

MOCK CAT**SECTION – 1**

Directions for questions 1 – 5: The last sentence in the following passages has been deleted. Select the sentence, out of the available options, that best suits the end of the passage.

1. Contrary to Thomas Friedman’s fervent imperialist plea – Please, Mr. President, “do it right” – the Bush people have no plans of installing a “self-sustaining, progressive, accountable” government in Baghdad. At the end of the long sledge of Iraq, the result will not be a democracy, but another client regime, with an obligation to carry out Washington’s strategic brief.
 - (1) “Armed democratisation” might be a noble aim in theory, but it has few strategic benefits in practice.
 - (2) It may turn out to be a pyrrhic victory after all.
 - (3) For, example is always better than precept.
 - (4) Is Washington really serious about the long term implications of its foreign policy?
 - (5) This, perhaps, is in line with the history of Washington’s bungs elsewhere.

2. With the assault on New York, the anarchy that has been one of the by-products of globalisation in much of the world can no longer be ignored. The ragged, irregular armies of the world’s most collapsed zones have proved that they can reach to the heart of its richest and most powerful state. Their brutal coup is an example of what military analysts call “asymmetric threat” — in other words, the power of the weak against the strong.
 - (1) The lesson that we draw for posterity is: Don’t do to others what you don’t want others to do to you.
 - (2) Given the guerrilla warfare of today, the definition of the strong and the weak is hazy indeed.
 - (3) The oppressed always find a way out to give it back.
 - (4) What it has shown is that the strong are weaker than anyone imagined.
 - (5) That is the flip side of globalization.

3. The first lecture, the one that was supposed to explain what: scientific thinking is about, Feynman called “The Uncertainty of Science.” The uncertainty he had in mind was not that of Heisenberg, but rather that of Kari Popper: that scientists should be skeptical of their own theories, or in other words, have an open mind. As with most scientists who profess to follow Popper, he consistently refutes himself throughout his lectures.

To Feynman, science has three parts: the facts or body of knowledge, the method or process that we use to establish those facts, and the applications of science, that is to say, technology: To him it’s an article of faith that technology follows science. He would regard technology arising on its own as something akin to the Virgin Birth.

 - (1) But scientific precepts are a priory before technology can set store for us.
 - (2) When the irrefutable scientific facts take shape, the applications in the form of technology are bound to follow.
 - (3) But his real point is that technology is only incidental to the importance of science.
 - (4) The body, the method, and the application, therefore, form the triumvirate of science.
 - (5) Feynman’s ideas find great acceptance in today’s scientific world.

4. The framers of curriculums have differed greatly in the knowledge they prescribe. If there have been times when all the students at school or college studied the same things, as if it were obvious that without exposure to a common body of knowledge they would not be educated at all, there have been other times when specialization ran so wild that it might almost seem as if educated men had abandoned the thought of ever talking to each other once their education was completed.
- If knowledge is one of our marks, we can hardly be dogmatic about the kind or the amount. However, if the framer of a curriculum wants to minimize his risks,
- (1) he ought to take lessons from history.
 - (2) he ought not to be so iconoclastic at the same time.
 - (3) he ought to give due cognition to specialization in today's world.
 - (4) he has to take views of the student community as well.
 - (5) he can invoke an ancient doctrine which holds that an educated man ought to know a little about everything and a lot about something.
5. A shrewd peasant was always well enough protected against impostors in the market place, and we have all sorts of businessmen who have made themselves excellent judges of phoniness without the benefit of a high-school diploma; but this kind of shrewdness goes along with a great deal of credulity. Outside the limited field within which experience has taught the peasant or the illiterate businessman his lessons, he is often hopelessly gullible.
- (1) The skepticism and the gullibility go hand in hand.
 - (2) The situation has, however, changed remarkably of late.
 - (3) The educated man, by contrast, has tried to develop a critical faculty for general use, and feels fortified against imposture in all its forms.
 - (4) The peasant and the businessman of today can hardly make do with such crude differentiation.
 - (5) It is this gullibility which is ultimately exploited by the unscrupulous.

Directions for questions 6 – 10: Identify the incorrect sentence or sentences.

6. A. As well as causing stress, bad breath can be exacerbated by stress.
 B. One study showed that when teachers used more complex speech, very young children learn to create more complex sentences themselves.
 C. The storm reached its crescendo shortly before three a.m. in the morning.
 D. At the beginning of 1998 the World Bank established a special internal audit committee to examine problems of corruption in its lending policies.
- (1) B, C and D (2) A, B and C (3) A and B (4) C and D
7. A. A spa is a spring whose water has the highest temperature than the water in the surrounding area.
 B. It is not too much to say that had there been no IMF; there would have been no East Asia crisis.
 C. The police reached the place and when they left, 40 persons had been injured and 70 arrested.
 D. If you go on to let your dog chasing cars, he will get run over one day.
- (1) A, C and D (2) B, C and D (3) A, C and B (4) B and C

8. A. The question of when man started cooking his food has not been answered by anthropologists with any definiteness.
 B. There has not been sufficient rain this year.
 C. Dr. Friedman, who is a leader of the laissez faire school, goes farther than most other observers, particularly in accusing the Fund of laying the ground for the crisis.
 D. The Neanderthals appeared in Europe during the three interglacial period.
 (1) A and B (2) B and C (3) C and D (4) A and D
9. A. Many teenagers will turn off their friends and family to help them decide about college.
 B. The increasing popularity of the motorcycle as a convenient, economical form of transportation has been just short of astounding.
 C. An NGO friend had arranged the visit to a village where his project had begun working.
 D. It is believed that the under privileged people have registered no progress in the last four and a half decades.
 (1) A and D (2) A and C (3) B and D (4) C and D
10. A. The devastating news of my son's death kept coming back to me in different ways, each one as if I were hearing it for the first time.
 B. What a surprise one morning when she walked into the grocery store where I worked and convinced my boss to let me off long enough for her to take me to lunch.
 C. The ministers of the local churches called for hour of prayer on the town square.
 D. When the hour ended, as if on magical command, a soft rain began to fall.

