CAT Sample Paper 3

by www.indiaeducation.net

Logical & Data Interpretation

DIRECTIONS ***for questions 1 to 4:*** **Answer the questions on the basis of the information given below.**

Details regarding the Performance of a few top companies during the Financial Year 2003-04

Name of the company	ET500 Rank	Sales (Rs.Cr)	Change in Sales (%)	PAT (Rs.Cr)	Change in PAT (%)	PE	DIV YIELD (%)	EPS (Rs)	Dividend (%)
Dr. Reddy's Laboratories	35	1667.9	11.0	392.0	4.9	19.0	0.5	51.2	100.0
Sun Pharmaceuticals Industries	40	934.0	16.0	265.4	34.3	22.8	0.8	28.6	100.0
Tata Iron and Steel Corporation	17	10166.9	27.6	1586.4	138.3	8.9	2.1	43.0	80.0
Jindal Steel and Power	110	1241.9	43.9	203.2	29.5	7.7	1.2	66.0	125.0
Madras Cements	139	671.7	8.7	33.3	139.7	31.5	0.8	24.6	60.0
Gammon India	209	1014.1	56.9	27.2	21.4	22.2	0.6	19.8	25.0
Hero Honda Motors	28	5381.5	4.7	666.0	14.0	14.7	3.7	33.4	900.0
TVS Motor Company	88	2762.4	5.5	134.1	18.4	14.8	1.4	5.8	120.0
Oil and Natural Gas Corporation	1	36175.8	27.5	10356.5	21.9	11.6	3.6	72.6	300.0
Hindustan Petroleum Corporation Ltd.	13	56680.5	13.9	2011.0	51.4	8.6	3.9	59.3	200.0
Satyam Computer Services	26	2359.3	21.4	379.0	–9.3	24.5	1.0	12.0	150.0
HCL Technologies	34	998.3	28.2	360.9	8.6	21.4	1.6	11.6	200.0
HCL Infosystems	86	1756.4	–0.3	112.7	241.6	20.8	1.5	31.9	100.0
Hughes Software	91	321.7	49.9	69.9	89.9	25.0	0.4	20.8	40.0
Hinduja TMT	150	148.5	58.8	75.6	21.3	11.0	3.4	18.5	70.0

Note:

- Change in Sales (%) = Change in sales from 2002-03 to 2003-04 as a percentage of sales in 2002-03.
- Change in PAT (%) = Change in PAT from 2002-03 to 2003-04 as a percentage of PAT in 2002-03.
- $PE = \frac{\text{Market value per share (in Rs.)}}{\text{EPS (in Rs.)}}$
- DIV YIELD (%) = Dividend per share (in Rs.) as a percentage of market value per share.
- Dividend (%) = Dividend per share (in Rs.) as a percentage of par value per share.
- NPM (%) = PAT as percentage of sales.

1. For how many of the companies given above, is the market value per share greater than Rs.500 but less than Rs.1,000?

(1) 4
(2) 6
(3) 7
(4) 8

2. For how many of the companies given above, is the dividend per share more than Rs.10?

(1) 2
(2) 3
(3) 4
(4) 6

3. Which of the following companies has the highest NPM% in the year 2003-04?

(1) Hinduja TMT
(2) Oil and Natural Gas Corporation
(3) HCL Technologies
(4) Jindal Steel and Power

4. Which company experienced the maximum growth in sales in 2003-04 over that in 2002-03?

(1) Jindal Steel and Power Ltd.
(2) Hindustan Petroleum Corporation Ltd.
(3) Oil and Natural Gas Corporation
(4) Hinduja TMT

DIRECTIONS *for questions 5 to 8:* Answer the questions on the basis of the information given below.

In Rangeela land, there are only three types of people: Lalpilas, Pilharas and Haralals. Lalpilas always get confused between red and yellow (i.e. they see yellow as red and vice versa.) and can see any other colour properly. Pilharas always get confused between yellow and green and can see any other colour properly and Haralals always get confused between red and green and can see any other colour properly.

5. Three persons Amar, Akbar and Anthony, who belong to Rangeela land made the following statements.
Amar : Gabbar Singh is wearing a green shirt.
Akbar : Gabbar Singh is not wearing a yellow shirt.
Anthony : Gabbar Singh is wearing a red shirt.
If none of them is a Haralal, then what is the colour of Gabbar Singh's shirt?

(1) Red
(2) Yellow
(3) Green
(4) Cannot be determined

6. Two persons - Dhiraj and Suraj, of Rangeela land made the following statements.
Dhiraj : Feroz is wearing a red hat. Feroz is wearing a yellow shirt.
Suraj : Feroz is wearing a red hat. Feroz is wearing a green shirt.
Suraj is a

(1) Lalpila
(2) Pilhara
(3) Haralal
(4) Such a conversation is not possible.

7. Veeru is a

(1) Lalpila
(2) Pilhara
(3) Haralal
(4) Cannot be determined

8. What is the colour of Basanti's saree?

(1) Green
(2) Red
(3) Yellow
(4) Cannot be determined

DIRECTIONS *for questions 9 to 12:* Answer the questions on the basis of the information given below.

The table gives some information about the points scored by Arjun in AHC (All Hastin Championship), in five different mind games - Dice, Dance, Dupe, Digit and Dynasty.

Game	Total Problems	Problems Attempted	Successful Attempts	Failures	Net Score
Dice	35	29			
Dance	30				
Dupe	35	17		6	
Digit	40				11
Dynasty	45		30		

It is also known that,
i. For every successful attempt Arjun gets one point and for every unattempted problem he loses 1/6th of a point and for every failure he loses 1/3rd of a point.
ii. Arjun scored a total of 67 points and attempted 125 problems.
iii. The number of failures of Arjun in Digit is 1/6th of his total failures and is double of that in Dance.
iv. Arjun's net score in Dance is double that in Dupe.

9. What is the total number of failures of Arjun in the competition?

(1) 24
(2) 30
(3) 36
(4) 42

10. In which of the following mind games does Arjun have the maximum number of failures?

(1) Dice
(2) Dupe
(3) Digit
(4) Dynasty

11. What is the number of problems attempted by Arjun in Dance?

(1) 12
(2) 15
(3) 18
(4) 21

12. What is the net score of Arjun in Dynasty?

(1) 21
(2) 22

(3) 24
(4) 26

DIRECTIONS ***for questions 13 to 16:*** **Answer the questions independently of each other.**

13. Each of companies A, B and C - have a tradition of rewarding their employees with a bonus, once every year, during Ramzan, Christmas or Deepavali. For each company every year the bonus is paid during the same time. Use the clues below to answer the following question.
(a) For no two companies is either the amount of bonus paid or the time of the year when bonus is paid the same
(b) Company B distributes bonus during Deepavali.
(c) The company that gives Rs.5,000 as bonus is in the manufacturing sector.
(d) Company, A distributes bonus during Christmas.
(e) The company that gives a bonus of Rs.10,000 is not in the IT sector.
(f) The company that gives bonus for Ramzan gives Rs.5,000.
(g) The company that gives bonus for Christmas gives Rs.12,000 as bonus.

Which of the following is true?

(1) Company A gives a bonus of Rs.12,000 for Christmas, company B gives a bonus of Rs.5,000 for Deepavali and Company C gives a bonus of Rs.10,000 and is in the IT sector.

(2) Company B gives a bonus of Rs.10,000 and is in the finance sector. Company C gives a bonus of Rs.5,000 during Ramzan and company A gives a bonus of Rs.12,000 and is in the manufacturing sector.

(3) Company A gives a bonus of Rs.12,000 and is in the finance sector. Company B gives a bonus of Rs.5,000 during Deepavali and company C gives a bonus of Rs.10,000 and is in the IT sector.

(4) Company B gives a bonus of Rs.10,000 for Deepavali. Company C gives a bonus of Rs.5,000 and is in the manufacturing sector. Company A gives a bonus of Rs.12,000 and is in the IT sector.

14. Seven people, A through G, sit in a row (not necessarily in the same order). Exactly three people sit between A and G, while exactly three people sit between B and E. Exactly four people sit between C and E, while exactly four people sit between D and G. Exactly two people sit between B and D, while exactly two people sit between C and A. Given that either B or A sits to the immediate right of D, then who sits exactly at the middle of the row?

(1) C
(2) B
(3) F

(4) Cannot be determined

15. According to probability theory, when a normal dice is thrown a large number of times, the probability of each number turning up will be 1/6. A group of friends decided to try this and got the following results after 50 tries:
All numbers were obtained at least once.
The number of 1's obtained was an even number.
The number of 2's obtained was equal to the number of 5's obtained.
The number of 3's obtained was five times the number of 1's obtained.
Exactly six 4's were obtained.
The number of six's obtained was twenty-two, which was the highest among all the numbers obtained.
What was the total number of odd numbers obtained?

(1) 22
(2) 17
(3) 25
(4) 18

16. Four friends Ashwath, Charan, Karthik and Srinivas are nicknamed Essi, KK, Kit and Maha, not necessarily in that order.
(i) Karthik is stronger than Essi but can't run as fast as Kit.
(ii) Essi is stronger than Ashwath but weaker than KK.
(iii) Srinivas is faster than Karthik and slower than Maha but weaker than Essi.
Who is nicknamed Maha?

(1) Karthik
(2) Ashwath
(3) Charan
(4) Srinivas

DIRECTIONS *for questions 17 to 20:* The questions given below are followed by two statements, I and II. Study the information given in the two statements and assess whether the statements are sufficient to answer the questions and choose the appropriate option from among the choices given below.

17. Did more than 50 employees leave Company A in the year 2002?
I. At the start of 2002, the difference between the number of male and female employees in company A is 90.
II. By the end of 2002, the total number of employees in company A is 50.

(1) Statement I alone is sufficient and statement II alone is not sufficient to answer the question.

(2) Statement II alone is sufficient and statement I alone is not sufficient to answer the question.

(3) Statements I and II together are sufficient but neither statement alone is sufficient to answer the question.

(4) Both statements I and II together are not sufficient to answer the question and additional data, specific to the problem, is needed.

18. Six persons - Irfan, Jagan, Karan, Lala, Manoj and Niran - participated in a race in which every participant finished in a different time. At least two persons finished before Jagan. The number of persons who finished before Lala is same as the number of persons who finished after Niran. Irfan finished before Manoj. Who finished the race in second position?
I. Manoj finished the race in third position.
II. Only Lala finished the race after Karan.

(1) Statement I alone is sufficient and statement II alone is not sufficient to answer the question.

