$ days. Had Anushka left after $3x/4$ days, Anirudh would have taken x days to finish the remaining work. Find the ratio of the efficiency of Anushka to that of Anirudh.
(a) 2 : 3 (b) 3 : 2
(c) 2 : 1 (d) 1 : 1
23. The number of factors of the square of a natural number is 105. The number of factors of the cube of the same number is 'F'. Find the maximum possible value of 'F'.
(a) 208 (b) 217
(c) 157 (d) 280
24. Let $R(x) = mx^3 - 100x^2 + 3n$, where m and n are positive integers. For how many ordered pairs (m, n) will $(x - 2)$ be a factor of $R(x)$?
(a) 16 (b) 17
(c) 18 (d) 15

Directions for questions 25 to 27: Answer the questions on the basis of the information given below.

The pie charts given below show the distribution of the number of athletes sent by three countries to take part in eight different games in the recently held Olympics. The numbers of athletes sent by USA, China and Russia were in the ratio 8 : 11 : 5. It is also known that the total number of athletes sent by the three countries put together was 2400.



25. The female to male ratio for Cycling athletes from Russia and USA was 1 : 19 and 4 : 1 respectively. If the number of female Cycling athletes was equal to the number of male Cycling athletes for the three countries put together, then what was the number of female Cycling athletes from China?
- (a) 4 (b) 96
 (c) 66 (d) None of these
26. What was the absolute difference between the maximum number of athletes sent by China for a game and the minimum number of athletes sent by Russia for a game?
- (a) 260 (b) 160
 (c) 242 (d) 145
27. The number of Water Polo athletes constituted what percent of the total number of athletes sent by the three countries put together?
- (a) 20.00 (b) 18.90
 (c) 22.30 (d) 18.54
28. How many natural numbers divide exactly one out of 1080 and 1800, but not both?
- (a) 20 (b) 42
 (c) 24 (d) 36
29. The coefficient of $a^{12}b^8$ in the expansion of $(a^2 + b)^{13}$ is
- (a) $\frac{13!}{12! 6!}$ (b) $-\frac{13!}{6! 8!}$
 (c) $\frac{13!}{6! 8!}$ (d) None of these
30. Once upon a time, the king of a jungle planned a 2-kilometre race between a rabbit and a tortoise. Soon after the start of the race, the rabbit took a huge lead. On realizing that even after taking a nap of 't' min, he would beat the tortoise by 13 min, he stooped under a tree and went to sleep. Meanwhile the tortoise kept walking. When the rabbit woke up, he realized that he had slept for $(14 + t)$ min, and immediately started running towards the target at a speed $\frac{3}{2}$ times his original speed. The race eventually ended in a dead heat. If the ratio of the original speed of the rabbit to that of the tortoise was $6 : 1$ and the rabbit overstretched his nap by $1\frac{1}{6}t$ min, then how long did the tortoise take to complete the race?
- (a) 24 min (b) 30 min
 (c) 28 min (d) 36 min
31. A paragraph is given below from which the last sentence has been deleted. From the given options, choose the one that completes the paragraph in the most appropriate way.
- Twenty some years ago I took my family (wife, toddler, and infant) to the National Gallery of Art, in Washington, D.C. At one point I found myself alone, and I suddenly questioned my assumption that the toddler, my son, was with my wife, who also had the infant. As I stood in a gallery looking around for them, I saw a security guard framed in the door of an adjacent room. He was at first (as guards often are) as staid and unmoving as the statuary he was protecting.
- (a) Suspecting the worst, I ran into the room and saw my son, who wasn't with my wife, swinging on the frame of a huge painting.
 (b) My eyes then moved on to the painting that I had almost become the proud owner of, Peter Paul Rubens' Daniel in the Lions' Den.
 (c) As I glanced at him again, there came a crowd streaming inside the hall which made me curious for the reason of the commotion.
 (d) Suddenly he flinched, gasped, and pointed agitatedly, horror smearing across his face.
32. A paragraph is given below from which the last sentence has been deleted. From the given options, choose the one that completes the paragraph in the most appropriate way.
- Historians have established that parts of Bangalore were inhabited since the time of the Western Ganga dynasty (AD 350 to AD 550) and played a role in the fortunes of the Chola, Hoysala and Vijaynagar empires, as the place was situated in a strategic location at the center of the South Indian peninsula. In spite of this hoary history, the founding date of the city is usually given as AD 1537 when Kempe Gowda I built a mud fort which was later fortified by Haider Ali in the 18th century. This fort was the nucleus of what is now commonly known as the "pete" area, a Bangalore that preceded the arrival of the British. With the defeat of Tipu Sultan in Srirangapatnam, the British army garrisoned itself in the vicinity of the old city area of Bangalore, thus laying the foundation of Bangalore Cantonment in the early 19th century.
- (a) For a significant part of its history, Bangalore was a divided city.
 (b) Through the 19th century the Cantonment gradually expanded and acquired a distinct cultural and political salience as it was governed directly by the British.

- (c) This was the beginning of a very different Bangalore from the one that existed around the old fort.
- (d) The overwhelming influence of the British also bequeathed a particularly libertarian cultural character to the Cantonment that the conservative residents of the city both loathed and longed for at the same time.
33. Five sentences are given below labeled A, B, C, D and E. They need to be arranged in a logical order to form a coherent paragraph/passage. From the given options, choose the most appropriate one.
- A. At the critical moment, a canopy conceals the act of anointment, by a priest not a civil official.
 - B. The conferring of state headship is an exclusive Anglican ritual, steeped in the Henrician Reformation.
 - C. The Queen is serene and vulnerable, flanked by fussing bishops and ranks of hereditary peers, symbolising the legitimacy of inherited office.
 - D. Succession is sanctioned and blessed by God, with a staged cry of assent from the congregation.
 - E. The Queen's 1953 coronation, to be reprised many times on television this weekend, now seems medieval in its costumes and ritual.
- (a) BDACE (b) EBCAD
(c) BECAD (d) ECBAD
34. Five sentences are given below, labeled A, B, C, D and E. They need to be arranged in a logical order to form a coherent paragraph/passage. From the given options, choose the most appropriate one.
- A. Logic suggests that Japanese food should not do well in North Indian fish-hating markets.
 - B. But sushi is all the rage because teenagers love it.
 - C. Over the last decade, new restaurants have opened and turned the conventional wisdom on its head.
 - D. Similarly, the fast food chains which survive on wheat (pizzas, pasta, hamburger buns, etc.) should all flop in the rice-loving South.
 - E. My guess is that the differences will be ironed out as the new generation comes of age.
- (a) ECABD (b) ABDEC
(c) CABED (d) EABDC
35. A paragraph is given below from which the last sentence has been deleted. From the given options, choose the one that completes the paragraph in the most appropriate way.
- When India revised its policy with respect to foreign investment, the country's balance of payments

difficulties had not been resolved. However, the presumption was that foreign firms would use India as a base for world market production, earning the country vast amounts of foreign exchange. However, that expectation has been belied.