Directions for questions 11 – 13: Sentences given in each question, when properly sequenced form a coherent paragraph. Each sentence is labeled with a letter. Choose the most logical order of sentence from amongst the five choices given to construct a coherent paragraph. These questions carry **three marks** each.

11. A. The Dutch lower house of parliament last year demanded an investigation into activities of the Muslim population, particularly radical mosques.
 B. In Netherlands, attitudes towards the one million-strong Muslim community remain influenced by Pim Fortuyn, the radical politician killed in 2002 who was critical of Muslim conservatism and the threat it posed to Dutch liberalism.
 C. In Germany, two states Bavaria and Baden – Wurtemberg have proposed legislation to bar the headscarf from educational institutions.
 D. In Belgium, the government is hoping to push a similar legislation through parliament.
 E. The country has since the 1980s experienced a zero population growth; today immigrants from Turkey and other North African countries make up almost 9 per cent of Germany's population.
 F. Ironically, this recent emphasis on cultural uniformity comes at a time when the European Union is all for diversity and accommodation, the broader European ideal remaining an acceptance of differences.
 (1) CEDBAF (2) CDBAEF (3) BDAEFC (4) ABDECF (5) CEAEDEF

12. A. Society and governments at all levels should learn from their innovations by systematically evaluating and disseminating information about what works and what does not.
 B. Only then can the innovations be scaled up to improve the lives of the quarter of a billion poor people in India.
 C. The challenge is formidable, because making services work for poor people involves changing not only service delivery arrangements but also public sector institutions.
 D. As governments and citizens create incentives for these changes, they should be selective in the problems they choose to address.
 E. They should be realistic about implementation difficulties.
 F. And they should be patient.
 (1) ABCDFE (2) ABCDEF (3) BCDEFA (4) CDEFAB (5) CBADEF
13. A. In effect, Edward frequently argued a "typology" based not on scriptural revelation alone, but also on figures instituted in nature.
 B. On the one hand, he accepted and employed scriptural typology, the exegetical science by which events and figures in the Old Testament were understood to prefigure the revelation of new dispensation; and on the other, he explored the analogies to this historical, typological scheme in the revealed world of the Natural Universe.
 C. But his approach to the historical problem of man's knowledge of God led him away from rigidly traditional methods of reading Christ in all the scriptures and further from the Puritan habit of extending the biblical types into contemporary history.
 D. As I have tried to clarify elsewhere, Edward attempted a reconciliation of those symbolic habits of mind he found in scriptural exegesis with the impressions of God's revelation that he apprehended in Nature.
 E. He has taken great care to caution his readers against the dangers of antinomianism and a spiritual personalism that would nullify the concept of God's transcendent majesty and power.
 F. The typology Edward provided in "A history of the work of Redemption" is conservative indeed when compared to the possibilities he outlines in the "images or shadows of Divine Things" and examines in the "Religious Affections".
 (1) DFBCEA (2) DBFECA (3) DCEFBA (4) DBFEAC (5) ABFEDC

Directions for questions 14 – 25: Read through the following passages and answer the questions that follow.

Passage – I:

Alas, the label "skeptic" has been misapplied to paranormal events. Since "skepticism" refers to doubt, not denial -- critics think negatively but still call themselves "skeptics" and have gained unfairly by that label. In science, the more extraordinary a claim, the heavier the burden of proof. The true skeptic thinks agnostically, saying the claim is *not proved* rather than *disproved* and asserts that the claimant has not given proof and that science must continue without incorporating the new claim. Since the true skeptic does not assert a claim, *he has no burden to prove anything*. He goes on using the established theories of "conventional science". But if a critic asserts that he has a *negative hypothesis* --saying, for instance, that a

seeming psi result was actually due to an artifact--he is *making a claim* and therefore also has to bear a *burden of proof*.

Critics who assert negatively, but who mistakenly call themselves "skeptics," often act as though they have no burden of proof. Thus many critics feel it is only necessary to prove their counter-claims based upon plausibility rather than empirical evidence. Thus, if a subject in a psi experiment had an opportunity to cheat, many critics assume he must have, regardless of any absence of evidence, even ignoring the subject's past honesty. Similarly, improper procedures are sometimes assumed to cause a subject's high psi scores. Discovering an opportunity for error should make such experiments less evidential and convincing. It usually disproves the claim that the experiment was "air tight" against error, but it does not *disprove* the anomaly claim.

Unconvincing evidence does not completely dismiss it. If a critic attributes a result to artifact X, he must demonstrate that artifact X can and probably did produce such results. In some cases, the appeal to mere plausibility may be so great that nearly all would accept the argument; for example, when someone known to have cheated in the past had an opportunity to cheat in this instance, we might reasonably conclude he probably did this time, too. But in many instances, the critic closes the door on future research when science demands hypothesis testing. Alas, most critics seem content in their armchairs producing *post hoc* counter-explanations but science best progresses through investigations.

Contrarily, proponents who recognize the above fallacy go too far in the other direction. Some argue, that wigs do not deny the existence of real hair. We must remember science can tell us what is empirically unlikely but not what is empirically impossible. Evidence is always a matter of degree and is seldom conclusive. Some proponents seem unwilling to consider evidence in probabilistic terms and cling to any slim loose end. Both critics and proponents need to think of adjudication in science as in the law courts, imperfect and with varying evidence. Absolute truth, like absolute justice, is seldom obtainable. We can only do our best to approximate them.

14. Which of the following is the clearest distinction between a *claim not proved* and a *claim disproved*?
- (1) A *claim not proved* represents a claim proved to be wrong while a *claim disproved* means there is not enough evidence to support it.
 - (2) A *claim disproved* represents a claim proved to be wrong while a *claim not proved* means there is not enough evidence to support it.
 - (3) A *claim not proved* is the mark of a true skeptic while a *claim disproved* is the mark of a pseudo-skeptic
 - (4) A skeptic who proposes a negative hypothesis makes a *claim not proved* while one who makes a positive hypothesis makes a *claim disproved*.
 - (5) None of these
15. Which one of the following is a problem with the critics, as per the writer?
- (1) They hardly invoke actual physical evidence to disprove a claim.
 - (2) They call themselves skeptics, while in fact, they are not.
 - (3) They do not pay attention to the absence of physical evidence
 - (4) They give more credence to the plausibility of an event
 - (5) They do not assume the responsibility of providing any proof of what they claim.