(2) Statement II alone is sufficient and statement I alone is not sufficient to answer the question.

(3) Statements I and II together are sufficient but neither statement alone is sufficient to answer the question.

(4) Both statements I and II together are not sufficient to answer the question and additional data, specific to the problem, is needed.

19. M and N are the father and mother of P respectively. P has four uncles and three aunts. None of the siblings of M and N are married. N has two siblings. How many sisters does M have?
I. N has two brothers.
II. M has a total of 5 siblings.

(1) Statement I alone is sufficient and statement II alone is not sufficient to answer the question.

(2) Statement II alone is sufficient and statement I alone is not sufficient to answer the question.

(3) Statements I and II together are sufficient but neither statement alone is sufficient to answer the question.

(4) Both statements I and II together are not sufficient to answer the question and additional data, specific to the problem, is needed.

20. When J and K run a race, J beats K by 20 seconds. When K and L run the same race, K beats L by 40 seconds. Find the speed of K (in m/s).
I. J beats L by 250 m.

II. The length of the race track is 1 km.

(1) Statement I alone is sufficient and statement II alone is not sufficient to answer the question.

(2) Statement II alone is sufficient and statement I alone is not sufficient to answer the question.

(3) Statements I and II together are sufficient but neither statement alone is sufficient to answer the question.

(4) Both statements I and II together are not sufficient to answer the question and additional data, specific to the problem, is needed.

Verbal Ability

DIRECTIONS *for questions 21 to 25:* Read the following passage and answer the questions that follow it.

We all know boys who love trains, fire trucks, tools of all kinds, throwing balls, catching balls, spinning until they fall down, chasing cats, tackling dogs, emptying the kitchen drawers of their contents, riding a tricycle, riding a carousel, pretending to be a farmer, pretending to be a cow, dancing, drumming, digging, hiding, seeking, jumping, shouting, and collapsing exhausted into bed wearing Spiderman pajamas after watching a Spiderman cartoon feature.

That doesn't make them unusual; in fact, in many ways, they couldn't be more typical. Which may be why we hear people say "He's definitely all boy." It's a statement that sounds reasonable enough until you think about it. What does "all boy" mean? Masculine? Straight? Something else? Are there partial boys? And what of the fondness some boys have for sunsets and flowers and butterflies?

These are the kinds of questions asked by anxious parents and, increasingly, academic researchers. Much of the focus so far has been on boys falling behind academically, paired with the notion that school is not conducive to the way boys learn. What motivates boys, one argument goes, is different from what motivates girls, and society should adjust accordingly. Others argue that such stereotypical thinking miscasts boys as victims and ignores the very real problems faced by girls. This debate is far from settled and has, in fact given rise to a host of deeper, more philosophical issues, all of which can be boiled down, more or less, to a single question: Just what are boys, anyway?

One of the first so-called boys' books is Michael Gurian's The Wonder of Boys. Since its publication in 1996 it has sold more than half-a-million copies, and Gurian, who has a master's degree in writing and has worked as a family counsellor, has become a prominent speaker and consultant on boys' issues. Drawing on neuroscience research done by others, Gurian argues that boy brains and girl brains are fundamentally dissimilar, and that boys are hard-wired to desire a sense of mission. In the nature versus nurture debate, Gurian comes down squarely on the side of the former, and advises that parents and teachers need to understand "boy biology" if they want to help young men succeed. He catches flak in various quarters, however, for supposedly over interpreting neuroscience data to comport with his theories - such as the one that female brains are active even when they're bored, while male brains tend to "shut down". Gurian counters that his work has been misrepresented and that the success of his programs backs up his scientific claims.

Close on Gurian's heels was Real Boys, by William Pollack, an associate clinical professor of psychology at Harvard Medical School. He writes that behind their facade of toughness, boys are vulnerable and desperate for emotional connection, but are more likely to express empathy and affection through an activity, like playing together, than having a heart-to-heart talk. Pollack's view of what makes boys the way they are is less rooted in biology than Gurian's. "What neuroscientists will tell you is that nature and nurture are bonded," says Pollack. "How we nurture from the beginning has an effect."

The following year, Raising Cain, by Dan Kindlon, an adjunct lecturer in Harvard's School of Public Health, and Michael Thompson, a psychologist in private practice, was published. Their book ends with seven recommendations for dealing with boys, including "recognize and accept the high activity level of boys and give them safe boy places to express it." The book is partially about interacting with boys on their own terms, but it also encourages adults to help them develop "emotional literacy" and to counter the "culture of cruelty" among older boys. It goes beyond academic performance, dealing with issues like suicide, bullying, and romance.

Perhaps the most provocative book of the bunch is The War Against Boys: How Misguided Feminism Is Harming Our Young Men, by Christina Hoff Sommers. As the subtitle suggests, Sommers believes that she's found the villain in this story, making the case that it's boys, not girls, who are being short-changed and that they need significant help if they're going to close the distance academically. But that does not mean, according to Sommers, that they "need to be rescued from their masculinity."

Those books were best sellers and continue to attract readers and prompt spirited debate. While the authors disagree on the details, they share at least two broad conclusions: (1) Boys are not girls, and (2) Boys are in trouble. Why and how they're different from girls, what's behind their trouble, and what if anything to do about it-all that depends on whom you read.

21. In this passage, the author raises questions and goes on to

(1) indicate that we will never really know the answers.
(2) analyse the answers that different writers provide.
(3) bring out the shortcomings in the answers that different writers provide.
(4) present the answers that different writers provide.

22. The author presents, at the end of paragraphs 2 and 3 respectively, 2 questions - "And what of...." and "Just what are...". Which of the following questions would these 2 questions originate from?

(1) Are interests gender specific?
(2) Are boys predictable?

(3) How should boys be dealt with as they grow?
(4) How are boys different from girls?

23. In the passage, who, among the 4 writers, implies or makes suggestions on how to deal with boys?

(1) All four
(2) Sommers, Gurian and Kindlon
(3) Kindlon and Gurian
(4) Pollack and Gurian

24. Which of the following statements appropriately represents information or thoughts provided in the passage?

(1) Pollack and Sommers both feel that the inherent nature of boys must be taken into account as we help them develop.
(2) While Pollack feels that the way boys are brought up contributes to the way they are, Kindlon feels that they should be dealt with as they are.
(3) Pollack and Kindlon both feel that boys lack emotional understanding.
(4) While Gurian feels that boys should be dealt with as they are, Sommers feels that everything depends on the way they're brought up.

25. Which one of the following is NOT representative of a hypothesis that is referred to in the passage?

(1) Though seemingly tough, boys do seek to connect with others emotionally, particularly through activities such as play.
(2) The level of mental activity in boys is directly related to their perception of external situations and circumstances.
(3) Boys have naturally high activity levels, and can make use of and display these in all circumstances.
(4) Excessive attention to girls can mean that boys do not get as much as they need.

DIRECTIONS *for questions 26 to 30:* Each question has a set of sequentially ordered statements. Each statement can be classified as one of the following.

- Facts, which deal with pieces of information that one has heard, seen or read, and which are open to discovery or verification (the answer option indicates such a statement with an 'F').
- Inferences, which are conclusions drawn about the unknown, on the basis of the known (the answer option indicates such a statement with an 'I').
- Judgements, which are opinions that imply approval or disapproval of persons, objects, situations and occurrences in the past, the present or the future (the answer option indicates such a statement with a 'J').

Select the answer option that best describes the set of statements.

26. (A) The present government has avowed goals to reduce poverty and stimulate development.
(B) The Prime Minister has acknowledged the need for focussed investment in science and technology by announcing a doubling of related spend in terms of percentage of GDP over the next couple of years.
(C) Parliament's approval for the creation of a National Science and Engineering Research Board, responsible for funding and furthering scientific research, is laudable and a significant step in the right direction.
(D) The Human Resource Development Ministry's efforts to improve the higher education system and the establishment of five new Indian Institutes of Science Education and Research in the past three years should provide a vital boost to the cause of scientific research in India.

(1) FFJI
(2) FIJI
(3) FIII
(4) JFFJ

27. (A) During the 1990s, there was a spurt in demand in areas that suited the economic reforms and a tendentious turn towards professional employment in the spheres of medical and engineering education, business and hotel management, housing, tourism etc.
(B) Inevitably, higher education became part of industrial growth - hence an industry in itself.
(C) The demands began multiplying and government agencies were hard put to respond to such needs.
(D) The deemed universities became the "ready to respond" tools to such demands and their growth increased.
(E) It was not an organized and wholesome growth, the focus was on quantity and not quality.

(1) FJIIJ
(2) FIFJJ
(3) JFJFJ
(4) FJFFJ

28. (A) As cinema screens open every other month in malls across the country, cinema hall owners have to offer more than just movies to set them apart.
(B) When PVR Cinemas opened its first multiplex in Delhi, it revolutionised the way we watched movies.
(C) About a decade later, while single-screen theatres in the nation's capital are all but extinct, multiplexes have opened in virtually every major

shopping mall.
(D) Clearly, the future of movie-watching is multiplexes.
(E) With the number of multiplex chains steadily increasing, the age-old question of product differentiation is becoming essential to the business.

(1) IJFJI
(2) IFFJI
(3) FJIFJ
(4) IJFFJ

29. (A) In the run-up to every general election it has become a ritual for Labour and the Tories to try and outdo each other in courting the sensation-mongering *Sun*.
(B) On the eve of 1997 elections, Tony Blair famously flew half way round the world to meet media-baron Rupert Murdoch to seek his blessings.
(C) And, lo and behold, within days the Sun was shining on him - switching support from the Tories to New Labour enabling the paper, later, to claim credit for the party's landslide victory.
(D) In return for its backing, Mr. Blair effectively hypothecated his government's policies to the Murdoch press.
(E) Much of his Europe agenda, especially the decision to drop the election pledge of a referendum on joining the euro, was driven by his deal with Mr. Murdoch.

(1) JJJJJ
(2) JFIJJ
(3) FIIJJ
(4) JJJFF

30. (A) Just like last year, India has ranked abysmally low in the 2009 gender gap survey conducted by the World Economic Forum.
(B) Indeed, India slipped one position to 114 out of 134 countries, with most indicators, suggesting that conditions for women have worsened rather than improved over the past year.
(C) High economic growth and an increased level of development should have improved the lot of women.
(D) The educational attainment sub-index makes for depressing reading, with almost a quarter of a billion Indian women lacking the basic capacity to read and write.
(E) India ranks remarkably high in the political empowerment sub-index, a result perhaps of a record number of women politicians having been elected to the current Lok Sabha.