- (a) This makes the foreign exchange cost of liberalization high and its implications for India's balance of payments adverse.
- (b) Unable to limit foreign presence as a result, the government in those years opted for regulation to reduce the cost of foreign presence.
- (c) That experience suggested that policy favouring foreign capital partly explained India's retarded development.
- (d) Foreign firms do not engage in export, but their principal target remains the domestic market.
36. Four sentences are given below labeled (a), (b), (c) and (d). Of these, three sentences need to be arranged in a logical order to form a coherent paragraph/passage. From the given options, choose the one that does not fit the sequence.
- (a) In case of a loss of coolant accident, where there is no supply of light water coolant to circulate around the core, and fuel meltdown, the highly radioactive molten fuel core will drop down into the core catcher.
 - (b) It is a huge vessel, weighing 101 tonnes and made of stainless steel.
 - (c) Extensive research was done at the Kurchatov institute in Moscow before the catcher's design and the bricks' composition were finalized.
 - (d) Another safety feature special to the reactors is the core catcher situated on the floor of the reactor building.

Directions for questions 37 to 39: Answer the questions on the basis of the information given below.

Four teams—T1, T2, T3 and T4— participated in a tournament of 'Bat and trap', an English bat-and-ball pub game. In the tournament, each team played exactly one match with each of the other teams. The matches were played on six consecutive days of a week from Monday to Saturday. Two points were awarded to the winner of a match and no points to the loser. No match in the tournament resulted in a tie/draw. It is also known that:

- I. T1 won only one match in the tournament and it was played on Monday.
- II. The match played on Thursday was won by T4.
- III. T3 won against T2 on Tuesday.
- IV. T2, T3 and T4 definitely did not play on Wednesday, Monday and Saturday respectively.
- V. T2 and T3 ended up with the same number of points at the end of the tournament.

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37. How many points did T4 score in the tournament?
- 2
 - 4
 - 6
 - Cannot be determined
38. T3 lost its match against
- T1
 - T2
 - T4
 - Both T1 and T2
39. The match played on Friday was between
- T1 and T2
 - T2 and T3
 - T1 and T4
 - T2 and T4
40. Four sentences are given below labeled (a), (b), (c) and (d). Of these, three sentences need to be arranged in a logical order to form a coherent paragraph/passage. From the given options, choose the one that does not fit the sequence.
- Nostalgia and wonder are the two emotions that dominate visitors' minds when they view the quaint collection of artwork harking back to an idyllic Bangalore, in Fernandes' small gallery, aPauology.
 - Thus nostalgia works at several levels, and as humans think that the condition of their lives is improving as they head into the future, a part of their mind also harks back to a supposedly simpler time when life was more peaceful.
 - Nostalgia can exist only when there is a linear conception of time and modernity, with its notion of progress, is deeply intertwined with the concept of nostalgia.
 - And Fernandes' work satiates that hunger for nostalgia an old Bangalorean would have.
41. The word given below has been used in the given sentences in four different ways. Choose the option corresponding to the sentence in which the usage of the word is *incorrect or inappropriate*.
- Buy***
- The negotiators kept the gunman talking to buy time for the hostages.
 - She had never bought into the idea that to be attractive you have to be thin.
 - Joe finally bought it in a plane crash in Tunisia.
 - Supermarkets have been buying out champagne for Christmas.
42. There are two gaps in the sentence/paragraph given below. From the pairs of words given, choose the one that fills the gaps most appropriately.
- It's the vulnerability of the political father-figure, played strategically to bring out something deeper from the _____ than civil obedience, something more like _____ love.
- populace, unquestioning
 - society, irrevocable
 - generality, unrequited
 - opposition, inevitable

43. Given below are five sentences or parts of sentences that form a paragraph. Identify the sentence(s) or part(s) of sentence(s) that is/are incorrect in terms of grammar and usage. Then, choose the most appropriate option.
- Since the breakdown of political formality, pictures have stood for a different message, for which the umbrella term is "down to earth".
 - This down-to-earthness has myriad elements, most of it contradictory or impossible.
 - For instance, to be down-to-earth you have to like sport; to like sport you have to choose a team; but if you go and see your team, you are no longer down-to-earth because you can afford a ticket.
 - If you pretend that you can't afford a ticket, you're disingenuous; if you shrug and say, "I can get a free ticket to anything, I'm prime minister", you're reasonable but you have squandered the advantage you gained in liking sport in the first place.
 - Realistically, all one can do is pretend you're too busy to watch sport, which works OK for the harassed, sleep-deprived, Thatcher-model premier, but couldn't possibly wash for David "Fruit Ninja" Cameron.
- A, C and E
 - B, D and E
 - B, C and D
 - A, B and E
44. Given below are five sentences or parts of sentences that form a paragraph. Identify the sentence(s) or part(s) of sentence(s) that is/are incorrect in terms of grammar and usage. Then, choose the most appropriate option.
- The central question to answering in judging the proportionality of this sentence is whether the desire to punish a whistleblower driven by moral outrage stems from the alleged harm he did US military and diplomatic interests, or whether it derives more from sheer embarrassment.
 - The judge presiding, Col Denise Lind, had already thrown out the gravest of charge, that of "aiding the enemy".
 - Col Lind had also limited the admissibility of evidence regarding the "chilling effects" that Mr Manning's actions had on US diplomacy by releasing 250,000 state department cables.
 - A military witness conceded there was no evidence that anyone had been killed after being named in the releases.

E. Mr Manning's recent apology for his actions does not, and should not, detract from the initial defence he gave for it, when he spoke of his shock at the "delightful bloodlust" displayed by that helicopter crew, or his belief that stimulating a debate about the wars was the right thing to do.

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

45. There are two gaps in the sentence/paragraph given below. From the pairs of words given, choose the one that fills the gaps most appropriately.

For Septimius Severus stood as a _____ reminder of what Libya had once been: a Mediterranean region of immense cultural and economic wealth, anything but _____ from the world beyond the sea.

- (a) constant, analogous
- (b) wistful, isolated
- (c) steady, different
- (d) nostalgic, indistinguishable

Directions for questions 46 to 48: Answer the questions on the basis of the information given below.

Eight persons are sitting at a rectangular table such that four persons are sitting along each of the longer sides of the table. Each person works in a different bank among PNB, SBI, HDFC, ICICI, CBI, BOB, BOI and Citi, and holds a different designation among IT Officer, Marketing Officer, Law Officer, Agricultural Officer, Rajbhasha Adhikari, Technical Officer, Finance Officer and HR Manager, not necessarily in the same order. It is also known that:

- I. The Finance Officer, who works in BOI, is sitting to the immediate left of the HR Manager.
 - II. The Marketing Officer, who works in SBI, is sitting opposite the Technical Officer.
 - III. The Agricultural Officer, who works in ICICI, is sitting diagonally opposite the Rajbhasha Adhikari, who is sitting to the immediate left of the Technical Officer.
 - IV. The Law Officer, who works in HDFC, is sitting to the immediate left of the Marketing officer.
 - V. The persons who work in PNB and HDFC are sitting along the same side of the table.
 - VI. The Rajbhasha Adhikari, who works in CBI, is sitting at one of the extreme ends in his row.
46. Who is sitting to the immediate right of the Finance Officer?

- (a) Agricultural Officer
- (b) Technical Officer
- (c) Marketing Officer
- (d) None of these

47. For how many persons can we definitely determine the banks in which they work?

- (a) 8 (b) 6
- (c) 4 (d) None of these

48. The person who is sitting opposite the Law Officer works in

- (a) BOI (b) ICICI
- (c) BOB (d) Cannot be determined

Directions for questions 49 to 51: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

It's argued that retribution is used in a unique way in the case of the death penalty. Crimes other than murder do not receive a punishment that mimics the crime - for example rapists are not punished by sexual assault and people guilty of assault are not ceremonially beaten up.