16. The author, in the last two paragraphs, tries to
- (1) effect a compromise by proposing a via media between the opposing viewpoints
 - (2) make a case for accepting approximate evidence as the guiding criterion for accepting something as true.
 - (3) make a case against armchair critics, who hardly consider empirical evidence while evaluating anomaly claims.
 - (4) reason that there is nothing like absolute truth in either sciences or justice
 - (5) reconcile two opposing viewpoints by appealing to evidence from other fields.
17. With which of the following is/ are the author most likely to agree?
1. The label skeptic is widely misunderstood.
 2. The burden of proof remains the same irrespective of the ordinariness or otherwise of a scientific claim.
 3. An agnostic simply does not believe in the truth of a particular event unless he is given proof.
 4. Many critics appeal to empirical evidence to prove their counter-claims.

Choose your answer from the following options.

(1) 1, 3

(2) 1, 2, 3

(3) 2, 3, 4

(4) 1

(5) 2, 4

Passage – II:

Autism has a strong genetic component: With one identical twin autistic, the other has a 70 percent chance of having it, a risk 10 times that of fraternal twins. Yet great, unsuccessful effort has been spent looking for its genetics. To Wigler, the key lies in spontaneous mutations — novel alterations in the parental germ line of the offspring. Last year he formed a controversial theory for it. It suggests that females, who develop autism with a 1/4th frequency with which males do, may carry the genetic profile for it.

Wigler attributes the failure of conventional studies to their studies on families with more than one autistic child to search for differences in one genetic base. These differences could be any alteration in a base called SNPs. Uncovering SNPs shared by affected people would uncover high-risk people. The problem is locating the same target: they have implicated loci on 20 of the 23 human chromosomal pairs.

In his first autistic research, Wigler, with Sebat, tried to determine the role of spontaneous mutations, called copy number variations. Before human genome sequencing, researchers thought an individual always had two copies of a gene. In 2004, the team showed that even in healthy individuals, they could go missing from (or be added to) the genome via genetic rearrangements. Studies on families with only one autistic member showed that up to 10 percent of non-inherited autism cases could be caused by these rearrangements. They found that the structural events were primarily deletions, leaving individuals with only one copy of a particular gene and leading, sometimes, to its functional disruption.

Later, Wigler unveiled a unified genetic theory, which he cobbled together by examining families with multiple autistic individuals and incorporating both hereditary and spontaneous events. Focusing on families with the first two children affected, he found that third-born male children have a 50 percent risk of acquiring the disorder, whereas the risk for third-born girls is closer to 20 percent. From there, Wigler developed a two-

tiered hypothesis: The majority fall into the low-risk category, having spontaneous mutation. Contrarily, high-risk families — 25 percent of all, manifest the disease when an unaffected individual, mostly female, carries a sporadic mutation. In case of a male, the chances are roughly half.

Although Wigler's model is seen as a simpler way to view the genetics of autism, others find it incomplete. Critics note that it does not explain observations of families with an autistic child in which either second- or third-degree relatives are also affected or in which first-degree relatives show mild symptoms. And the model fails to explain why girls do not get autism as frequently as boys. Wigler believes that more data might help prove him. For instance, the girl-boy discrepancy could be explained if the genetic modifiers are sex-specific, an effect that might become apparent if researchers look at cases in which a normal mother has an autistic daughter.

18. Which of the following is a major problem in uncovering the genetic basis of autism in terms of the conventional approach?
- (1) Too many chromosomes are responsible for it
 - (2) There is great, complex interaction among different chromosomes responsible for autism, which is not amenable to studies.
 - (3) There is no clarity as to which chromosome is responsible for autism.
 - (4) Not enough subjects are available for studies.
 - (5) None of these
19. Which of the following purposes is served by the first paragraph in relation to the passage as a whole?
- (1) It sums up a major point of discussion, which is being explained by the rest of the passage.
 - (2) It sums up a major point of discussion, with the rest of the passage trying to explain why the efforts to decode autism have been unsuccessful.
 - (3) It discusses Wigler's work and how it has been instrumental in accounting for genetic basis of autism.
 - (4) It highlights a major point i.e. females carry autism more frequently and the rest of the passages discusses the reasons for it.
 - (5) It highlights a major unanswered question in autism research and the rest of the passage is again silent on it.
20. Which of the following is most nearly **CORRECT** in the context of the above passage?
- (1) High-risk families often have a male carrying a sporadic mutation leading to autism.
 - (2) An individual having a functional disruption in a single gene, because the other copy has been deleted, is a very common occurrence.
 - (3) The unified genetic theory of autism combines elements from two different theories and gives an integrated picture.
 - (4) In case of families with multiple affected members, the males have a greater risk of being autistic as compared to females.
 - (5) None of these

21. Which of the following could have been the most suitable title for the above passage?
- (1) Autistic Research: Some New Trends
 - (2) Wigler's Work on Autism: Some Unanswered Questions
 - (3) The Genetic Basis of Autism: Wigler's Work
 - (4) The Failure of Conventional Studies on Autism
 - (5) How Do Spontaneous Mutations Cause Autism?

Passage – III:

The most commonly used words are the ones evolving the most slowly, say researchers in *Nature*.

In one of the papers, Harvard University researchers investigated the evolution of English verb conjugations across 1,200 years while the Reading University researchers reviewed cognates (words sounding similar in different languages carrying the same connotation, such as "water" and the German "wasser") to discover how all Indo-European tongues have evolved from a common ancestor.