(1) FFJJI
(2) JIFFI

(3) FFJJJ
(4) FFJII

DIRECTIONS ***for questions 31 to 35:*** **Read the following passage and answer the questions that follow it.**

On August 23, 1989, officials from the newly reformed and soon-to-be-renamed Communist Party of Hungary ceased policing the country's militarised border with Austria. Some 13,000 East Germans, many of whom had been vacationing at nearby Lake Balaton, fled across the frontier to the free world. It was the largest breach of the Iron Curtain in a generation, and it kicked off a remarkable chain of events that ended 11 weeks later with the righteous citizen dismantling of the Berlin Wall.

Twenty years later, the anniversary of that historic border crossing was noted in exactly four American newspapers, according to the Nexis database, and all four mentions were in reprints of a single syndicated column. August anniversaries receiving more media play in the U.S. included the 400th anniversary of Galileo building his telescope, the 150th anniversary of the first oil well, and the 25th anniversary of Teenage Mutant Ninja Turtles. A Google News search of "anniversary" and "freedom" on August 23, 2009, turned up scores of Woodstock references before the first mention of Hungary.

Get used to it, if you haven't already. November 1989 was the most liberating month of arguably the most liberating year in human history, yet two decades later the country that led the Cold War coalition against communism seems less interested than ever in commemorating, let alone processing the lessons from, the collapse of its longtime foe. At a time that fairly cries out for historical perspective about the follies of central planning, Americans are ignoring the fundamental conflict of the postwar world.

The consensus Year of Revolution for most of our lifetimes has been 1968, with its political assassinations, its Parisian protests, and a youth-culture rebellion that the baby boomers will never tire of telling us about. But as the pre-eminent modern Central European historian Timothy Garton Ash wrote in a 2008 essay, 1989 "ended communism in Europe, the Soviet empire, the division of Germany, and an ideological and geopolitical struggle…that had shaped world politics for half a century." Without the superpower conflict to animate and arm scores of proxy civil wars and brutal governments, authoritarians gave way to democrats in Johannesburg and Santiago, endless war was replaced by enduring peace in Central America, and nations that had never enjoyed self-determination found themselves independent, prosperous, and integrated into the West. "It was", continues Garton, "in its geopolitical results, as big as 1945 or 1914. By comparison, '68 was a molehill." Perhaps '68 still gets all the headlines

because it happened to more people in the West.

There was much more that changed. The abject failure of top-down central planning as an economic organizing model had a profound impact even on the few communist governments that survived the '90s. Vietnam, while maintaining a one-party grip on power, launched radical market reforms in 1990, resulting in some of the world's highest economic growth in the last two decades. Cuba, economically desperate after the Soviet spigot was cut off, legalized foreign investment and private commerce. And in perhaps the single most dramatic geopolitical story in recent years, China, the country that most symbolized state repression in 1989 has used capitalism to pull off history's most successful anti-poverty campaign.

Perhaps the least appreciated benefits of the Cold War's end have been those enjoyed (if not always consciously) by the side that won. Up until 1989, mainstream Western European political thought included a large and unhealthy appetite for governments owning the means of production. For instance, French President Francois Mitterand nationalized wide swaths of France's economy upon taking office in 1981. By the time the Berlin Wall fell, it was the rule, not the exception, that Western European governments would own all their country's major airlines, phone companies, television stations, gas companies, and much more.

No longer. In the long fight between Karl Marx and Milton Friedman, even the democratic socialists of Europe had to admit that Friedman won in a landslide. Although media attention was rightly focused on the dramatic economic changes transforming Asia and the former East Bloc, fully half of the world's privatisation in the first dozen years after the Cold War, as measured by revenue, took place in Western Europe. European political and monetary integration has turned out to be one of the biggest engines for economic liberty in modern history. It was no accident that, in the midst of Washington's illegal and ill-fated bailout of U.S. automakers, Swedish Enterprise Minister Maud Olofsson, when asked about the fate of struggling Saab, tersely announced, "The Swedish state is not prepared to own car factories."

With no Cold War to prod it, the United States, at least as represented by its elected officials and their economic policies, is no longer leading the global fight for democratic capitalism as the most proven path to human liberation. You are more likely to see entitlement reform in Rome than in Washington (where, against the global grain, the federal government is trying to extend its role).

Ironically, the one consistent lesson U.S. officials claim to have learned about the Cold War is the one that has the least applicability outside the erstwhile East Bloc: that aggressive and even violent confrontation with evil regimes will lead to various springtimes for democracy. It is telling that the victors of an epic economic and spiritual struggle take away conclusions that are primarily military. Telling, and tragic.

31. We can infer, when the author tells us that the 20th anniversary of the Hungarian border crossing was paid less attention than various other anniversaries, that he feels

(1) that it wasn't as significant an event as it first seemed.
(2) that the telescope, the oil well, Ninja Turtles and Woodstock, are more relevant to life today than that crossing was.
(3) that the west is gradually forgetting the Cold War.
(4) that the west is forgetting the significance of the end of the Cold War.

32. Which one of the following is NOT among Garton's thoughts about 1989?

(1) It was a year when a long-running conflict between credos ended.
(2) It was a year when a nation was re-united with its neighbour.
(3) It was a year as important 1914 and 1945.
(4) It was a year when Soviet power was dismantled.

33. Which of the following does the author feel is a post-Cold War lesson that America may have learnt?

(1) That, under certain circumstances, democracy can be born out of aggression.
(2) That democratic capitalism is the most proven path to human liberation.
(3) That the State must play a greater role in the support of private enterprise.
(4) That without superpower conflict, the world is actually more peaceful.

34. Which of the following does the author feel is a post-Cold War lesson that America has not learnt?

(1) That the capitalist method can be applied even in rigidly controlled economies.
(2) That radical economic reform can result in spectacular growth rate.
(3) That there are inadequacies in the system of central planning.
(4) That State ownership of enterprise is fraught with risk.

35. The author uses the word 'telling' twice, towards the end of the last paragraph, in describing a situation. What does he mean to convey with the use of this word?

(1) The situation is indicative of the priorities of the U.S. administration.
(2) The U.S. administration and its officials have not looked beyond the situation

that was apparent to them.

(3) The U.S. administration recognised that the situation was relevant only to the erstwhile East bloc.

(4) That political and military strength are the priorities of the U.S. administration.

DIRECTIONS *for questions 36 to 40:* Each of the following questions has a paragraph from which the last sentence has been deleted. From the given options, choose the one that completes the paragraph in the most appropriate way.

36. The possibilities are truly unimaginable especially because we do not yet really understand the mysterious, boundless quality of this unique form of power. Knowledge inhabits a more ethereal realm with principles we are only now coming to grasp and purposes we can only imagine. Unlike other resources we are accustomed to, information is a fluid that constantly alters as it moves, increasing as it interacts and overflows as it crosses boundaries. Unlike other raw materials, knowledge can't be used up.

(1) Strangely, the more you dispense, the more you generate.

(2) Not surprisingly, it dazzles our imagination and taps talent that is limitless and especially powerful.

(3) Predictably, the more you give, the more you get.

(4) Therefore, forced by the necessity to cope with a complex new era, countries will become a storehouse of knowledge.

37. Meat grown in a petri dish? Sounds like science fiction, but it isn't. Scientists at Windhaven University in the Netherlands have grown invitro meat using cells from a live pig to replicate growth in a petri dish. They haven't been able to actually taste the pork they have grown because of lab rules. Nevertheless, there's potential here for some huge benefits.

(1) It would not only lead to a ban on killing animals for food, but strengthen the measures to fight poaching.

(2) If meat can be grown in the lab rather than in farms, then people need not make sacrifices for the sake of Mother Earth.

(3) They can, so to say, have their rack of lamb and eat it too.

(4) It could mean not only an end to killing animals for food, but also a significant saving of energy on maintaining abattoirs.

38. The question of economic growth is thrown into further confusion by the methods used to measure it. Fundamentally, economics is myopic. It measures reality by its current market price. The intrinsic value of real things, their essential character which remains unchanged even when their

price on the market fluctuates, is not an issue to the economist. He is like Oscar Wild's cynic.

(1) Someone who is consigned permanently to the present, spurring both the past and the future.
(2) Someone, who knows the price of everything and value of nothing.
(3) Someone, who basks in the glories of growth unmindful of the cost.
(4) Someone, who worships price and assumes that 10% richer in monetary terms is 10% richer in happiness.

39. Recent studies show exploratory play - the restless, unstoppable drive to push every button and pull every string-helps children discover how the physical world works. Their equally unstoppable "pretend" play - the parade of alternate identities, imaginary friends and wild fantasies - helps them work out all the possible ways that people would be. The picture that emerges from this research is that babies and young children are not so much defective as different from adults. They have equally complex and powerful, but very different minds and brains, suited to their distinctive evolutionary role. Babies are brilliant learners but terrible planners. They have fantastically creative and visionary imaginations, but absolutely no executive capacity.

(1) So, human development is more like reverse metamorphosis than simple growth.
(2) Little wonder then, that they make adults dance to their tunes.
(3) They are the R & D guys and adults are the CEOs.
(4) So, child indeed is the father of man.

40. How different our lives are when we really know what is deeply important to us, and keeping that picture in mind, we manage ourselves each day by the way we want to be and do what really matters most. If the ladder is not leaning against the right wall, every step we take just gets us to the wrong place faster. We may be very busy. We may be very efficient.

(1) But we will be truly effective only when we begin with the end in mind.
(2) And we may gain new perspectives.
(3) Perhaps fame, achievement, money, or some of the other things we strive for are not part of the wall.
(4) But, if we are not focussed, success will always elude us.

DIRECTIONS *for questions 41 to 45:* Read the following passage and answer the questions that follow it.

Even though the individual members of every race may be much the same, human societies differ considerably in their levels of technology and organization. Some societies, like those of New Guinea, are just emerging from the Stone Age cultures, while others, like those of Finland or Taiwan, are highly educated and lead in manufacturing sophisticated goods for the global economy. Is the difference solely because New Guineans were dealt a bad hand in items of geography and resources, or could there be some genetic difference, may be in the nature of sociality, that helped keep New Guineans and others in the Stone Age while propelling other peoples on a quite different trajectory?