Camus and Dostoevsky argued that the retribution in the case of the death penalty was not fair, because the anticipatory suffering of the criminal before execution would probably outweigh the anticipatory suffering of the victim of their crime. Others argue that the retribution argument is flawed because the death penalty delivers a 'double punishment'; that of the execution and the preceding wait, and this is a mismatch to the crime.

Many offenders are kept 'waiting' on death row for a very long time; in the USA the average wait is 10 years. In Japan, the accused are only informed of their execution moments before it is scheduled. The result of this is that each day of their life is lived as if it was their last.

Some lawyers argue that capital punishment is not really used as retribution for murder, or even consistently for a particular kind of murder. They argue that, in the USA at least, only a small minority of murderers is actually executed, and that imposition of capital punishment on a "capriciously selected random handful" of offenders does not amount to a consistent programme of retribution. Since capital punishment is not operated retributively, it is inappropriate to use retribution to justify capital punishment. This argument would have no value in a society that applied the death penalty consistently for particular types of murder.

Some people who believe in the notion of retribution are against capital punishment because they feel the death penalty provides insufficient retribution. They argue that life imprisonment without possibility of parole causes much more suffering to the offender than a painless death after a short period of imprisonment.

The death penalty doesn't seem to deter people from committing serious violent crimes. The thing that deters is the likelihood of being caught and punished. The general consensus among social scientists is that the deterrent effect of the death penalty is at best unproven.

49. Which of the following options presents the main idea of the given passage?
- The death penalty itself does not serve its purpose of retribution for heinous crimes and neither does it act as a means of deterrence.
 - The use of the death penalty as a means of retribution needs to be reconsidered as it fails to serve its purpose.
 - The argument of retribution in the favour of death penalty is flawed as it amounts to a punishment not matching the crime, owing to the anticipatory suffering of the guilty.
 - Capital punishment as a just means of retribution and as a deterrent is debatable.
50. Which of the following has not been mentioned as an argument against capital punishment?
- It may not be retribution enough.
 - It can be misused to punish the innocent.
 - As a punishment, it may not match the crime committed.
 - No other crime, apart from murder, receives a punishment that mimics the crime.
- | | |
|-------------|-------------|
| (a) A and B | (b) Only B |
| (c) Only C | (d) C and D |
51. Why does the author state that retribution in the case of the death penalty is unique?
- Barring cases of murder, the death penalty does not deliver punishment that is similar to the crime.
 - The punishment mirrors the crime, unlike in crimes other than murder.
 - It brings with it an anticipatory suffering that was in all probability absent in the case of the victim of the crime.
 - The death penalty leaves no opportunity for remorse in the case of the criminal.

Directions for questions 52 to 54: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Scheibitz's paintings are often difficult to read, though most contain human presences, and many are titled as if they are portraits: Portrait Tracy Berglund; Henry Stand; Ret Marut. The names sound as invented as the shapes that make and unmake the figures in the paintings. Look long enough and Tracy Berglund appears to resolve into a female figure in a long skirt and grey jacket, holding a slice of watermelon. Or it could be cheese. Or a megaphone.

Everything looks deliberate and calculated, but at some point things stop making sense – or rather, start making a kind of sense that is all Scheibitz's own. Flat planes drift into emptiness; distracted brushstrokes wander away like someone getting lost on a walk. Perspectives

CAT 2013 SOLVED PAPER (Memory Based)

warp, geometries fall apart. The spaces between things become more insistent than the things themselves. These are very unreasonable paintings.

That's part of the pleasure. Scheibitz's work has been called "conceptual painting". I have always thought painting is a conceptual as well as a physical activity. Using fragments of graphic symbols, compound forms and motifs whose origins are often impossible to trace, the artist arrives at a kind of figuration that is at odds with itself. "I can't invent anything and I can't use what I find as it is," he recently told one interviewer. He also told me, as we looked around his show, that everything connects to everything else.

Part of Scheibitz's collection of source materials is laid out on tables at Baltic – not that they're much help. Here is a gift pack of multicoloured Harrods golf tees, then two patterned cigarette lighters, some dice, a walnut and several stones with naturally occurring right angles. How odd. And now, he has painted various objects yellow: a plaster tortoise, a paintbrush stiff with pigment, a toy car. Among all these things, traces of the shapes and contours in his paintings might be found, like lines of a song or a bit of a tune that goes round your head. There are dozens of these objects. How they are translated into elements in his paintings is anybody's guess.

The overall impression is that nothing is random. There are affinities here. Scheibitz has a good eye for an ambiguous but characterful shape. One "portrait", called John Held, is painted on a small, asymmetrically carved gravestone that sits on a plinth. It looks a bit like a face but has no features.

52. Which of the following options best explains why the author terms Scheibitz's paintings as unreasonable?
- The paintings serve to confuse more than to illuminate.
 - The paintings are not what they seem at first and need further pondering.
 - The paintings do not depend on the interpretation of the onlooker but on that of their artist.
 - The paintings require an understanding of art and its related philosophy.
53. Which of the following options can be inferred from the given passage?
- As an artist, Scheibitz deliberately thrives on creating an art that is difficult to fathom and place.
 - The paintings of Scheibitz are hard to categorise; however, this makes them all the more invigorating.
 - In Scheibitz's paintings nothing is arbitrary; everything has a reason and a place for its existence.
 - The understanding of art cannot be devoid of a philosophical conception; that is what gives art its conceptual framework.

54. Which of the following options best presents the significance of the penultimate paragraph?
- It indicates that everything that the painter is inspired by is interlinked.
 - It allows for the understanding that Scheibitz's paintings though inspired by real life may portray things in an abstract light.
 - It attests that there is a method to the painter's madness.
 - It supports the author's assertion that his paintings have to draw from real life and cannot be entirely invented.

Directions for questions 55 to 57: Answer the questions on the basis of the information given below.

A Cricket team of 11 players is to be formed from a group of 15 players—A, B, C, D, E, F, G, H, I, J, K, L, M, N and O. Among the players A, D, K, L, M, N and O are batsmen; B, C, E, F, G and H are bowlers; I and J are wicketkeepers. It is also known that:

- I. The team must have at least 5 batsmen and exactly 1 wicketkeeper.
 - II. H can be selected only if B is selected.
 - III. F can be selected only if both G and N are selected.
 - IV. If I is selected, then F is also selected.
 - V. K and M cannot be selected together for the team.
The same is true for B and G.
55. In how many ways can the team be formed?

- | | |
|-------|-------|
| (a) 3 | (b) 4 |
| (c) 5 | (d) 6 |

56. If G is one of the bowlers in the team, then who will be the wicketkeeper?
- J
 - I
 - Either (a) or (b)
 - No such team is possible
57. If H is selected, then who among the following cannot be selected in the team?

- | | |
|-------|-------|
| (a) O | (b) N |
| (c) G | (d) J |

Directions for questions 58 to 60: The poem given below is followed by a set of questions. Choose the most appropriate answer to each question.

I would not exchange the sorrows of my heart
For the joys of the multitude.
And I would not have the tears that sadness makes
To flow from my every part turn into laughter.
I would that my life remain a tear and a smile.