Pagel *et al* examined some 200 words in 87 Indo-European languages, including those for "water," "two," "to die" and "where." The number of cognate classes for each word ranged from one for frequent concepts such as *numbers* to 46 different basic sounds to describe a single entity like a *bird*. The word for *three* in all Indo-European languages and English is quite similar: from *tres* in Spanish to *drei* in German to the Hindi *teen*. In contrast, the *bird* has several sounds like *pajaro* in Spanish and *oiseau* in French.

They then narrowed their focus to their usage frequency in four Indo-European languages—English, Spanish, Greek and Russian. They found that they were used at similar rates even if the synonymous words were not cognates. "The high frequency words in Spanish are the same as the high frequency English," he says. "That indicated that we could come up with an Indo-European frequency of use."

The investigators have discovered that it would take just 750 years to replace less-used words and up to 10,000 years for new words to come into being. The Harvard researchers studied the roots of English, tracing verb conjugations in the language from 1,200 years ago to its current form. Across time, several past tense forms of verbs have died out in English and now it only one persists as a rule: adding "-ed" to the verb-ending. Research on grammatical texts from Old English catalogued all the irregular verbs. Among them: the still irregular "sing" / "sang," "go" / "went" as well as the since-regularized "smite" which once was "smote" in Old English but since has become "smitten," and "slink," which is now "slinked" but 1,200 years ago was "slunk." They located 177 irregular verbs in Old English and 145 that were still irregular in Middle English; today, only 98 of the 177 verbs have not been "regularized."

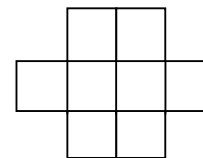
After calculating their usage frequency, researchers determined that the words that evolved most quickly into regular forms were used less than others. In fact, given two verbs, if one was used 100 times less frequently than others, it would evolve 10 times faster than them. They predict that the past tense of *wed* will regularize from *wed* to *wedded* in near future.

Partha Niyogi, in *The Computational Nature of Language Learning and Evolution* says these findings are consistent with lexical evolution models. "Languages are constantly changing," he notes. "In biological evolution, that fact has got great attention, but linguistically, this is happening constantly."

22. Which of the following represents the principal idea behind the passage?
- (1) To discuss the usage frequency of common words in four different Indo-European languages
 - (2) To convey the point that we are still uncertain about the origins of some words used in Indo-European languages
 - (3) To inform the reader about new developments taking place in linguistic research
 - (4) To inform the reader about the controversy surrounding a particular issue in linguistic research.
 - (5) To drive home the idea that within linguistic research, certain issues are still unresolved
23. Which of the following could be a suitable concluding line if you were to complete the last paragraph of the above passage?
- (1) Languages, all the more, are evolving over time just like speciation.
 - (2) This constant evolution of languages has been responsible for all the confusion regarding the usage of specific words.
 - (3) In short, the survival of the fittest applies here, too.
 - (4) You just have to appreciate it to realize it.
 - (5) Ultimately, nothing succeeds like success in language, too.
24. On the basis of the above passage, we **CANNOT** reasonably infer which ones out of the following?
- I. The past tense verb form of *eat* should become *eated* instead of *ate* earlier than *cost* becomes *costed* in future.
 - II. Several irregular verbs have been regularized over time.
 - III. Spanish shares several features with English.
- (1) I and III (2) I and II (3) II only
(4) I only (5) III only
25. Which of the following is an accurate representation of the structure of this passage?
- (1) The author states a point and discusses evidence gathered by two different sets of researchers, which converges.
 - (2) The author proposes a point and then talks about two different sets of researchers who hold opposite points of view and in the end, tries to reconcile their findings.
 - (3) The author discusses the work of two sets of researchers, leaving the question unanswered by the end of it.
 - (4) The writer addresses a significant issue with the help of scattered evidence collected from different branches of knowledge.
 - (5) The writer poses a question and tries to answer it with the help of available evidence.

SECTION – 2

26. Three fruit sellers were selling watermelons @ 3 each. One has 33, the second has 29 melons and the third person has only 27 melons. Each sold some melons until one man dropped his price to Rs. 1 each. The other two did likewise, and at this price they sold all the watermelons they had left and found that each person has earned the same amount of money at the end. What can be the maximum amount that each person earned?
- (1) 39 (2) 45 (3) 57 (4) 79 (5) 81
27. If $y = 2[x] + 3 = 3[x - 2] + 5$, then $[x + y]$ is
- (1) 10 (2) 15 (3) 12 (4) 14 (5) 16
28. What is the 1025th term of the sequence 1, 2, 2, 4, 4, 4, 4, 8, 8, 8, 8, 8, 8, 8, 8, 16, 16, 16, 16, 16
- (1) 2^{12} (2) 2^8 (3) 2^9 (4) 2^{10} (5) 2^{11}
29. Let X is any six digit number. Then what will the maximum value be of the ratio of Number X to the sum of the digits of number X:
- (1) 100000 (2) $111111/3$ (3) 1 (4) 999999 (5) can't be determined
30. You have a magical pot in which there are Rs. X. You also have four friends. You put your hand inside the pot and you get the rupees tripled so you give Rs. Y to your first friend. After sometime you again put your hand inside and get the remaining money in the pot tripled so you give Rs. 2 Y to your second friend. Again when you put your hand inside the pot the remaining money in the pot gets tripled, so you give Rs. 3Y to your third friend. When you reach your fourth friend you find that the magical pot is no more working as there is no money in the pot. Find the minimum value of X if the rupees are in denomination of 1 Re. coins.
- (1) 3 (2) 4 (3) 5 (4) 2 (5) 6
31. There are two co-prime numbers X and Y. While finding the HCF of X and Y by division method, four successive remainders are 4, 5, 7 and 9. If $X < Y$, then find the value of X.
- (1) 173 (2) 329 (3) 473 (4) 537 (5) 479
32. Find the number of integral solutions of $ab = a + b + 3$.
- (1) 4 (2) 6 (3) 8
(4) 2 (5) there are infinite solutions
33. A Titan clock loses 5 minutes per hour. An HMT clock loses 5 minutes per hour of the Titan clock A Citizen clock gains 5 min per hour of the HMT clock. All clocks are set right at 12.00 noon. What will be the time shown by the Citizen clock when it is 2:00 P.M?
- (1) 1:49:14 pm (2) 1:49:57 pm (3) 1:40:11 pm (4) 1:49:14 am (5) None of these
34. Six balls have to be placed in the squares of the figure given below such that each row contains at least one ball. In how many different ways can this be done?
- (1) 28 (2) 26
(3) 32 (4) 30
(5) None of these