Jared Diamond of the University of California, Los Angeles, has advocated a geographical answer to this question. In his book Guns, Germs, and Steel he argues that because more domesticable species of plant and animal existed in Eurasia, agriculture got started there first, giving Europeans a head start in economic development. Accustomed to living in crowded environments, Europeans built up immunity to many diseases, including those contracted from their domestic animals, such as influenza, measles and smallpox, and these diseases were devastating to non-urban peoples on other continents.

In Diamond's view it was the economic head start and the germs, not any inherent difference in abilities, that enabled Europeans to conquer other peoples. "History", he says, "followed different courses for different peoples because of difference among peoples' environments, not because of biological differences among peoples themselves".

As Diamond explains, having spent many years studying the birds of New Guinea, he came to know the inhabitants well and was impressed with their evident intelligence. New Guineans, in Diamond's view, are probably more intelligent than Westerners, and the reason, he says, is genetic. The chief selective pressure on Westerners was the need to acquire resistance to the disease rampant in their crowded communities, whereas in New Guinea, where the chief cause of death is war, murder or starvation, one needed one's wits to survive; "in mental ability New Guineans are probably genetically superior to Westerners."

But if the New Guineans had the smarts, why was it the dumber, disease ridden Westerners who figured out how to escape from the deadening cycle of Stone Age tribalism and perpetual warfare, a problem the New Guineans never cracked? Because Westerners lucked out in their geography, Diamond argues. Eurasia had a greater absolute number of plant and animal species and more of them proved suitable for domestication.

The Chinese lost their technological edge, also for a geographical reason, in Diamond's view: the connectedness of the Chinese mainland allowed one ruler to dominate and make irreversible errors, like destroying the Chinese fleet, whereas in Europe, with its balkanisation and competing statelets, diversity thrived and the best had a better chance of winning out. By

colonial times, this left Europeans as the winners, thanks to their superior geography.

Single cause explanations generally make historians roll their eyes but the boldness and ingenuity of Diamond's thesis certainly puts geography more on the map than it was before. Yet, does genetics have no role at all in shaping human history?

Many readers who like the political implications of Diamond's thesis that Western dominance is an accident of geography and therefore no race is better than any other - may skip over his premise of New Guinean genetic superiority. But if New Guineans adapted genetically by developing the intellectual skills to survive in their particular environment, as Diamond says is the case, why should not other populations have done exactly the same?

In attributing western advance solely to geography, while tacitly excluding the genetic explanation invoked for the New Guineans, Diamond focuses on the development of agriculture. But archaeologists now believe that in the Near East sedentism came long before agriculture: first people settled down, abandoning the foraging way of life. Then they took to cultivating wild plants. Then, probably by accident, they developed domestic varieties of plant and animal species. The critical step was not domestication, but sedentism. This finding would seem to undercut an important part of Diamond's case because, unlike the case with agriculture, it's harder to see any geographical reason why sedentism should have risen in one society and not another. Given that the human form was undergoing another genetically driven change around this time, the gracilisation of the skull and skeleton, a genetic explanation for sedentism would not be so implausible. People such as the Nutufians perhaps responded to their environment with a different kind of sociality that enabled them to abandon the foraging way of life and settle down in fixed communities.

If sedentism was indeed prompted by an evolutionary change, it was one that may have occurred independently in different populations, as has happened with properties like pygmy stature, lactose tolerance and doubtless many others.

Such genetic adaptations, if they occurred, could not spread through the world's population like wildfire, since it can take many generations for gene frequencies in a population to change. Instead, they would take place at different rates in different populations. This wide spread in start times for the forager-settler transition could help explain why human societies throughout the world have attained such different levels of development.

41. Jared Diamond's thesis that geography determines the progress of a nation is borne out by all of the following EXCEPT

(1) The technological superiority of Taiwan and the progress made by that

nation.

(2) The stagnation in the once technologically advanced China.

(3) The superior intelligence of New Guineans who had to outwit their enemies in order to survive

(4) The climatic conditions of Eurasia that helped agriculture thrive there.

42. The passage

(1) strengthens Diamond's thesis of geography being the sole cause for the progress of nations.

(2) examines the possible roles genes and geography could have played in shaping human history.

(3) offers an alternative theory to negate Diamond's thesis.

(4) finds an answer to the question, "What caused different countries to grow at different rates?"

43. The inconsistency in Jared Diamond's argument is that:

(1) He wants to rule out racial difference and so is ready to accept any other explanation.

(2) He looks at different aspects of development while comparing different countries.

(3) The inherent abilities of the population is not taken into account.

(4) He uses genetics to explain one country's development while excluding it in another context.

44. What, according to the passage, could be an explanation for different rates of development in different parts of the world?

(1) The genes of the native population that propels the country on a particular course.

(2) Geographical features and economic resources that a country is blessed with.

(3) The fact that sedentism preceded the development of agriculture.

(4) Evolutionary changes that led to genetic adaptation took place at different rates in different populations.

45. As understood from the passage, which of the following statements is/are NOT true?

A. Diversity enables the best to survive while uniformity hampers progress.
B. Survival instinct forced the New Guineans to become sharper mentally.
C. Genetics could not have led to sedentism.
D. Jared Diamond sees agriculture as the reason for the greater progress made by Europeans.

(1) Only C
(2) B and C
(3) A and D
(4) B and D

Quantitative Ability

DIRECTIONS ***for questions 46 to 53:*** **Answer the questions independently of each other.**

46. Each of four girls, A, B, C and D, had a few chocolates with her. A first gave 1/3rd of the chocolates with her to B, B gave 1/4th of what she then had to C and C gave 1/5th of what she then had to D. Finally, all the four girls had an equal number of chocolates. If A had 80 chocolates more than B initially, find the difference between the number of chocolates that C and D initially had.

(1) 20
(2) 30
(3) 15
(4) Cannot be determined

47. In a survey conducted to find out the readership of three newspapers A, B and C, it was found that the number of people who read newspaper A is at least 20 and at most 40, the number of people who read newspaper B is at least 50 and at most 70, the number of people who read newspaper C is at least 70 and at most 83. It was also found that 8 people read all the three newspapers and 85 people read at least two of the three newspapers. Find the minimum number of people who read both A and B but not C.

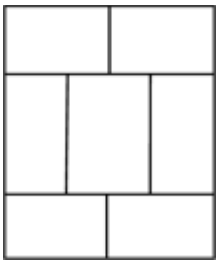
(1) 1
(2) 2
(3) 3
(4) 0

48. There are twenty-five identical marbles to be divided among four brothers such that each of them gets no less than three marbles. In how many ways can the marbles be divided among the four brothers?

(1) 286
(2) 364
(3) 455
(4) 560

49. Several identical cuboids of dimensions 4 cm × 3 cm × 2 cm are put together to form a large cube. What is the least possible volume (in cu.cm) of such a cube?

(1) 216
(2) 1728
(3) 5832
(4) 13824

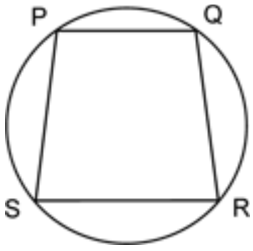
50. 

In the figure above, seven congruent rectangles are assembled together perfectly to form a bigger rectangle of perimeter 130 cm. Find the area (in sq.cm) of the bigger rectangle.

(1) 1000
(2) 1056
(3) 750
(4) 1050

51. Three filling pipes R, S and T together, can fill an empty tank in 2 hours, S can fill the tank four times faster than T. Initially R alone is opened and after x hours, it is closed and immediately S and T are opened together. The tank is full after another y hours. If the tank was filled in a total of 4 hours, and $x \neq y$, find the time (in hours) that T alone would take to fill the tank.

(1) 6
(2) 12
(3) 20
(4) 24

52. 

In the figure above, PQRS is a cyclic quadrilateral, where PQ = p cm, QR = q cm, RS = r cm and PS = s cm. If (PQ) (QR) = 3(PS) (RS) and ∠PQR =

120°, then *s* =

(1) $p + r - q$
(2) $q + r - p$
(3) $p + q - r$
(4) $\frac{p+q+r}{3}$

53. Find the value of $\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\ldots}}}}$.

(1) $\frac{\sqrt{5}-1}{2}$
(2) $\frac{\sqrt{3}-1}{2}$
(3) $\frac{\sqrt{2}+1}{2}$
(4) $\frac{\sqrt{5}+1}{2}$

DIRECTIONS *for questions 54 and 55:* Answer the questions on the basis of the information given below.

The people of an island named Tingo use the number system to the base 5. The students of that island had recently taken an exam called BAT, a management entrance test, to gain admissions into their top B-schools. Answer the following two questions that appeared in that exam.

54. The number N, expressed to the base five is 2323……23 upto a total of hundred digits. The remainder when N^{4231} is divided by 4 is

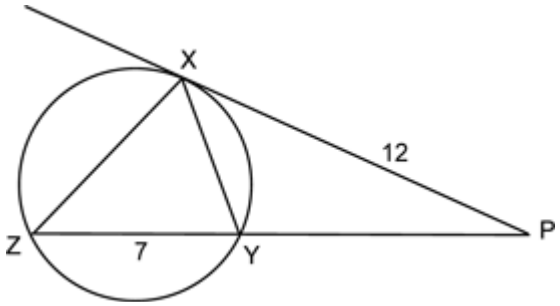
(1) 0
(2) 1
(3) 2
(4) 4

55. A number written to the base five is called an *oven* number, if it is exactly divisible by 3. Which of the following is not an *oven* number?

(1) $(4213)^{2143}$
(2) $(1423)^{2143}$
(3) $(1243)^{2143}$

(4) $(3421)^{2143}$

56. In the figure below, PX = 12 cm, YZ = 7 cm and the perimeter of PXY is 27 cm. Find the perimeter of ΔPXZ.



(1) 36 cm
(2) 27 cm
(3) 22.5 cm
(4) 31.5 cm

57. If a four-digit natural number is 7083 more than the number formed by reversing the order of its digits, then how many such natural numbers are possible?

(1) 18
(2) 24
(3) 27
(4) 36

58. Two trains, T_1 and T_2, simultaneously pass through a station on two parallel tracks without stopping at the station. The platform P_2 passed by the train T_2 is 50% more in length than the platform P_1 passed by train T_1. The train T_1 runs at a speed of 72 kmph, while the other train is 25% slower and 50% longer. What is the ratio of the times taken by the trains T_1 and T_2 in passing the platforms P_1 and P_2 respectively?