A tear to purify my heart and give me understanding
Of life's secrets and hidden things.
A smile to draw me nigh to the sons of my kind and
To be a symbol of my glorification of the gods.
A tear to unite me with those of broken heart;
A smile to be a sign of my joy in existence.
I would rather that I died in yearning and longing than
that I live Weary and despairing.
I want the hunger for love and beauty to be in the
Depths of my spirit, for I have seen those who are
Satisfied the most wretched of people.
I have heard the sigh of those in yearning and Longing,
and it is sweeter than the sweetest melody.
With evening's coming the flower folds her petals
And sleeps, embracing her longing.
At morning's approach she opens her lips to meet
The sun's kiss.
The life of a flower is longing and fulfilment.
A tear and a smile.
The waters of the sea become vapour and rise and come
Together and area cloud.
And the cloud floats above the hills and valleys
Until it meets the gentle breeze, then falls weeping
To the fields and joins with brooks and rivers to Return to
the sea, its home.
The life of clouds is a parting and a meeting.
A tear and a smile.
And so does the spirit become separated from
The greater spirit to move in the world of matter
And pass as a cloud over the mountain of sorrow
And the plains of joy to meet the breeze of death
And return whence it came.
To the ocean of Love and Beauty—to God.

58. Which of the following options best reflects the theme of the poem?

- Misery is necessary as it inspires the poor to find new meaning in their lives.
- The yearning of the heart helps unite those in need and opens a greater space for growth and development.
- Despair and contentment are both necessary for the growth of the individual self.
- The challenges and joys that one experiences are a necessary part of the journey of life and of one's destiny.

59. Which of the following options best explains why the poet feels that those who are Satisfied are the most wretched?
- Such people have achieved satisfaction through deplorable means.
 - They lack the longing that brings with it a sense of fulfillment and the ability to understand the secrets of life.
 - They cease to hunger for love and beauty.
 - Their lives no longer have a destiny to fulfill and all the happiness no longer forms a part of it.

60. Which of the following does the author attempt to signify while stating the example of the clouds?
- The cycle of give and take
 - The fact that all forms complete their life-cycle going through a series of partings and meetings
 - The reality that every occurrence has significance apart from the obvious
 - The co-existence of the spiritual and the worldly

Answers

1. (c)	2. (d)	3. (d)	4. (b)	5. (b)	6. (b)	7. (c)	8. (a)	9. (b)	10. (b)
11. (d)	12. (b)	13. (c)	14. (c)	15. (c)	16. (c)	17. (a)	18. (b)	19. (a)	20. (a)
21. (c)	22. (d)	23. (d)	24. (a)	25. (c)	26. (a)	27. (d)	28. (a)	29. (d)	30. (b)
31. (d)	32. (c)	33. (d)	34. (a)	35. (d)	36. (c)	37. (a)	38. (c)	39. (d)	40. (a)
41. (d)	42. (a)	43. (b)	44. (a)	45. (b)	46. (d)	47. (b)	48. (a)	49. (d)	50. (b)
51. (b)	52. (c)	53. (c)	54. (c)	55. (d)	56. (c)	57. (c)	58. (d)	59. (c)	60. (b)

Explanations

1. LCM of 6, 4 and 3 = 12

$$\therefore 2^{\frac{7}{6}} = (2^{14})^{\frac{1}{12}}$$

$$3^{\frac{3}{4}} = (3^9)^{\frac{1}{12}}$$

$$5^{\frac{3}{4}} = (5^8)^{\frac{1}{12}}$$

It is clear from the above numbers that $5^8 > 3^9 > 2^{14}$.

2. Let the time at which Mr. Clockilal entered the museum be 'm' minutes past 12 noon.

$$\therefore \left| \frac{11}{2}m - 30 \times 0 \right| = 20 \Rightarrow m = 3\frac{7}{11}$$

As he spent more than 3 hours and less than 4 hours in the museum, and the angle between the minute and hour hands at the time of leaving was 220° , he

must have left the museum between $3:3\frac{7}{11}$ p.m.

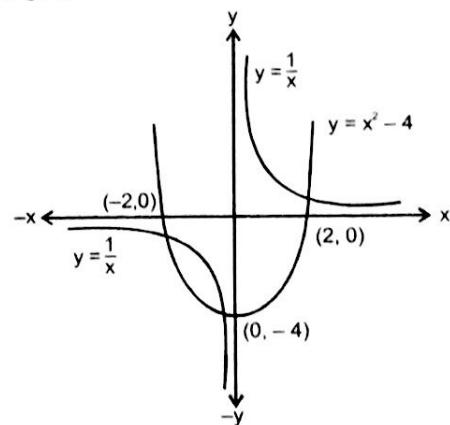
and 4 p.m.

Let the time at which he left the museum be 'n' minutes past 3 p.m.

$$\therefore \left| \frac{11}{2}n - 30 \times 3 \right| = 220 \Rightarrow n = 56\frac{4}{11} \text{ or } 41\frac{9}{11}$$

Hence, the time spent by Mr. Clockilal in the museum was either 3 hours $52\frac{8}{11}$ minutes or 3 hours $38\frac{2}{11}$ minutes.

3. The graphs of the two functions are shown below :



From the above figure, it is obvious that the graphs of the two functions intersect at three points.

4. Let the fund value follow the quadratic polynomial

$$f(x) = ax^2 + bx + c.$$

When

$$x = 0, f(x) = 10 \Rightarrow c = 10$$

When

$$x = 2, f(x) = 5$$

$$\begin{aligned}
 \Rightarrow & 4a + 2b + 10 = 5 \\
 \Rightarrow & 4a + 2b = -5 \quad \dots (i) \\
 \text{When} & x = 4, f(x) = 15 \\
 \Rightarrow & 16a + 4b + 10 = 15 \\
 \Rightarrow & 16a + 4b = 5 \quad \dots (ii) \\
 \text{Solving (i) and (ii), we get} &
 \end{aligned}$$

$$a = \frac{15}{8}, b = \frac{-25}{4}$$

\therefore Required difference

$$= \left(\frac{15}{8} \times 8^2 - \frac{25}{4} \times 8 + 10 \right) - 10 = 70.$$

5. $E = 3 + 8 + 15 + 24 + \dots + 195 = 1 \times 3 + 2 \times 4 + 3 \times 5 + 4 \times 6 + \dots + 13 \times 15$

$$\therefore T_n = n(n+2) \text{ and } n = 13$$

$$\begin{aligned}
 \therefore E &= \sum_{n=1}^{13} T_n = \sum_{n=1}^{13} n(n+2) \\
 &= \frac{n(n+1)(2n+1)}{6} + 2 \times \frac{n(n+1)}{2} \\
 &= \frac{13 \times 14 \times 27}{6} + 2 \times \frac{13 \times 14}{2} = 1001 \\
 &= 7 \times 11 \times 13
 \end{aligned}$$

Hence, the sum of the prime factors of E

$$= 7 + 11 + 13 = 31.$$

6. Let the required number of hour be h .

$$\frac{\frac{1}{h} \left(1 - \frac{5}{100} \right)^h}{9 \left(1 - \frac{20}{100} \right)^h + 1 \times \left(1 - \frac{5}{100} \right)^h} \geq \frac{18}{100}$$

Going through the options, $h = 4$ comes out to be the correct answer.

For questions 7 to 9: The given data can be tabulated as shown below.