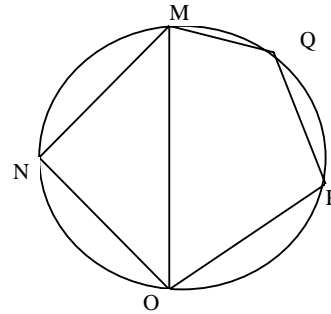
35. What are the numbers of quadratic polynomials $ax^2 + bx + c$ which satisfy the following conditions?
 I. a, b and c are distinct.
 II. $a, b, c \in \{1, 2, 3, 4, 5, 6\}$
 III. $x + 1$ divides $ax^2 + bx + c$
 (1) 8 (2) 12 (3) 10 (4) 0 (5) infinite
36. If L_1, L_2 and L_3 be the length of the altitudes of ΔABC from the vertices a, b and c. If Δ is the area and P is the semi-perimeter. What is the value of $\frac{1}{L_1} + \frac{1}{L_2} + \frac{1}{L_3}$?
 (1) $\frac{3\Delta}{P}$ (2) $\frac{3\Delta}{2P}$ (3) $\frac{P}{\Delta}$ (4) $\frac{\Delta}{2P}$ (5) $\frac{P}{2\Delta}$
37. If $[x]$ denotes the greatest integer value just below x then the value of $[x] + \left[x + \frac{1}{n}\right] + \left[x + \frac{2}{n}\right] + \dots + \left[x + \frac{n-1}{n}\right]$ is
 (1) $[nx]$ (2) $\left[\frac{n}{x}\right]$ (3) $\left[x + \frac{2}{n}\right]$ (4) n (5) None of these
38. If x, y and z are positive integers then $\frac{x}{y} + \frac{y}{z} + \frac{z}{x}$ is always greater than or equal to
 (1) 3 (2) $4\sqrt{3}$ (3) $\sqrt{3}$ (4) 4 (5) None of these
39. Let $T = \{3, 8, 13, 18, 23, \dots, 433, 438, \text{ and } 443\}$ be a set of positive integers and S is a subset of T such that the sum of no two elements of S is divisible by 4. Then the maximum possible number of elements in S will be
 (1) 20 (2) 21 (3) 22 (4) 23 (5) 25

Directions for questions 40 – 41: To decide the divisibility of an 'n' digit number by 7 we define a method $\alpha_1\alpha_2\alpha_3\alpha_4 \dots \alpha_n$ is divisible by 7 if $\alpha_13^{n-1} + \alpha_23^{n-2} + \dots + \alpha_{n-1}3^1 + \alpha_n3^0$ is divisible by 7.
 $8xyz75$ is a positive integer exactly divisible by 875 where $x, y, z \in \{0, 1, 2, 3, \dots, 8, 9\}$ and $x = y$.

40. What is the value of x?
 (1) 4 (2) 3 (3) 8 (4) either (1) or (2) (5) either (2) or (3)
41. How many triplets of $\{x, y, z\}$ are possible?
 (1) 4 (2) 2 (3) 3 (4) 5 (5) can't be determined
42. How many integral solutions are possible for the equation $|x - |4 - x|| - 2x = 4$
 (1) 1 (2) 2 (3) 4
 (4) no solution is possible (5) more than 4
43. A set of three letters is to be selected from any one of the three names: MYSORE or, INDORE or, BANGALORE on the condition that only three consecutive letters can be taken. If ORE is taken, what is the probability that it is from BANGALORE?
 (1) 2/9 (2) 1/3024 (3) 1/24 (4) 1/9 (5) None of these

44. How many odd digits will be required to number a book containing 343 pages?
 (1) 612 (2) 486 (3) 726 (4) 388 (5) None of these
45. Let a, b and c be the length of the sides of triangle ABC. Given $(a + b + c)(b + c - a) = \alpha bc$. Then the value of α will lie in between
 (1) - 1 and 1 (2) 0 and 4 (3) 0 and - 1 (4) 0 and 1 (5) none of these

46. In the following figure (not drawn to the scale) MN, NO and OP are equal chords of a circle. If $\angle NMO = a^\circ$, then find the measure of $\angle MQP$.



- (1) $180^\circ - a^\circ$ (2) $180^\circ - \frac{5}{2}a^\circ$ (3) $\frac{7}{2}a^\circ$
 (4) $3a^\circ$ (5) $90^\circ + \frac{5}{2}a^\circ$
47. How many seven-digit numbers are there, the sum of whose digit is even?
 (1) 4500000 (2) 5500000 (3) 9000000 (4) 6000000 (5) none of these

Directions for questions 48 & 49: There are 4 positive integers and the HCF of each possible pair is 5. The LCM of all the 4 numbers is 4620.

48. Find the product of all 4 numbers:
 (1) 478970 (2) 23100 (3) 577500 (4) 497800 (5) none of these
49. Find the difference between the greatest & the smallest number:
 (1) 35 (2) 25 (3) 15 (4) 40 (5) none of these
50. In a race of one mile, PT Usha can be given a start of 128 metres by Anju George. If Anju George can give Shiny Wilson a start of 4% in a 200 metres dash. Then who out of PT Usha and Shiny Wilson will win a race of 1.5 mile and by what percent of mile. (one mile = 1600 m)
 (1) PT Usha, $8\frac{1}{3}\%$ (2) Shiny Wilson, 3% (3) PT Usha, $4\frac{1}{6}\%$
 (4) Shiny Wilson, $6\frac{1}{4}\%$ (5) Both take equal time

SECTION – 3

Directions for questions 51 – 55: Answer the following question on the basis of the information given:

Make your Career is an institute involved in preparing student for CAT entrance examination. There runs six regular batches in the month of April named C_1 , C_2 , C_3 , C_4 , C_5 and C_6 . Also have a weekend batch only having classes on Sunday. Every batch have at least one class in a week.