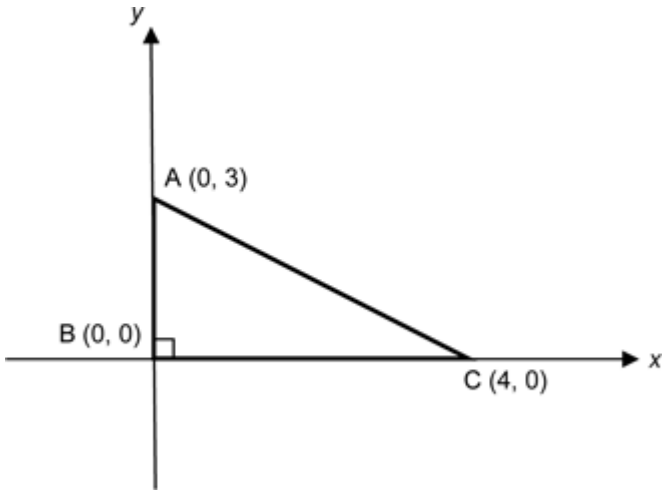
(1) 4 : 3
(2) 3 : 1
(3) 1 : 2
(4) Cannot be determined

59. P is a point outside the circle with centre O. If a straight line drawn through P intersects the circle at points A and B such that $AB = 4\sqrt{6}$ cm and $90° < \angle AOB < 120°$, which of the following could be the radius (in cm) of the circle?

(1) 4
(2) 5
(3) 6
(4) 7

60. Find the total number of ways in which a black square and a white square can be selected from a chessboard such that both the squares lie either in the same row or in the same column.

(1) 256
(2) 512
(3) 128
(4) 64



61.

In the above triangle ABC, find the co-ordinates of the foot of the perpendicular drawn from B to AC.

(1) $\left(\frac{4}{5}, \frac{3}{5}\right)$
(2) $\left(\frac{32}{25}, \frac{24}{25}\right)$
(3) $\left(\frac{4}{5}, \frac{12}{5}\right)$
(4) $\left(\frac{36}{25}, \frac{48}{25}\right)$

62. If $4^{[\log_2 \log_3 (4x+1)]} - \log_3 (4x+1)^6 + 8 = 0$ and $x > 4$, find $\log_4(x - 4)$.

(1) 2

(2) 3
(3) 4
(4) 6

63. Ours is a big family. I have thrice as many brothers as sisters and my sister Bharathi has four times as many brothers as sisters. How many children do my parents have?

(1) 15
(2) 16
(3) 21
(4) 20

64. A and B have written an entrance exam and scored 55 marks and 85 marks respectively. Every question answered correctly fetches one mark but the negative marks per wrong answer for the first twenty wrong answers is different from that for the remaining wrong answers. A and B attempted 160 and 150 questions respectively. If A and B correctly answered 50% and

of the questions that they attempted respectively, find the negative mark for each wrong answer beyond the first twenty wrong answers.

(1) 1/2
(2) 1/3
(3) 1/4
(4) 2/3

65. A certain sum is invested at simple interest. If the sum becomes *k* times itself in 16 years and 2*k* times itself in 40 years, in how many years will it become 4*k* times itself?

(1) 96 years
(2) 88 years
(3) 80 years
(4) 64 years

SOLUTIONS

Logical & Data Interpretation

1. Market price per share = P.E × EPS
It is greater than Rs.500 but less than Rs.1000 for Dr. Reddy's Laboratories, Sun Pharmaceuticals Industries, Jindal Steel and Power, Madras Cements, Oil and Natural Gas Corporation, Hindustan Petroleum Corporation, HCL Infosystems, Hughes Software. A total of eight companies. Choice (4)

2. Dividend is more than Rs.10 for Oil and Natural Gas Corporation $\left(\frac{11.6 \times 3.6 \times 72.6}{100}\right)$, Hindustan Petroleum Corporation $\left(\frac{8.6 \times 3.9 \times 59.3}{100}\right)$, and Hero Honda $\left(\frac{33.4 \times 3.7 \times 14.7}{100}\right)$. A total of 3 companies. Choice (2)

3. NPM (%) = PAT as percentage of sales.
By observation this is more than 50% only for Hinduja TMT. Hence it is highest for Hinduja TMT. Choice (1)

4. Change in sales for any company = $\frac{\text{Sales} \times \%\text{change in sales}}{(100 + \%\text{change in sales})}$
From observation choices (1) and (4) can be eliminated. Among choices (2) and (3)
HPCL $\rightarrow 56680 \times \frac{13.9}{113.9} \cong 6900$ and
ONGC $\rightarrow 36175 \times \frac{27.5}{127.5} \cong 7800$ Choice (3)

5. As none of the persons is a Haralal, Gabbar Singh could not have worn a red or green shirt. If Gabbar had worn a red shirt, then Amar could not have made such a statement. If Gabbar had worn a green shirt, then Anthony could not have made such a statement.
$\therefore$ Gabbar should have worn a yellow shirt. Choice (2)

6. As both are saying Feroz is wearing a red hat, both must belong to same type.
As Dhiraj is saying that Feroz is wearing a yellow shirt and Suraj is saying that Feroz is wearing a green shirt, both of them cannot belong to same type, which is a contradiction.
$\therefore$ Such a conversation is not possible. Choice (4)

7. Given, Veeru always tells the truth.
∴Jai is a Lalpila. i.e. he mistakes red as yellow and as he is saying that Basanti is wearing a yellow saree, we can say that Basanti is not wearing a red saree. She is wearing a saree of yellow or green or some other colour. As Jai says that Veeru is a Haralal, Veeru cannot be Haralal. He can be either a Lalpila or a Pilhara. He cannot be a Lalpila, as if he was a Lalapila, then the saree must be of red colour, which is a contradiction.
∴Veeru is a Pilhara and the saree is of green colour. Choice (2)

8. Given, Veeru always tells the truth.
∴Jai is a Lalpila. i.e. he mistakes red as yellow and as he is saying that Basanti is wearing a yellow saree, we can say that Basanti is not wearing a red saree. She is wearing a saree of yellow or green or some other colour. As Jai says that Veeru is a Haralal, Veeru cannot be Haralal. He can be either a Lalpila or a Pilhara. He cannot be a Lalpila, as if he was a Lalapila, then the saree must be of red colour, which is a contradiction.
∴Veeru is a Pilhara and the saree is of green colour. Choice (1)

9. Given,
Arjun attempted 125 problems and got 67 points i.e., he already lost 60 x 1/6 = 10 points for unattempted problems and for every failure he loses another 4/3 (1 mark of the question and 1/3rd negative marks) points of this 115 points.

$$125 - 10 - \frac{4}{3}(F) = 67$$

$F = 36$

Total successful attempts = 125 – 36 = 89
In Dupe, number of successful attempts = 17 – 6 = 11

$$\text{Net score} = 11 - \left(6 \times \frac{1}{3}\right) - 18 \times \left(\frac{1}{6}\right) = 6$$

Net score in Dance = 12
Number of failures in Digit = 6
Now, sum of number of unattempted problems and successful attempts in Digit is 34 and as the total score in Digit is a integer, the number of unattempted problems must be a multiple of 6.
By trail and error,
Number of unattempted problems = 18
Number of attempted problems = 22
Number of successful attempts = 16
Net score = 11
Number of failures in Dance = 3
Net score = 12
By trail and error,
Number of unattempted problems, which must be a multiple of 6 = 12
Number of successful attempts = 15
Now total successful attempts = 89
$\therefore$ Number of successful attempts in Dice = 17
$\therefore$ Number of failures = 12
$\therefore$ Net score = 12
Number of failures in Dynasty = 9
Number of unattempted problems in Dynasty = 6

Game	T.P	P.A	S.A	F	N
Dice	35	29	17	12	12
Dance	30	18	15	3	12
Dupe	35	17	11	6	6
Digit	40	22	16	6	11
Dynasty	45	39	30	9	26

T.P = Total Problems; P.A = Problems Attempted;
S.A = Successful Attempts; F = Failures;
N = Net score.

Choice (3)

10. Given,
Arjun attempted 125 problems and got 67 points i.e., he already lost 60 x 1/6 = 10 points for unattempted problems and for every failure he loses another 4/3 (1 mark of the question and 1/3rd negative marks) points of this 115 points.

$$125 - 10 - \frac{4}{3}(F) = 67$$

$F = 36$

Total successful attempts = 125 – 36 = 89
In Dupe, number of successful attempts = 17 – 6 = 11

$$\text{Net score} = 11 - \left(6 \times \frac{1}{3}\right) - 18 \times \left(\frac{1}{6}\right) = 6$$

Net score in Dance = 12
Number of failures in Digit = 6
Now, sum of number of unattempted problems and successful attempts in Digit is 34 and as the total score in Digit is a integer, the number of unattempted problems must be a multiple of 6.
By trail and error,
Number of unattempted problems = 18
Number of attempted problems = 22
Number of successful attempts = 16
Net score = 11
Number of failures in Dance = 3
Net score = 12
By trail and error,
Number of unattempted problems, which must be a multiple of 6 = 12
Number of successful attempts = 15
Now total successful attempts = 89
$\therefore$ Number of successful attempts in Dice = 17
$\therefore$ Number of failures = 12
$\therefore$ Net score = 12
Number of failures in Dynasty = 9
Number of unattempted problems in Dynasty = 6

Game	T.P	P.A	S.A	F	N
Dice	35	29	17	12	12
Dance	30	18	15	3	12
Dupe	35	17	11	6	6
Digit	40	22	16	6	11
Dynasty	45	39	30	9	26

T.P = Total Problems; P.A = Problems Attempted;
S.A = Successful Attempts; F = Failures;
N = Net score.

Choice (1)

11. Given,
Arjun attempted 125 problems and got 67 points i.e., he already lost 60 x 1/6 = 10 points for unattempted problems and for every failure he loses another 4/3 (1 mark of the question and 1/3rd negative marks) points of this 115 points.

$$125 - 10 - \frac{4}{3}(F) = 67$$

$F = 36$

Total successful attempts = 125 – 36 = 89
In Dupe, number of successful attempts = 17 – 6 = 11

$$\text{Net score} = 11 - \left(6 \times \frac{1}{3}\right) - 18 \times \left(\frac{1}{6}\right) = 6$$

Net score in Dance = 12
Number of failures in Digit = 6
Now, sum of number of unattempted problems and successful attempts in Digit is 34 and as the total score in Digit is a integer, the number of unattempted problems must be a multiple of 6.
By trail and error,
Number of unattempted problems = 18
Number of attempted problems = 22
Number of successful attempts = 16
Net score = 11
Number of failures in Dance = 3
Net score = 12
By trail and error,
Number of unattempted problems, which must be a multiple of 6 = 12
Number of successful attempts = 15
Now total successful attempts = 89
∴ Number of successful attempts in Dice = 17
∴ Number of failures = 12
∴ Net score = 12
Number of failures in Dynasty = 9
Number of unattempted problems in Dynasty = 6

Game	T.P	P.A	S.A	F	N
Dice	35	29	17	12	12
Dance	30	18	15	3	12
Dupe	35	17	11	6	6
Digit	40	22	16	6	11
Dynasty	45	39	30	9	26

T.P = Total Problems; P.A = Problems Attempted;
S.A = Successful Attempts; F = Failures;
N = Net score.