Counties	NCD deaths in 2008			NCD deaths in 2009		
	Male	Female	Total	Male	Female	Total
Indonesia	582	815	1397	275	850	1125
Russia	827	892	1719	950	925	1875
India	2967	2273	5240	3160	2020	5180
China	4323	3670	7993	4195	3850	8045
USA	1054	1150	2204	1150	530	1680
Total	9753	8800	18553	9730	8175	17905

7. In three countries, viz. Indonesia, India and USA, the number of deaths due to NCDs in 2009 was less than that in 2008.

8. Required percentage = $\frac{8800 - 8175}{8800} \times 100 = 7.10\%$

9. Required difference = $(9753 - 9730) \times 1000 = 23000$.

10. AT $x = \frac{\pi}{4}$, $f(x) = 0$

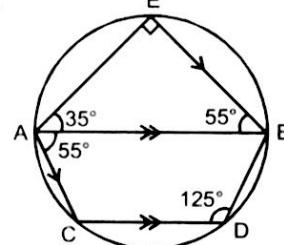
$$\text{AT } x = \frac{\pi}{2}, f(x) = \infty$$

Hence, $f(x)$ lies in the range of $(0, \infty)$.

11. \therefore No three points corresponding to the five vertices of a pentagon are collinear, by joining any of the three vertices of a pentagon, we get a triangle.

Hence, the number of triangles that can be drawn = ${}^5C_3 = 10$.

12.



$$\angle AEB = 90^\circ \text{ (Angle in a semicircle)}$$

$$\therefore \angle ABE = 180 - (90 + 35) = 55^\circ$$

$$\therefore \angle BAC = 55^\circ \text{ (Alternate interior angles)}$$

Now, $\angle CDB = 180 - 55 = 125^\circ$ (Sum of opposite angles of a cyclic quadrilateral is 180° .)

$$\therefore \angle ABD = 180 - 125 = 55^\circ$$

(Sum of interior opposite angles is 180°).

$$\text{Hence } \angle CDB - \angle ABD = 125 - 55 = 70^\circ.$$

13. The given set S has 6 composite and 4 prime numbers.

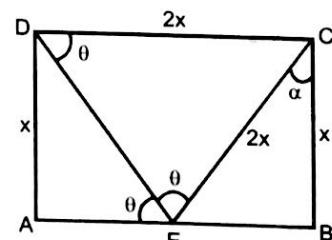
The number of subsets of S comprising composite numbers only = $2^6 - 1$

The number of subsets of S comprising prime numbers only = $2^4 - 1$

$$\text{Hence, the required difference} = (2^6 - 1) - (2^4 - 1) = 48.$$

14. Let the two sides of the rectangle be x and $2x$ and $\angle AED$ be θ .

$$\therefore \angle DEC = \theta$$



$$\therefore \angle CEB = 180 - 2\theta$$

Also, $\angle EDC = \angle AED = 0$ (AB is parallel to CD.)

In $\triangle DEC$,

$$\angle DEC = \angle EDC \Rightarrow CD = EC = 2x$$

In $\triangle BCE$,

$$\cos \alpha = \frac{x}{2x} \Rightarrow \alpha = 60^\circ$$

Now, in $\triangle BCE$

$20 = 90^\circ + 60^\circ$ (Exterior angle is equal to the sum of opposite interior angles.)

$$\Rightarrow \theta = 75^\circ.$$

15. Let the GDP of Belgium be y Euros.

$$\therefore y \times \frac{4.8}{100} \times 1.5 = x \Rightarrow y = \frac{100}{7.2} x$$

Hence, the debt (in Euros) of Belgium

$$= \frac{100.8}{100} \times \frac{100}{7.2} x = 14x.$$

16. Two countries, viz. Denmark and Finland, were rated AAA.

17. Let the GDP (in Euros) of Italy be x.

Therefore, the GDP (in Euros) of Finland = $1.5x$.

The fiscal-deficit of:

$$\text{Italy} = 0.051x$$

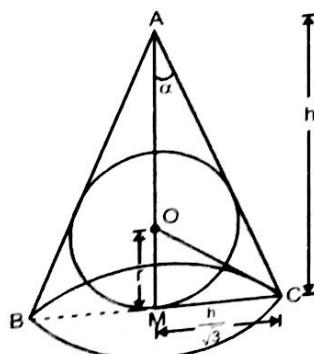
$$\text{Finland} = 0.034 \times 1.5x = 0.051x.$$

Hence, the required percentage = 0.

18. Since 'ab' is a two-digit prime number and one of its digit is 3, it can assume any of the values among 13, 23, 31, 37, 43, 53, 73 and 83.

As the absolute difference between the digits of the number is not a factor of 2, the number among the obtained numbers that satisfy the aforementioned condition are 37, 73 and 83. Hence, the number of values that 'ab' can assume is 3.

- 19.



Let the semi vertical angle of the cone be α .

$$\tan \alpha = \frac{h/\sqrt{3}}{h} \Rightarrow \tan \alpha = \frac{1}{\sqrt{3}} \Rightarrow \alpha = 30^\circ$$

The vertical angle of the cone = 60°

Therefore, the triangle ABC is an equilateral triangle.

The given case i.e. placing of a sphere of the maximum volume inside a cone will be identical to the case of inscribing a circle inside a triangle. Therefore, the center (O) of the circle will coincide with the centroid of the triangle ABC.

In triangle ACM, OC is angle bisector of $\angle ACM$.

$$\therefore \angle OCM = 30^\circ$$

In $\triangle OCM$,

$$\tan 30^\circ = \frac{r}{h/\sqrt{3}} \Rightarrow r = \frac{h}{3}$$

Hence, the ratio of the volume of the sphere to that

$$\text{of the cone} = \frac{\frac{4}{3}\pi\left(\frac{h}{3}\right)^3}{\frac{1}{3}\pi\left(\frac{h}{\sqrt{3}}\right)^2 \times h} = 4 : 9.$$

20. The sum of the roots of $ax^2 + bx + c = 0$ is $\frac{-b}{a}$.

$ax^2 + bx + c$ attains its maximum value at $x = \frac{-b}{2a}$.

$$\therefore \frac{-b}{2a} = 2 \Rightarrow \frac{-b}{a} = 4$$

Hence, the sum of the roots = 4.

21. Since the number of candies received by each child is a prime number, each child must get at least 2 candies.

Once each child has received 2 candies, the remaining 2 candies should be distributed in such a manner that the number of candies with any child after the distribution remains a prime number.

The above condition can realise only if the remaining 2 candies are given to exactly two children in such a way that both the children receive one candy each.

Hence, the number of ways of distribution = ${}^8C_2 = 28$.

22. Let the efficiencies of Anirudh and Anushka be 'a' and 'b' units/day respectively.

$$\therefore (a+b)x + a \times \frac{x}{2} = (a+b)\frac{3x}{4} + a \times x \Rightarrow \frac{a}{b} = 1$$

Hence, the required ratio is 1 : 1.

23. Let the number be N.

In order to maximize the number of factors of N^3, N^2 must be expressed as a product of as many prime factors as possible.