- * Sunday is holiday for regular batches.
- * C_1 is scheduled on the alternate days.
- * C_2 has all days classes except Wednesday and Thursday.
- * The C_3 batch has all the four classes in succession.
- * Batch C_6 has their classes only on Friday and Tuesday.
- * Except Tuesday and Thursday batch C_5 has their classes.
- * C_1 and C_4 never have their classes on same day.
- * C_3 never ever has their class on Friday and Saturday.
- * C_4 is the batch which has only one class in a week on Monday or Wednesday.

51. What is the maximum number of batches run in the institute?
 (1) 1 (2) 2 (3) 3 (4) 4 (5) 5
52. Which of the following batches will have same number of classes during the week days?
 (1) C_2 , C_6 , C_1 (2) C_5 , C_2 , C_4 (3) C_2 , C_3 , C_5
 (4) C_1 , C_6 , C_5 (5) C_7 , C_6 , C_4
53. If the month starts with Thursday, how many classes batch C_2 will have in the month?
 (1) 16 (2) 17 (3) 18 (4) 19 (5) 20
54. If C_5 is not to be scheduled on any day that C_2 is scheduled, how many days C_5 will have the classes in a week?
 (1) 0 (2) 1 (3) 2 (4) 3 (5) 4
55. If the institute is having 4 different faculty members, what is the average class per faculty in a week?
 (1) 4.5 (2) 5 (3) 5.25 (4) 4 (5) 4.75

Directions for questions 56 – 59: Each question is followed by two statements, (A) and (B). Answer each question using the following instruction:

Choose (1) If the question can be answered by using statement (A) alone but not by using (B) alone.

Choose (2) If the question can be answered by using statement (B) alone but not by using (A) alone.

Choose (3) If the question can be answered by using either statement alone.

Choose (4) If the question can be answered by using both the statements together but not by either statement alone.

56. In a cricket match, the 'man of the match' award is given to the player scoring the highest number of runs. In case of a tie, the player (out of those locked in the tie) who has taken the higher number of catches is chosen. Even thereafter if there is a tie, the player (out of those) locked in the tie) who has dropped fewer catches is selected. Aakash, Biplab, and Chirag who were contenders for the award

- dropped at least one catch each. Biplab dropped 2 catches more than Aakash did, scored 50, and took 2 catches. Chirag got two chances to catch and dropped both. Who was the 'man of the match'?
- (A) Chirag made 15 runs less than both Aakash and Biplab.
 (B) The catches dropped by Biplab are 1 more than the catches taken by Aakash.
57. Four friends, A, B, C and D got the top four ranks in a competitive examination, but A did not get the first. B did not get the second, C did not get the third, and D did not get the fourth rank. Who secured which rank?
- (A) Neither A nor D were among the first 2.
 (B) Neither B nor C was third or fourth.
58. The members of a local club contributed equally to pay Rs. 600 towards a donation. How much did each one pay?
- (A) If there had been five fewer members, each one would have paid an additional Rs. 10.
 (B) There were at least 20 members in the club, and each one paid no more than Rs. 30.
59. A family has only one kid. The father says "after 'n' years, my age will be 4 times the age of my kid." The mother says "after 'n' years, my age will be 3 times that of my kid." What will be the combined ages of the parents after 'n' years?
- (A) The age difference between the parents is 10 years.
 (B) After 'n' years the kid is going to be twice as old as she is now.

Directions for questions 60 – 64:

The chart below shows the distances in km between four villages A, B, C and D which are connected by straight roads.

-	A	B	C	D
A	-	15	13	24
B	15	-	12	28
C	13	12	-	21
D	24	28	21	-

60. If a health visitor has to visit all the villages starting from B and to return to B, which is the shortest route he should take?
- (1) B A C D B (2) B A D C B (3) B D C A B (4) B D A C B (5) BCDAB
61. Health camps have to be set up in two of the four villages, so that the distances from the remaining two villages to the health camps may be the least. Which two villages should be selected?
- (1) B and C (2) A and C (3) A and D (4) C and D (5) B and A
62. If a village E is 8 km from A on the road to B, what is E's distance from C?
- (1) 10 km (2) 18 km (3) 9 km (4) 20 km (5) 15 km

63. If the bus fare along route ABD is Re. 0.25 per km and along ACD it is Re. 0.18 per km, which route is less expensive and by how much?
- (1) ABD by Rs. 2.83 (2) ACD by Rs. 4.63
 (3) ABD by Rs. 1.25 (4) ACD by Rs. 1.35 (5) Both route same
64. If a village is equidistant from B, C and A, what is its distance from B?
- (1) 10 km (2) 12 km (3) 8 km (4) 14 km (5) 16 km

Directions for questions 65 – 67: Each question is followed by two statements. You have to decide whether the information provided in the statements is sufficient for answering the question.

- Mark (1)** If the question can be answered by using one of the statements alone, but can not be answered by using the other statement alone.
- Mark (2)** If the question can be answered by using either statements alone.
- Mark (3)** If the question can be answered by using both statements together, but cannot be answered by using either statements alone.
- Mark (4)** If the question cannot be answered even be using both the statements together.