Choice (3)

12. Given,
Arjun attempted 125 problems and got 67 points i.e., he already lost 60 x 1/6 = 10 points for unattempted problems and for every failure he loses another 4/3 (1 mark of the question and 1/3rd negative marks) points of this 115 points.

$$125 - 10 - \frac{4}{3}(F) = 67$$

$F = 36$

Total successful attempts = 125 – 36 = 89
In Dupe, number of successful attempts = 17 – 6 = 11

$$\text{Net score} = 11 - \left(6 \times \frac{1}{3}\right) - 18 \times \left(\frac{1}{6}\right) = 6$$

Net score in Dance = 12
Number of failures in Digit = 6
Now, sum of number of unattempted problems and successful attempts in Digit is 34 and as the total score in Digit is a integer, the number of unattempted problems must be a multiple of 6.
By trail and error,
Number of unattempted problems = 18
Number of attempted problems = 22
Number of successful attempts = 16
Net score = 11
Number of failures in Dance = 3
Net score = 12
By trail and error,
Number of unattempted problems, which must be a multiple of 6 = 12
Number of successful attempts = 15
Now total successful attempts = 89
∴ Number of successful attempts in Dice = 17
∴ Number of failures = 12
∴ Net score = 12
Number of failures in Dynasty = 9
Number of unattempted problems in Dynasty = 6

Game	T.P	P.A	S.A	F	N
Dice	35	29	17	12	12
Dance	30	18	15	3	12
Dupe	35	17	11	6	6
Digit	40	22	16	6	11
Dynasty	45	39	30	9	26

T.P = Total Problems; P.A = Problems Attempted;
S.A = Successful Attempts; F = Failures;
N = Net score.

Choice (4)

13. From the given conditions, company B gives bonus during Deepavali, and it should be 10,000 since its given that (Ramzan – 5,000 and Christmas – 12,000), so also company C gives bonus during Ramzan (since company A – Christmas and Company B Deepavali, given) which is 5,000 and is in the manufacturing sector and company A gives a bonus of Rs.12,000 and should be in IT sector (since 5,000 – Manufacturing and 10,000 – Non IT).
∴ Only choice (4) is true.

Choice (4)

14. It is given that either B or A sits to the immediate right of D. It is also given that two people sit in between B and D, hence B does not sit to the immediate right of D. So, A sits to the immediate right of D.
If A sits to the immediate right of D, then the possible arrangements are
D A _ _ _ G _ → (1)
G _ _ _ _ D A → (2)
_ D A _ _ _ G → (3)

(2) can be ruled out because three people sit between A and G. Three people sit between B and E and four people sit between C and E.
So, (1) also is ruled out.
Considering (3), we get
E D A F B C G.
Hence, F sits exactly at the middle of the row. Choice (3)

15. Let number of 1's obtained be x and number of 2's obtained be y.
∴Number of 3's obtained = $5x$ and number of 5's obtained = y
$x + y + 5x + y = 50 - (22 + 6)$
$6x + 2y = 22$
Since 'x' must be an even number, 'x' can only be two.
If $x = 2$, $y = 5$
∴Number of 1's + 3's + 5's = 2 + 10 + 5 = 17 Choice (2)

16.

	Essi	KK	Kit	Maha
Ashwath	x	x	x	✓
Charan	✓	x	x	x
Karthik	x	✓	x	x
Srinivas	x	x	✓	x

(a) Karthik is different from Essi and Kit.

(b) Essi is different from Ashwath and KK.
⇒ Ashwath is different from KK.

(c) Srinivas and Karthik are different from Maha.
⇒ Srinivas is not Essi. Hence, Ashwath is nicknamed Maha. Choice (2)

17. Neither of the statements alone is sufficient as each has only partial information about the number of employees in two years.
From I and II, let the number of employees at the start of the year be 100.
∴ In this case, only 50 employees left the company.
Let the number of employees at the start of the year be more than 100 employees. In this case, more than 50 employees left the company. We cannot answer the question.
Choice (4)

18. Let each person be denoted by the first letter of his name.
Given, I > M and J did not finish first or second.
From I, M finished third in the race.
∴ I and one of L and N finished the race first and second in any order.
∴ I alone is not sufficient.
From II, Karan finished before only Lala.
∴ Lala and Karan finished sixth and fifth respectively.
∴ Niran finished first. As Irfan finished before Manoj and at least two persons finished before Jagan, neither Manoj nor Jagan finished the race second. Hence, Irfan finished second.
∴ II alone is sufficient. Choice (2)

19. It is given that, P has four uncles & three aunts.
⇒ M and N together have a total of four brothers and three sisters i.e. seven siblings.
As N has two siblings, M has five siblings.
From statement (I) alone, N has two brothers.
⇒ M has the remaining siblings i.e. two brothers and three sisters.
∴ (I) alone is sufficient.
The information from (II) is already known. Hence (II) alone is not sufficient.
Choice (1)

20. Let the time taken by K be x.
Time taken by J = $x - 20$
Time taken by L = $x + 40$
Now,
From I alone or II alone we cannot find the ratio of speeds of J and L.
By combining both (I) and (II)
$\frac{x-20}{x+40}=\frac{750}{1000}=\frac{3}{4} \Rightarrow x = 200$
⇒ Speed of K = 5 m/s. Choice (3)

Verbal Ability

21. **Number of words and Explanatory notes for RC:**

Number of words : 771

The author does not present any significant opinions of his own in the passage. Neither does he analyse the opinions of other writers. He merely presents, to us, the opinions that different writers have. Choice (4)

22. **Number of words and Explanatory notes for RC:**

Number of words : 771

In the passage the author offers the different opinions writers have, on what parents and teachers need to keep in mind as they deal with growing boys. So, that is the major question being examined or answered. In the course of this, questions are asked about the connection between gender and interest and about what the characteristics of boys are, overall. The understanding of these 2 elements would help in determining how boys should be brought up or 'dealt with as they grow'.

Choice (3)

23. **Number of words and Explanatory notes for RC:**

Number of words : 771

While Sommers feels that boys should be helped, she implies that this should be done in a manner that does takes into account their masculinity. Gurian implies that it is necessary that boys should be understood for what they are, if they are to be helped. Kindlon makes seven recommendations. Choice (2)

24. **Number of words and Explanatory notes for RC:**

Number of words : 771

Statement 1 is correct in both parts – Pollock saying that nature and nurture must work together, and Sommers, saying that boys should be helped, though their masculinity shouldn't tampered with.
Statement 2 is wrong in its second half – Kindlon actually feels that they should be helped in developing some attributes, like emotional literacy. Statement 3 is wrong in its first half – Pollack feels that boys have emotional understanding, but display it through activity rather than through talk.
Statement 4 is wrong in its second half – Sommers, in saying that they should be helped, implies that their masculinity shouldn't be tampered with; therefore, their masculinity is important, and not everything is dependent on the manner in which they are brought up. Choice (1)

25. **Number of words and Explanatory notes for RC:**

Number of words : 771

1 is an idea put forth by Pollock. 2 is Gurian's idea (when he says that boys, when bored, tend to shut down). 3 is a distortion of Kindlon's idea – while he speaks of the high activity levels, he says that boys need particular circumstances to display these levels. 4 is the idea from Sommers – she believes that boys would be 'shortchanged' if girls are more in focus. Choice (3)

26. Statement A reports what the government's goals are. So, it is a fact. Note that the word avowed, which means self-confessed or self-declared is not the writer's comment – these goals openly-admitted or acknowledged are widely known – F. Statement (B) is an inference. Announcing a doubling of expenditure is a fact from which we infer the government or the Prime Minister's focus – I. Words 'laudable' and 'a step in the right direction' are the writer's opinion. So, statement (C) is a judgment – J. The last statement is an inference. That scientific research should benefit from the measures undertaken (establishment of five new institutes) is something which we could expect in the normal course. (Given this has been done, this should happen). So, FIJI is the answer. Choice (2)

27. Statement (A) is a report of the scenario in the nineties. It is a fact – F. There are two words or phrases in statement (B) which help us conclude that it is an opinion. 'Inevitably' and 'industry in itself' – J. Statement C talks of two independent situations. They are related developments, but the statement does not capture the relationship. Demands increased and government found it difficult to cope. The statement does not have linkers like so, as, hence, etc. So, the statement is a fact – F. Statement D is also like the previous one and qualifies as a fact – F. The last statement is a judgement. 'Not an organized and wholesome growth', 'the focus was on quantity and not on quality' are opinions – J. So, FJFFJ is the answer. Choice (4)

28. Statement A is an inference – the first half being a fact which can be verified and the second half a logical fallout – I. The strong term 'revolutionized' used in statement (B) makes it an opinion – J. Statement (C) is a fact. The phrases 'all but extinct' and 'virtually' are descriptive phrases and not to be mistaken for judgment – F. The writer makes an assertion – I. "Clearly, the future is multiplexes", statement (D) is a judgement – J. Statement (E) is an inference – Relationship between multiplex numbers increasing and product differentiation becoming a necessity is clearly brought out – I. So IJFJI. Choice (1)

29. Statement A is an opinion. The phrases which support that it is a judgment are has become a ritual, outdo each other and sensation-mongering. Observations which echo an opinion – J. Statement B is a fact, which can be verified – F. Statement C is an inference. We can infer that the switching support to the new Labour is what enabled the paper to claim credit for the party's victory. (When it claimed credit, it admitted that it had switched sides). Note that the first part of the sentence "And lo, and behold ------ Sun was shining on him" is only figurative representation of a fact. It is not to be treated as an opinion – I. The words 'effectively hypothecated make statement (D) a judgment – J. The last sentence also reflects the writer's opinion on Mr. Blair's decisions with regard to Europe – J. So, JFIJJ is the answer. Choice (2)