No. of factors of

$$\begin{aligned} N^2 &= 105 = 3 \times 5 \times 7 \\ &= (2+1)(4+1)(6+1) \end{aligned}$$

$\therefore N^2 = (a)^2(b)^4(c)^6$, where a, b and c are prime numbers.

$$\therefore N^3 = (a)^3(b)^6(c)^9$$

Hence, the number of factors of N^3

$$= (3+1) \times (6+1) \times (9+1) = 4 \times 7 \times 10 = 280.$$

24. $(x-2)$ is a factor of $R(x)$.

$$\therefore R(2) = 0$$

$$\Rightarrow m(2)^3 - 100(2)^2 + 3n = 0$$

$$\Rightarrow 8m - 400 + 3n = 0$$

$$\Rightarrow m = \frac{400 - 3n}{8} = 50 - \frac{3n}{8}$$

As m and n are positive integers, so n must be a multiple of 8. For n = 8, 16, 24, ..., 128, we get m = 47, 44, 41, ..., 2 respectively.

Hence, the number of possible values of ordered pair (m, n) is 16.

For questions 25 to 27:

The total number of athletes sent by:

$$\text{USA} = 2400 \times \frac{8}{24} = 800$$

$$\text{China} = 2400 \times \frac{11}{24} = 1100$$

$$\text{Russia} = 2400 \times \frac{5}{24} = 500$$

25. Total number of Cycling athletes sent by the three countries together

$$= 0.15 \times 800 + 0.12 \times 1100 + 0.16 \times 500 = 332$$

Total number of female Cycling athletes sent by the three countries together = 166

Number of female Cycling athletes sent by Russia

$$= \frac{1}{20} \times (0.16 \times 500) = 4$$

Number of Cycling athletes sent by USA

$$= \frac{4}{5} \times (0.15 \times 800) = 96$$

Hence, the number of female Cycling athletes sent by China = 166 - (4 + 96) = 66.

26. Maximum number of athletes sent by China for a game = $0.25 \times 1100 = 275$

Minimum number of athletes sent by Russia for a game = $0.03 \times 500 = 15$

Hence, the required difference = $275 - 15 = 260$

27. The total number of Water Polo athletes sent by the three countries put together

$$= 0.15 \times 800 + 0.25 \times 1100 + 0.10 \times 500 = 445$$

Hence, the required percentage

$$= \frac{445}{2400} \times 100 = 18.54.$$

$$28. 1080 = 2^3 \times 3^3 \times 5^1$$

$$1800 = 2^3 \times 3^2 \times 5^2$$

$$\text{HCF of } 1080 \text{ and } 1800 = 2^3 \times 3^2 \times 5$$

$$\text{Number of factors of } 1080 = 4 \times 4 \times 2 = 32$$

$$\text{Number of factors of } 1800 = 4 \times 3 \times 3 = 36$$

$$\begin{aligned} \text{Number of factors of HCF of the two numbers} \\ = 4 \times 3 \times 2 = 24 \end{aligned}$$

Hence, the required number of divisors

$$\begin{aligned} &= (32 + 36) - 2 \times 24 \\ &= 20. \end{aligned}$$

29. The expression $a^{12}b^8$ can be rewritten as $(a^2)^6b^8$.

We can observe that the sum of the powers of a^2 and b in $(a^2)^6b^8$ is $(6+8)$ i.e. 14. But in the expansion of $(a^2 + b)^{13}$ the sum of the powers of a^2 and b must be 13 in each of the terms. Hence, the given term does not exist in the expansion i.e. the required coefficient is zero.

30. The rabbit overstretched his sleeping time by

$$1\frac{1}{6}t \text{ min.}$$

$$\therefore t + 1\frac{1}{6}t = 14 + t \Rightarrow t = 12$$

Let the speed (in km/min) of the rabbit and tortoise be '6x' and 'x' respectively.

Had the rabbit not overstretched his nap, he would have beaten the tortoise by 13 min.

$$\therefore \frac{2}{6x} + 12 + 13 = \frac{2}{x} \Rightarrow x = \frac{1}{15}$$

Hence, the time taken by the tortoise to complete

$$\text{the race} = \frac{2}{x} = \frac{2}{1/15} = 30 \text{ min.}$$

31. Here, the sentence "He was at first..." indicates that while at first the guard seemed stoic, something about him will change in the next moment.

Option (a) does not mention the guard at all, as an ideal follow up sentence should.

Same is the case with option (b), where the author mentions a painting, previously unmentioned in the passage.

Option (c) does mention the guard, but does not depict any change in him. A logical extension of a sentence such as "He was at first..." will depict a change in the subject's actions or reactions whereas option (c) shifts the focus from the guard to the author as it states "As I glanced..."

- Option (d) describes a sudden change in the guard's expressions and bodily movements. Hence, it aptly follows the previous sentence in the passage. Thus, option (d) is the correct answer.
32. As the given paragraph is about an overall broad historical view of Bangalore, option (c) best fits in as the last line of the passage.
 Option (b) seems to be appropriate too but, as pointed out earlier, the given paragraph is about a broad overview of Bangalore's history, rather than the history of the cantonment per se.
 Option (a) is incorrect as it is more like an introduction to the topic, rather than the concluding line of the paragraph.
 Option (d) talks about an issue not touched upon in the given paragraph.
33. The paragraph follows a general to specific format. Starting with general statements on the Queen's coronation to bringing in more specific details - as those given in statement C. BAD is a mandatory sequence wherein sentence B states that conferring of state headship is an exclusive Anglican ritual; sentence A states what happens in the ritual – act of anointment by a priest – and sentence D states how the ritual ends – succession is sanctioned and is followed by a sort of applause by the people who have gathered there.
34. CAB forms a logical sequence. Statement C mentions the fact that conventional wisdom (accepted norms) have been turned over. Statement A introduces an example of this – how Japanese food should logically not be accepted in the fish-hating North Indian markets. Statement B presents a contrast by stating that though Sushi is a Japanese item, it is all the rage among North Indians. It also gives the reason why conventional logic has not played out with reference to the acceptance of Japanese restaurants in North India. Options (b) and (d) can be ruled out as they do not contain this mandatory sequence. Statement D should follow CAB as it provides an example that is similar to the one in CAB. Also, statement E should either start or end the sequence as it is a general statement, while all the other statements refer to specific examples. Hence, option (c) can be ruled out and option (a) is the answer.
35. Option (d) is the correct answer as it explains how and why the expectations of foreign firms earning vast amounts of foreign exchange for India, were belied.
 Option (c) is incorrect as nowhere does the paragraph mention that a policy 'favoring' foreign capital was adopted by India. It merely mentions that India's policy with respect to foreign investment had been 'revised'. Moreover, the paragraph mentions that the revised policies did not live up to their expectations. This does not imply that the policies caused India's retarded development.
- Option (a) is incorrect as, again; the paragraph only talks about the failure of foreign firms in earning forex for India. There is no mention of how this affected the cost of liberalization.
 Option (b) is negated as it refers to events beyond those covered in the given paragraph.
36. Options (d), (b) and (a) form a sequence as they talk about the core catcher, its structure and its functionality, respectively. Option (d) introduces the core catcher. Option (b) provides further details on its structure while option (a) explains how the core catcher functions in the eventuality of an accident. These options thus form a mandatory sequence. Option (c), though related, does not fit this sequence as it talks about the background of the core catcher's design and mentions bricks' composition which is a wider concern.
- For questions 37 to 39:**
 From statements (III) and (V), it can be concluded that both T2 and T3 ended up with either 2 or 4 points.
Case 1: When T2 and T3 scored 2 points each.
 Since T3 won against T2, T3 must have lost its remaining matches and T4 must have won all its matches. Thus, T1 must have played on Monday against T3, but this was not the case as per the statement (IV). Hence, this case is invalid.
Case 2: When T2 and T3 scored 4 points each.
 Since T2 lost against T3 on Tuesday, it must have won against T1 and T4. From statement (IV), T2 and T4 did not play on Wednesday and Saturday respectively. So T2 must have won its matches against T4 and T1 on Friday and Saturday respectively.
 Further analysis leads to the following table.
- | Day | Match played between | Winner |
|-----------|----------------------|--------|
| Monday | T1 & T4 | T1 |
| Tuesday | T2 & T3 | T3 |
| Wednesday | T1 & T3 | T3 |
| Thursday | T3 & T4 | T4 |
| Friday | T2 & T4 | T2 |
| Saturday | T1 & T2 | T2 |
37. T4 scored 2 points.
 38. T3 lost against T4.
 39. The match played on Friday was between T2 and T4.