65. Sridhar is 1 foot taller that Srinath. Srikant is taller than Srinath. Is Sridhar taller than Srikant?
- (A) Srinath is 5 feet tall.
 (B) Srikant is $\frac{1}{2}$ feet taller than Srinath.
66. In a right angled triangle ABC, where $\angle B = 90^\circ$, what is length of the hypotenuse?
- (A) EB is the median drawn from B to the hypotenuse.
 (B) AE = 2.5 cm.
67. What is the area of an equilateral triangle ABC?
- (A) AB = 9 cm
 (B) Height of the triangle is $(\frac{\sqrt{3}}{2} \times 9)$

Answer Question 68 to 71 on the following information given:

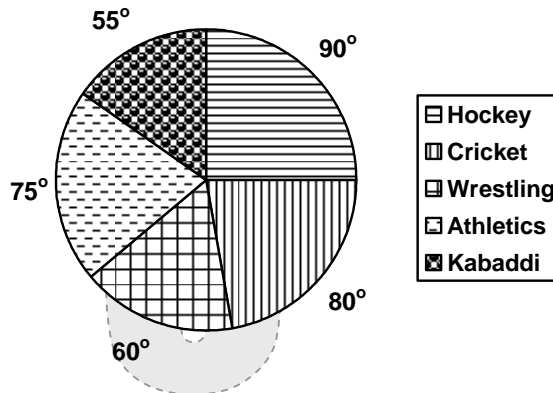
Five friends Isha, Shweta, Deepak, Aman and Rakesh planned to start a business. All agreed that everybody will put his or her share in the business as he/she wish. Initially they started with 1, 2, 3, 4, 5 lakh (not necessarily in that order). They re-invest 1, 2, 3, 4, 5 lakh and finally had their sharing in business as 4, 5, 6, 7, 8 lakh at the end of 1 year. At most one of the friend re – invest same amount of money and none finally had same amount of investment at the end of year. Each friend started with at least one lakh and also further invested at least one lakh. Further, information regarding them is given as

- (1) Aman invest 2 lakh at the start of business and have final investment of 7 lakh at the end of year.
 (2) Shweta reinvested 3 lakh rupees and did not have 8 lakh as her final investment.
 (3) Rakesh did not re-invest 1 lakh or 2 lakh.
 (4) Isha has the same amount in business at the end of the year as much as Deepak started with.

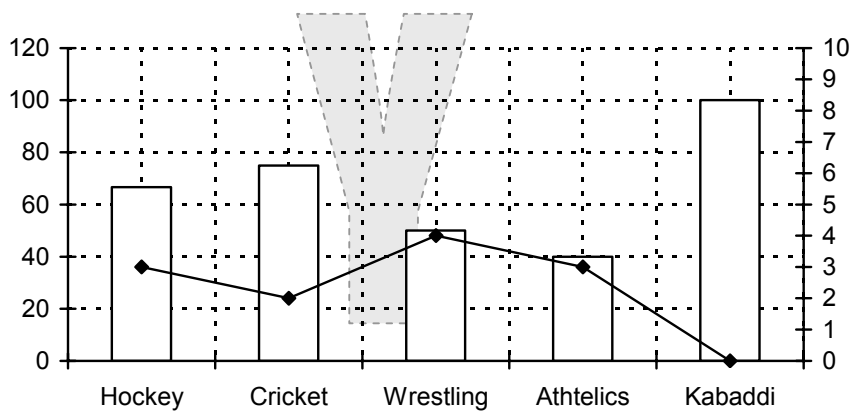
68. How many lakh(s) did the person that invests 3 lakhs initially reinvested?
 (1) 1 lakh (2) 2 lakh (3) 3 lakh (4) 4lakh (5) Data insufficient
69. How much did the person that ended with 6 lakh, re-invested in the business?
 (1) 1 lakh (2) 2 lakh (3) 3 lakh (4) 4lakh (5) None
70. What was the name of that friend who invests 1 lakh as initial investment?
 (1) Isha (2) Shweta (3) Deepak (4) Rakesh (5) Aman
71. The friend who ended with maximum amount of sharing in the business at the end of year, started with what amount?
 (1) 1 lakh (2) 3 lakh (3) 4 lakh (4) 5 lakh (5) 2 lakh

Directions for questions 72 – 75: Answer the following question on the basis of the information given:

The pie chart given below shows the breakup of player of different games who are nominated for Arjun Award for their excellence in the field of sports for year 2006.

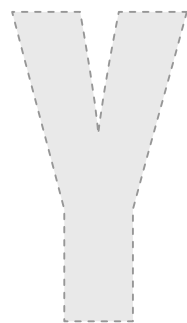


A player is nominated for Arjun award only when he is a national or international player in his/her field. The bar graph below shows the percentage of national players in a particular game and line graph shows the number of women player nominated for the award in that game.



Total player of the five sports nominated for Arjun Award 2006 are 72.

72. How many international players nominated for Arjun Award 2006 had represented India in Hockey?
(1) 6 (2) 9 (3) 12 (4) 18 (5) 15
73. How many male players are there from cricket, nominated for Arjun award 2006?
(1) 15 (2) 14 (3) 13 (4) 12 (5) 11
74. Total number of women players nominated for Arjun award 2006 is equal to the total nominated player for Arjun award 2006 of which sport.
(1) Cricket (2) Athletics (3) Wrestling (4) Kabaddi (5) Hockey
75. What is the number of international male player nominated for Arjun award 2006, from Hockey?
(1) 15 (2) 12 (3) 9 (4) 10 (5) cannot be determined



MOCK CAT**ANSWERS**

1. (1)	2. (4)	3. (3)	4. (5)	5. (3)	6. (2)	7. (1)	8. (4)
9. (2)	10. (4)	11. (1)	12. (2)	13. (2)	14. (2)	15. (5)	16. (1)
17. (1)	18. (3)	19. (1)	20. (4)	21. (3)	22. (3)	23. (1)	24. (1)
25. (1)	26. (5)	27. (2)	28. (4)	29. (1)	30. (4)	31. (2)	32. (2)
33. (1)	34. (2)	35. (2)	36. (3)	37. (1)	38. (1)	39. (5)	40. (4)
41. (2)	42. (2)	43. (1)	44. (2)	45. (2)	46. (4)	47. (1)	48. (3)
49. (4)	50. (4)	51. (4)	52. (3)	53. (2)	54. (3)	55. (5)	56. (4)
57. (3)	58. (1)	59. (4)	60. (2)	61. (4)	62. (1)	63. (2)	64. (3)
65. (1)	66. (3)	67. (2)	68. (2)	69. (1)	70. (2)	71. (3)	72. (3)
73. (2)	74. (3)	75. (5)					