30. Statement (A) reports India's low ranking and is a fact. 'Abysmally low' is not an opinion. The ranking based on poor performance as reflected in a survey – F. Statement (B) is also a fact. Slipping one position indicates that conditions have worsened – F. Statement (C) is a veiled opinion and qualifies as judgment. When the author says growth should have improved the condition, the implication is it has not – J. Statement (D) is a judgment. While there is a fact which has been provided in the statement (quarter of a billion women being illiterate), the phrase 'depressing reading' suggests an opinion. (It is sad or tragic that this is the case) – J. Statement (E) is also an opinion. 'A result perhaps' indicates that this is how the writer interprets the situation – J. Hence FFJJJ. Choice (3)

31. **Number of words and Explanatory notes for RC:**

Number of words : 890

Right through the passage, the author points to the various effects and changes the world has seen after the end of the Cold War, leading us to the inference that he thinks it is very significant, and its significance is not recognised. Choice (4)

32. **Number of words and Explanatory notes for RC:**

Number of words : 890

Germany, a divided nation, was re-unified, not re-united with a neighbour. Choice (2)

33. **Number of words and Explanatory notes for RC:**

Number of words : 890

The last para points to what U.S. officials claim to have learnt, post-Cold War. That is presented in choice A. The other choices are sundry statements from the passage none of which can be considered a lesson. Choice (1)

34. **Number of words and Explanatory notes for RC:**

Number of words : 890

In para 3 the author indicates that America is paying no attention to the lessons from the collapse of the USSR, especially the follies of central planning. This thought is repeated again in para 5. Choice (3)

35. **Number of words and Explanatory notes for RC:**

Number of words : 890

When we consider the author's view that, though they were victors in an economic and spiritual struggle, the Americans took away only military conclusions, (when there were so many other conclusions that could be arrived at), we can infer that he feels that military and political matters are their priority. Choice (4)

36. The paragraph is about knowledge and its unimaginable power and potential. Option (1) concludes the para best. It is an effective continuation of the previous line – 'Unlike other ---- used up". It is a resource which gets generated even as we use it. The idea of knowledge in option (2) is tangential to the preceding lines. The word 'predictably' in option (3) is an inapt linker. It does not go with the previous references to knowledge as unimaginable and mysterious. Besides, a resource is generated. The use of give and get does not fit in here. Options (4) brings in ideas which have not been discussed in the para. Choice (1)

37. As the last sentence ends with the idea of two huge benefits which are likely to follow due to a recent experiment of growing meat in the lab, we have to look at on option which can fit in as probable benefits. Growing meat in the lab can lead to a ban on killing animals and strengthen fight against poaching do not fit the context aptly. So, choice (1) can be eliminated. Choice (2) is vague and meaningless. Choice (3) seems correct, but the pronoun 'they' in the option leads to ambiguity. When we talk of benefits, we are not referring to any particular group of people, alone being benefited. So, choice (3) is not the correct choice. Statement (4) is correct as it mentions two probable benefits. Choice (4)

38. The key words in the para are price and value. Economics is myopic and economists fail to draw a destination between the two is what the para conveys. So, choice (2) is correct. Options (1) refers to ideas which have not been discussed. Option (3) does not fit in with the idea of a cynic. On the same score, we eliminate option (4).
Choice (2)

39. Choice (1) is not an apt ending because idea of 'reverse metamorphosis' is not substantiated or explained in the para. The fact that babies are creative and imaginative does not lead to the conclusion arrived at in option (2). Option (3) is correct. The last two lines in the para clearly point to this conclusion. Option (4) seems right. Child indeed is the father of man suggests that there is a reflection of one in the other. But the ideas conveyed in the para do not capture this message.

Choice (3)

40. Choice (2) can be a continuation of the last sentence provided in the question but is not conclusive. Choice (3) is inapt because the reference to ladder leaning against the right wall in the para amounts to knowing what is important to us or beginning with the end or goal in mind. Choice (4) talks of success, which has not been discussed. Choice (1) conclude the idea bests. Choice (1)

41. **Number of words and Explanatory notes for RC:**

Number of words : 868

Refer to para 4: the superior intelligence of New Guineans is attributed to genetics not geography. Hence choice 3 is not an example for geography. Choice (3)

42. **Number of words and Explanatory notes for RC:**

Number of words : 868

Choice 1 contradicts the passage. Choice 2 is true - refer to the question with which para 8 ends and what follows it. Choice 3 is incorrect as no alternative theory is proposed. Choice 4 is incorrect as no answer is provided. Choice (2)

43. **Number of words and Explanatory notes for RC:**

Number of words : 868

Refer to para 8 - the inconsistency lies in using genetics to explain the superior intelligence of New Guineans while ignoring the same as explanation in other contexts.

Choice (4)

44. **Number of words and Explanatory notes for RC:**

Number of words : 868

Refer to the first sentence of the third para from the end of the passage. 'In attributing western advance solely to geography, while tacitly excluding the genetic explanation involved for the New Guineans ……' It is clear that Jared Diamond is not consistent.

Choice (4)

45. **Number of words and Explanatory notes for RC:**

Number of words : 868

Statement A is true – refer to para 6, in the example about China he says about Europe …. diversity thrived and the best had a better chance of winning out.
Statement B is true – refer to para 4, last sentences (….. one needed one's wits to survive). Statement C is false negated by para 9, penultimate sentence (… a genetic explanation for sedentism would not be implausible).
Statement D is true – refer to para 2 (…. agriculture got started there first, giving Europeans a head start……). Choice (1)

Quantitative Ability

46. Let's calculate this from the last.

A	B	C	D
x	x	x	x

So after 'C' gave 1/5 of her share to D she is left with 'x'.

$\Rightarrow$ Before she gave to D she had $\frac{5}{4}x$.

A	B	C	D
x	x	$\frac{5}{4}x$	$\frac{3}{4}x$

So this is the situation before C gave to D (or) after B gave to C.
So B is left with 'x' after she gave 1/4th of his chocolates to C.

$\Rightarrow$ Before B gave to C, she had $\frac{4}{3}x$.

A	B	C	D
x	$\frac{4}{3}x$	$\frac{11}{12}x$	$\frac{3}{4}x$

This is the situation after A gave 1/3rd of his share to B.

$\Rightarrow$ Initially 'A' had $\frac{3}{2}x$

$\therefore$

A	B	C	D
$\frac{3}{2}x$	$\frac{5}{6}x$	$\frac{11}{12}x$	$\frac{3}{4}x$

Given A – B = 80

$\Rightarrow \frac{4}{6}x = 80 \Rightarrow x = 120$ and $C - D = \frac{1}{6}x = 20$

Alternative solution:

Considering only the transactions A $\rightarrow$ B and B $\rightarrow$ C, A will have $\frac{2}{3}$A and B will have $\frac{3}{4}\left(B + \frac{A}{3}\right)$. But it is given that A and B finally had an equal number. So we get $\frac{2}{3}A = \frac{3}{4}\left(B + \frac{A}{3}\right)$ --- (1). Also, given that A – B = 80 ---- (2).

Now, from (1) and (2) we get A = 180 and B = 100 and also that everyone has 120 chocolates with them in the end.

Now considering the transactions B $\rightarrow$ C and C $\rightarrow$ D, we get

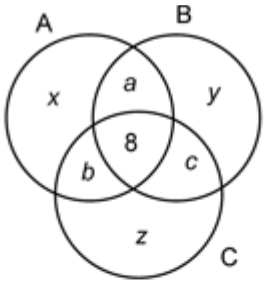
$$\frac{4}{5}\left(\frac{C + \left(100 + \frac{80}{3}\right)}{4}\right) = \frac{1}{5}\left(C + \frac{\left(100 + \frac{180}{3}\right)}{4}\right) + D = 120$$

$\Rightarrow$ C = 110 and D = 90

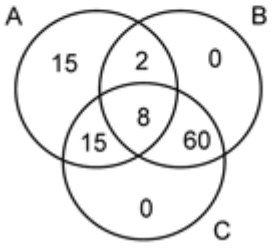
$\Rightarrow$ C – D = 20

Choice (1)

47.



Given that $a + b + c + 8 = 85$
$\Rightarrow a + b + c = 77$
For a to be minimum $b + c$ should be maximum.
The maximum value of $b + c$ is 75 ($\because n(c) = 83$)
$\therefore$ The minimum value of a is 2.
The following values satisfy all the constraints.



Choice (2)

48. First give away two marbles to each brother. Then the problem is equivalent to the situation where the remaining 17 marbles need to be distributed among four brothers, such that each brother receives at least 1 marble.

This can be done in ${}^{17-1}C_{4-1} = {}^{16}C_3 = \frac{16 \times 15 \times 14}{1 \times 2 \times 3} = 560$ ways. Choice (4)

49. The smallest cube that can be constructed with the blocks of dimension 4 cm × 3 cm × 2 cm will have an edge equal to LCM (4, 3, 2) i.e., 12 cm. Hence its volume is 12^3 i.e., 1728 cu.cm. Choice (2)

50. Let the length and breadth of each congruent rectangle be l and b respectively.
Clearly, 2l = 3b (from the figure, by observation)

$\therefore$ Length of big rectangle = $l + 2b = \frac{7b}{2}$

Breadth of big rectangle = 2l = 3b
Ratio of length and breadth of big rectangle = 7 : 6
As perimeter of the bigger rectangle 130 cm, its length = 35 cm and breadth = 30 cm.
The required area = 35 × 30 = 1050 sq.cm. Choice (4)

51. Let the capacities of the three taps be r, s and t.

Given $r + s + t = \frac{1}{2}$ and $s = 4t$

$\Rightarrow s + t = 5t = \frac{1}{2} - r$

Further $(r)(x) + (5t)(y) = 1$ and $x + y = 4$

Hence $(r)(x) + \left(\frac{1}{2} - r\right)(4 - x) = 1$

$\Rightarrow 4rx - 8r - x + 2 = 0$

$\Rightarrow (x - 2)(4r - 1) = 0$

$\Rightarrow x = 2$ or $r = \frac{1}{4}$, but $x \neq y$.

Hence $r = \frac{1}{4}$ and $t = \frac{1}{5}\left(\frac{1}{2} - r\right) = \frac{1}{20}$

Hence T alone takes 20 hours.

Alternative solution:

Let the capacities of the three taps be 'a' units, 4 units and 1 unit per hour. Now total capacity of the tank is $(a + 4 + 1) \times 2$ units. Also, $[(a \times x) + (4 + 1)(y)]$ will be the capacity of the tank. Hence $(a + 5) \times 2 = [ax + 5(4 - x)]$.