40. Options (c) and (b) are a mandatory pair as the deep intertwining between modernity and nostalgia is summed up and explained in option (b). Similarly, options (b) and (d) are also a mandatory pair and 'that hunger' mentioned in option (d) refers to the harking back of the human mind to 'a supposedly simpler time' in the past 'when life was more peaceful'. This sequence therefore deals with nostalgia and how such a sense of nostalgia finds expression in the artist's work. Option (a), though on seemingly related lines, actually talks about the reaction of observers of the artist's work rather than how the work evokes such a reaction and therefore it does not fit into the sequence.

41. Option (a) has the correct usage of the word 'buy'. 'Buy time' means to delay something.

Option (b) is also correct for 'bought into an idea' means to believe in an idea.

'Bought it', as mentioned in option (c), means to die. 'Buying out' means to pay somebody for their share in a business, usually in order to get total control of it for yourself or to pay money so that somebody can leave an organization before the end of an agreed period. It is incorrect in the given sentence and the correct usage is 'buying in', which means to buy something in large quantities. Therefore, option (d) is the correct answer.

42. This question can be done by elimination. It is clear that the first blank will be filled up by some word similar to society or the population. In the second blank, an adjective for the word 'love' is required.

Option (b) can be eliminated because 'irrevocable', which means irreversible, doesn't fit in as something that a political father-figure may demand from the people.

Option (c) is also incorrect because 'unrequited' means unreturned, and going by the statement, does not logically fit in.

Option (d) is incorrect because 'civil obedience' cannot be demanded from the opposition, but from the civilians.

The word populace, meaning the ordinary people of a country or an area, aptly fits in the first blank. 'Unquestioning' goes perfectly with obedience, that is demanded of the people, and hence option (a) is correct.

43. Sentences A and C are correct in terms of grammar and usage.

In sentence B, the pronoun 'it' (singular pronoun) has been incorrectly used to refer to the noun 'elements' (plural). Since 'elements' is plural, a plural pronoun should be used here. The correct sentence will be – "...elements, most of them..."

In sentence D, the phrase 'gained in' is incorrect and should be replaced by the phrase 'gained by'. The phrase 'gained in' is used to indicate an increase or growth in something. For example, 'The shares gained in value'.

Sentence E is incorrect because the same pronouns should be used in the whole sentence. Since the entire paragraph is in second person, the pronoun 'one' should be replaced by 'you' to make the sentence correct. Therefore, the correct answer is option (b).

44. Sentences C and D are correct in terms of grammar and usage.

Sentence A should contain the word 'answer' instead of 'answering' because an 'infinitive' is never followed by the '-ing' form of the verb.

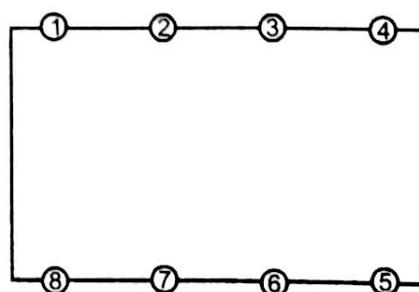
Sentence B is wrong because instead of 'gravest of charge', it should be 'gravest of charges'.

Sentence E has a subject-verb agreement error. The word 'actions' (plural) should have been referred to by the pronoun 'them' (plural pronoun) and not 'it' (singular pronoun). Hence, the correct answer is option (a).

45. All the four options are grammatically appropriate for the first blank, but logically, only option (b) fits in. Since the sentence talks about a yearning for the glorious past, the word 'wistful', which means 'full of yearning or desire tinged with melancholy' aptly fits in the blank and makes it meaningful. The other options do not fit in the given context and hence are incorrect.

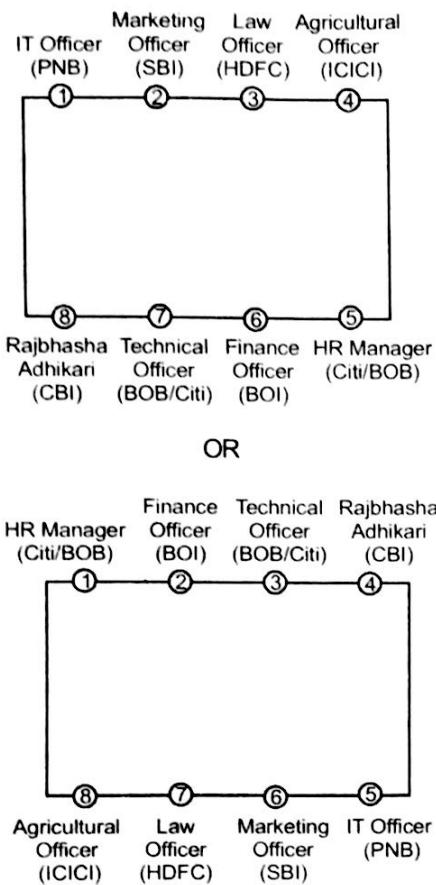
For questions 46 to 48:

Consider the following table with marked positions.



From statements (III) and (VI), Rajbhasa Adhikari is sitting on either chair 4 or chair 8. From statements (II), (IV) and (V), it can be deduced that the Law Officer, the Marketing Officer and the officer who works in PNB are sitting along the same side of the table. Now, from statements (I) and (III), it can be concluded that the Finance Officer, the HR Manager, the Technical Officer and the Rajbhasa Adhikari are sitting along the same side of the table. Therefore, IT Officer works in PNB.

Further analysis leads to the following arrangements.



OR

46. HR Manager is sitting to the immediate right of Finance officer.
 47. For six persons, we can definitely determine the banks in which they work.
 48. The person who is sitting opposite the Law Officer works in BOI.
 49. The passage presents arguments against the death penalty – right from the fact that it is seen as a mismatch to the crime committed, that it is not retribution enough and to the fact that it does not deter people from committing crime. The fact that the death penalty is unfair is given in the first three paragraphs. That it does not serve its purpose can be inferred from the fourth and the fifth paragraphs. The sixth paragraph asserts that the death penalty does not deter people from committing crime. Option (d) aptly sums up these main arguments in the passage and is thus the correct answer.
- Option (a) is incorrect because rather than presenting different sides of the argument, it sticks to only one of the views.
- Option (b) is incorrect because the passage does not focus on reconsidering (or lobbying for) the use of the death penalty.

Option (c) states only one of the points mentioned in the passage as a reason for the argument of death penalty being flawed and hence becomes incorrect.

50. Sentence A can be inferred from the first line of the second last paragraph.

Sentence C can be inferred from the second paragraph, which indicates that death penalty may cause double suffering to the accused due to the dreadful wait before death.

Sentence D can be inferred from the first line of the first paragraph itself.

Sentence B cannot be evidenced from the passage. Thus, option (c) is the answer.

51. According to the passage, all crimes, except murder, do not receive a punishment that is similar to the crime. The author has made a hidden assumption here that the death penalty is handed over only in the case of murder and thus, it mirrors the crime. This fact, that it mirrors the crime, is what makes death penalty unique. Thus, option (b) is correct.

Option (a) is incorrect because, as pointed out before, the death penalty is assumed to be given only for murder. The option states that the death penalty is given for crimes besides murder too, which cannot be inferred from the passage.

Option (c) is incorrect because anticipatory suffering is not mentioned as a feature that makes the death penalty unique but one that makes it unfair.

Option (d) is not discussed and is beyond the scope of the passage.

52. The last line of the second paragraph refers to Scheibitz's paintings as unreasonable. Refer to the first two paragraphs in order to understand why the author draws such a conclusion. The first paragraph refers to the fact that the paintings are not what they seem at first or even second glance (refer to the last three sentences of this paragraph). The second paragraph indicates a sense of contradiction in the paintings. The first sentence of this paragraph also indicates that the paintings make sense but if one enters Scheibitz's realm. The next few lines explain the fact that the paintings force the individual to see the subtle – 'The spaces between things become more insistent than the things themselves.' It is indicated that the onlooker is thus forced to see things beyond the obvious and to understand the paintings not from their individual perspectives but from the artist's (Scheibitz's) perspective. Option (c) is, thus, the answer.

Option (a) is ruled out because it fails to present a complete perspective.

Option (b) is also ruled out as it is incomplete and doesn't answer the question.

Option (d) can be ruled out because it is not derived from the information in the passage. There is no indication that one must understand art and its related philosophy in order to understand Scheibitz's paintings.

53. Option (a) cannot be inferred on the basis of the passage because there is no indication that the artist deliberately creates art that is difficult to fathom and place. In fact, in the third paragraph the artist is quoted as saying that, "I can't invent anything and I can't use what I find as it is." This indicates that the artist does not deliberately confuse. The last sentence of this paragraph also indicates, that in the artist's mind, everything in his paintings is interconnected with the inspirations he draws from real life.

Option (b) is incorrect because it is not evidenced from the passage that Scheibitz's paintings are hard to categorize.

Option (c) is correct and can be inferred from the last line of the third paragraph and the entire fourth paragraph.

Option (d) is incorrect because it seeks to explain the passage in a philosophical light. While the philosophical link can be briefly inferred ("The spaces between things become more insistent than the things themselves" and "The overall impression is that nothing is random" etc.), it does not form the mainstay of the discussion and the option cannot be concretely inferred.

54. Though it is true according to the passage that everything the artist is inspired by has a reason, but option (a) makes too general a statement. According to the passage, the source materials are interconnected which necessarily may not be the source of his inspiration.

Option (b), which says Scheibitz's paintings may portray things in an abstract light, contradicts the last line of the third paragraph and hence, is incorrect.

Option (d) talks about the author's assertion, which is incorrect because the assertion mentioned in the option is that of the painter.

Refer to the lines, "The overall impression is that nothing is random. There are affinities here." These lines, paraphrased into option (c), provide the correct significance of the penultimate paragraph and therefore option (c) is the correct answer.

For questions 55 to 57:

From statement (V), B and G cannot be together in the team. Therefore, there are three possible cases.

Case I: When B is selected.

F cannot be selected as F can only be selected when both G and N are selected. Thus, when B is selected, the team comprises exactly four bowlers. Also, J must be the wicketkeeper in the team, as selection of I ensures selection of F. Following table gives the possible compositions for the team.

Batsmen	Bowlers	Wicketkeeper
A, D, L, N, O, K/M	B, H, C, E	J

The number of ways in which the team can be formed

$$= 2 \times 1 \times 1 = 2$$

Case II: When G is selected.

H cannot be selected as H can only be selected when B is selected. Thus, when G is selected, then again the team comprises exactly four bowlers. Following table gives the possible compositions for the team.

Batsmen	Bowlers	Wicketkeeper
A, D, L, N, O, K/M	G, F, C, E	I/J

The number of ways in which the team can be formed

$$= 2 \times 1 \times 2 = 4.$$

Case III: When neither B nor G is selected.

When both B and G are not selected, then there is no possible composition for the team.

55. The total number of ways in which the team can be formed $= 2 + 4 = 6$.
56. If G is one of the bowlers in the team, then either of the two (i.e., I and J) can be selected as the wicketkeeper in the team.
57. If H is selected, G cannot be selected.
58. The poem 'A Tear and A Smile' by Kahlil Gibran reflects the poet's philosophical musings. The poet feels that both tears and smiles are necessary in his life – refer to the fifth line of the poem and the stanza after this line. The poet feels that tears purify his heart while smiles bring him closer to the gods (a symbol of my glorification of the gods). The poet also uses the last four stanzas to illustrate that challenges and joys form part of every being's life and that these two elements play their part in the fulfilment of one's destiny. Refer to the last stanza – 'the spirit become separated' and 'return whence it came' – which indicates that one lives this life to fulfil a destiny and to ultimately return to the original source. Option (d) is hence the answer.

Option (a) can be ruled out because the poet does not mention the poor. He only mentions those in yearning and longing – this does not indicate poverty.

Option (b) can be ruled out because the main theme is the importance of 'a tear and a smile' and not the unification of those in need.

Option (c) is incorrect because it is incomplete and does not bring in the fact that 'a tear and a smile' are instrumental in moving one towards one's destiny – towards one's final goal.

59. Refer to lines 12-17. In line 12, the poet feels that it is better to live a life in which one constantly aspires (yearns) for fulfilment, instead of leading a life that is dull and tired (dull because there is nothing to aspire for – refer to line 15). The poet goes on to state further that the sighs of an individual who longs for fulfilment are sweet to hear. One can infer that the author is in favour of the individual strife towards fulfilment. The poet also clearly indicates that a person who is Satisfied cannot experience the joys that yearning and longing bring with them. Option (c) can thus be inferred to be the answer.

Option (a) can be ruled out because it judges the manner in which people find satisfaction; information on the means used to find satisfaction is not stated or implied in the poem.

Option (b) is incorrect because the poet links the ability to understand the secrets of life with the presence of challenges (tears). The poem, however, does not provide any information on why an individual would lack the ability to understand the secrets of life.

Option (d) presumes more than the poem indicates – there is no implication that Satisfied individuals are already in a state of happiness that ceases to exist as soon as they become Satisfied.

60. Refer to lines 24-32 in which the author brings in the example of the clouds to convey that one eventually returns to one's origins. Line 24 states that the clouds start from the sea (water vapour that rise from the sea form clouds). Line 28 indicates that after a time, the clouds return to their origin, the sea. Thus, option (b) is correct.

Option (a) is incorrect because give and take indicates that an exchange is taking place – whereas the author mentions a parting and a meeting and the return to one's origins.

Option (c) is incorrect because the author does not imply that there are obvious and subtle explanations for the formation of clouds.

Option (d) is incorrect because there is no demarcation of spiritual and worldly phenomenon in the poem.