$\Rightarrow 2a + 10 = (a - 5)x + 20$

$\Rightarrow a(2 - x) = 5(2 - x)$, but since $x \neq y \neq 2$, we get $a = 5$ and the capacity of tank $= 2(a + 5) = 20$ units.

$\Rightarrow$ T alone can fill the tank in 20 hours. Choice (3)

52. $PR^2 = PQ^2 + QR^2 - 2(PQ)(QR)\cos\angle PQR = p^2 + q^2 + pq$

$PR^2 = PS^2 + SR^2 - 2(PS)(SR)\cos\angle PSR$

$= s^2 + r^2 - 2sr\cos(180° - \angle PQR)$

$p^2 + q^2 + pq = s^2 + r^2 - sr$

Adding pq both sides, $(p + q)^2 = s^2 + r^2 - sr + pq$

$= s^2 + r^2 - sr + 3sr = (s + r)^2$

$p + q = s + r$

$s = p + q - r$ Choice (3)

53. Let the entire continued fraction be x.

$\therefore x = \frac{1}{1 + x}$

$\Rightarrow x^2 + x - 1 = 0 \quad \Rightarrow x = \frac{-1 \pm \sqrt{5}}{2}$

As $x > 0$, $x = \frac{\sqrt{5} - 1}{2}$ Choice (1)

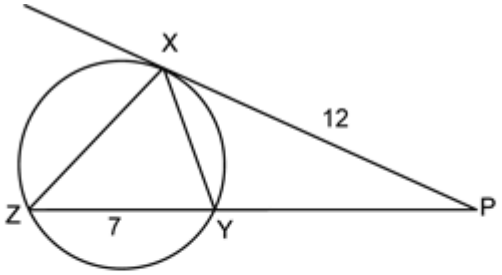
54. Since the given base is 5, the remainder rule for 4 is similar to the remainder rule for 9 that we have in our base 10.
When a number is expressed in base 5, the four's remainder of the number is equal to the fours remainder of the sum of the digits of the number.
Given N = 2323……23 (100 digits)
Sum of the digits in our base of 10 is 250.
The 4's remainder of 250 is 2. [We can verify that if 250 is expressed in base 5, i.e. $(2000)_5$ the sum of the digits (i.e. 2) has the same 4's remainder]
This means when N itself is divided by 4, the remainder is 2.
$\therefore N^{4231}$ leaves a remainder of 0 when divided by 4.

Alternative solution:

The number N is of the form
$2 \times 5^{99} + 3 \times 5^{98} + 2 \times 5^{97} + \ldots\ldots\ldots 3 \times 5^2 + 2 \times 5^1 + 3 \times 5^0$
$= 2(5^{99} + 5^{97} + \ldots\ldots 5^1) + 3(5^{98} + 5^{96} + \ldots\ldots 5^0)$
$= 2 \times$ (even number) + 3(even number).
Hence N is an even number. Any even number raised to a power of 2 or more will definitely be divisible by 4. Choice (1)

55. In the given options other than 1423, all other numbers are divisible by 3. 1423 leaves a remainder 1 when divided by 3.
Hence $(1423)^{2143}$ leaves remainder 1 when divided by 3.
$\therefore (1423)^{2143}$ is not oven.
Note: In order to check out the remainders of each option, first convert them into base 10 and apply the remainder rule for three.
For example $(1423)_5 = (238)_{10}$
Clearly 238 divided by 3 leaves a remainder if 1 and hence $(1423)^{2143}$ leaves remainder 1 when divided by 3. Choice (2)

56.



We have $PX^2 = PY \times PZ$
$\Rightarrow 144 = x(x + 7)$
$x = 9$
Also $\angle PXY = \angle XZY$ [Alternate segment Theorem]
$\therefore \Delta PXY$ is similar to ΔPZX
$\Rightarrow$ Perimeters of ΔPXY and ΔPZX will be in the ratio PX : PZ i.e. 3 : 4
Since perimeter of PXY is 27 cm perimeter of PXZ is 36 cm. Choice (1)

57. Let the number be *abcd*
Reversing the number, we get *dcba*
abcd – *dcba* = 7083 ----- (1)
(1000*a* + 100*b* + 10*c* + *d*) – (1000*d* + 100*c* + 10*b* + a) = 7083
999(*a* – *d*) + 90(*b* – *c*) = 7083 i.e.,
111(*a* – *d*) + 10(*b* – *c*) = 787 ------ (2)
(1) implies that *a* > *d*
–9 ≤ *b* – *c* ≤ 9
∴697 ≤ 111(*a* – *d*) ≤ 877
Only possible value of *a* – *d* = 7
From (2), *b* – *c* = 1
(*a*, *d*) can be (9, 2), (8, 1) or (7, 0)
(*b*, *c*) can be (9, 8), (8, 7), ... or (1, 0)
∴(*a*, *d*) has 3 possibilities and (*b*, *c*) has 9 possibilities.
∴(*a*, *b*, *c*, *d*) has 27 possibilities. Choice (3)

58. We can use the symbol P and T for the length of the platform and train respectively.
The data is tabulated below

$P_1 = 2p$	$T_1 = 2t$	$S_1 = 4u = 72$ kmph
$P_2 = 3p$	$T_2 = 3t$	$S_2 = 3u = 54$ kmph

The ratio of the times taken

$$= \frac{P_1 + T_1}{S_1} \frac{S_2}{P_2 + T_2} = \frac{2p + 2t}{3p + 3t} \frac{3}{4} = \frac{1}{2}$$

Choice (3)

59. The point P is not important here, but AB is a chord of length = $4\sqrt{6}$ cm (given).

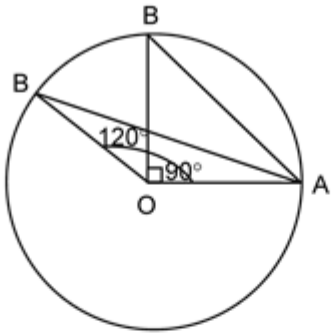
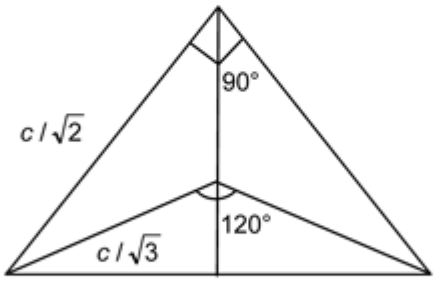


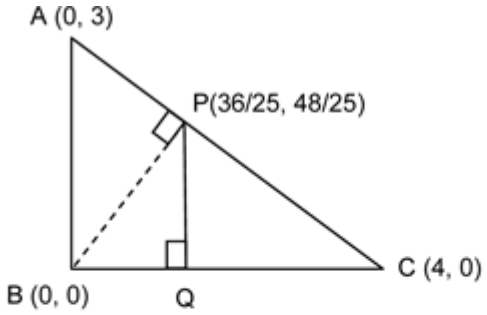
Fig A



For a circle of a given radius *r*, as the angle subtended by a chord at the centre increases from 90° to 120°, the chord length increases from $\sqrt{2}r$ to $\sqrt{3}r$.
For a chord of a given length *c*, as the angle subtended at the centre increases from 90° to 120°, the radius decreases from $c/\sqrt{2}$ to $c/\sqrt{3}$. As $c = 4\sqrt{6}$, we get $\frac{4\sqrt{6}}{\sqrt{3}} < r < \frac{4\sqrt{6}}{\sqrt{2}}$ i.e. $4\sqrt{2} < r < 4\sqrt{3}$ i.e. $5.66 < r < 6.93$
Among the options, 6 is the only possible value. Choice (3)

60. First a black square can be selected in 32 ways. For every black square selected there will be 4 white squares in that row and 4 white square in that column and hence we will have 8 ways to choose a white square.
$\therefore 32 \times 8 = 256$ ways. Choice (1)

61.



Let P(x, y) be the point such that BP $\perp$ AC
Let Q be the foot of the perpendicular from P on BC.

Clearly $\frac{1}{2}$ AB $\times$ BC $= \frac{1}{2}$ AC $\times$ BP = Area of ΔABC

$\Rightarrow$ BP $= \frac{12}{5}$ and ΔBPQ is similar to ΔABC ($\because \angle$PBQ = $\angle$CAB and $\angle$BPQ = $\angle$BCA)

Hence BQ $= \frac{BP}{AC} \times AB = \frac{36}{25}$ and PQ $= \frac{BP}{AC} \times BC = \frac{48}{25}$

$\Rightarrow$ The co-ordinates of the point P are $\left(\frac{36}{25}, \frac{48}{25}\right)$ Choice (4)

62. $4^{\log_2 \log_3(4x+1)} = 2^{2\log_2 \log_3(4x+1)}$
$= 2^{\log_2 [\log_3(4x+1)]^2} = [\log_3(4x+1)]^2$
$\therefore [\log_3(4x+1)]^2 - 6[\log_3(4x+1)] + 8 = 0$
$\therefore \log_3(4x+1) = 2$ or 4.
$\therefore x = 2$ or 20. As $x > 4$, $x = 20$
$\therefore \log_4(x-4) = 2$. Choice (1)

63. Let there be b boys and g girls.
$\Rightarrow b - 1 = 3s$ and $b = 4(s-1)$
$\Rightarrow 3s + 1 = 4s - 4 \Rightarrow s = 5$ and $b = 16$
$\Rightarrow s + b = 21$

Alternative solution:

Since I have thrice as many brother as sisters, the total number of siblings I have will be a multiple of 4. Hence, total children that my parents have (including me) will be of the form $4k + 1$. From the choices only option (3) is possible. Choice (3)

64. Let the negative marking per mistake for the first twenty mistakes be n_1 and for all the subsequent mistakes let it be n_2.
A attempted 160 questions and got only 80 correct and B attempted 150 questions and got only 100 correct.
So, $80(1) - 20(n_1) - 60(n_2) = 55$
$100(1) - 20(n_1) - 30(n_2) = 85$
$\Rightarrow 20 + 30n_2 = 30$
$\Rightarrow n_2 = 1/3$ Choice (2)

65. The sum becomes k times itself in 16 years and it becomes $2k$ times in 40 years both at SI.
$\Rightarrow$ The sum will earn an interest of k times itself in (40 – 16) i.e., 24 years, or an interest of $2kp$ in 48 years.
$\therefore$ It requires 40 + 2(24) i.e., 88 years for the sum to become $4k$ times itself.

Choice (2)