EXPLANATIONS

- For choosing the correct option, we need to keep in mind that the idea should be in continuation of the last line in the passage. The passage is talking about how the Iraq situation will not be a success practically. Option (3), (4) and (5) are not related, hence eliminated. Pyrrhic victory refers to a situation where one loses a lot and victory does not remain significant. This is not related, hence, eliminated.
- Going by the PoE method, (1), (2) and (3) and (5) are not related to the passage, hence, answer is (4).
- (2), (4) and (5) are eliminated in first go as they are unrelated to the passage and ideas. (1) is a tricky option, read carefully. Technology follows science but does it say that it should follow the principles. This is why (1) is also rejected.
- 'However' in the beginning of the sentence shows that the idea which is to follow is contradictory to the belief earlier. This means we would look for an option that talks about 'dogmatic' knowledge, this is only done in (5), hence, it is the answer.
- The comparison is between an educated man and an uneducated one. (1), (2) and (4) are unrelated, hence eliminated (5) would be the second best choice, but (3) is correct option as it continuous the idea.
- (2) 'As well as causing' should be followed by a cause which is amiss. The sentence is awkward; therefore, (A) is an incorrect sentence. (B) is incorrect due to inappropriate tense usage. Past indefinite and present tense have been used in the same sentence. Therefore, (B) is also incorrect. The usage of 'in the morning' in (C) is repetitive. (D) has no error.
- (1) Superlative degree has been used for comparison instead of the 'comparative' degree; therefore (A) is incorrect. (C) is incorrect as the usage of 'they' is ambiguous, the meaning is not clarified. (D) is incorrect as it uses the gerund where it is not required.
- (4). 'Of' is a syntax error; therefore (A) is incorrect. (D) is also incorrect as 'period' should be used in plural as we are talking about three periods.
- (2) Can one 'turn off' friends? (A) is incorrect. (C) is an awkward and a meaningless sentence, with the double usage of past perfect (had).
- (4) In both the sentences, (C) and (D) an article is either missing or has been misplaced making the sentences meaningless or dangling.

11. **(1)** Logically connecting sentence are AF, CE.
12. **(2)** AB should be placed together in the same sequence. So are DE.
13. **(2)** D begins the passage by introducing Edward. B follows by elaborating on D. F explains the first part of B (topologies). E elaborates on F. Hence (2).
14. **(2)** the claim is *not proved* rather than *disproved* and asserts that the claimant has not given proof and that science must continue without incorporating the new claim. Since the true skeptic does not assert a claim, *he has no burden to prove anything*.
Read to the third paragraph carefully. Option (1) says just the converse of what should be there. Option (3) is not supported by the passage as is option (4).
Hence option (1) is the best possible option, as it is definitely supported by the contents of the passage.
15. **(5)** Options (3) and (4) answer only a part of the question (refer to paragraph 3). Hence they are incomplete. Option (1) conveys a point applicable to many critics, not all of them.
Option (2) is factually incorrect as it is hardly rooted in the passage. Hence the best possible answer is option (5) as it is very clearly enunciated in paragraph 2.
16. **(1)** Option (2) is only a partial answer as it is summing up only the last paragraph as is option (4), which focuses only on the last paragraph. Option (3) is focusing on a secondary comment made by the author. By no account can it be called a summary of the last two paragraphs.
Option (5) is not justified as it again sums up the contents of the last paragraph only.
Note the italicized words carefully, which clearly support the answer choice (1).
Both critics and proponents need to think of *adjudication* in science as in the law courts, imperfect and with varying evidence. Absolute truth, like absolute justice, is seldom obtainable. We can only do our *best to approximate* them.
17. **(1)** Both 1 and 3 are justified (please refer to the first paragraph and the first line of the second paragraph). Choices 2 and 4 are wrong as they run contrary to the passage (It is clearly mentioned that in science, the burden of proof is directly proportional to the extraordinariness of the claim presented *and that* the critics hardly take recourse to empirical evidence).
Hence answer option (1) is the best one.
18. **(3)** Options (1) and (2) run contrary to what is given in the passage. Thus, they are not justified.
There is nothing said about the subjects available for study even, thereby ruling out option (4).
Please refer to the last lines of paragraph 2 for the correct answer.
The *problem* is locating the *same target*: they have implicated loci on 20 of the 23 human chromosomal pairs.
19. **(1)** The failure of efforts to decode the genetic basis of autism is only one of the many points being made by the writer. Hence option (2) is definitely wrong here.
The opening paragraph does talk about Wigler's work but nowhere does it suggest that his work has been instrumental in this regard. Rather, it has got mixed results; there is nothing conclusive or final in this regard. Hence option (3) is not justified here.
Option (4) goes contrary to the contents of the first paragraph, which says that it is much commoner among males rather than in females.
There is no question given in the first paragraph at all. So option (5) is wrong *ab initio*.
Hence option (1) is the best possible under given circumstances.

20. **(4)** Option (1) is wrong as it is females who have a greater chance of getting the disease in such cases, according to the passage.
- Option (2) is again unjustified in that the total number of such cases does not exceed 10 percent, which does account for the phrase, *a very common occurrence* in the option.
- Option (3) runs contrary to the passage, as Wigler has only given one theory incorporating both hereditary and spontaneous factors. So there are no theories here. Hence option (3) is wrong here.
- For the right answer, please refer to 4th paragraph from the bottom, which mentions a higher at-risk percentage for males. Hence option (4) is the best one.
21. **(3)** Option A talks of some new trends, while the passage discusses only one trend: the genetics of autism. Hence it is not justified
- Option (2) hints at some unanswered questions, which basically refers to the critics' viewpoint. In fact, it does not tell the whole story, it is only part of it. Not every comprehensive answer, and is therefore, rejected.
- Option (4) again alludes to a secondary aspect raised by Wigler, but it does incorporate the entire passage.
- Option (5) ignores everything else and focuses only on spontaneous mutations. In order to be correct, it has to include something more.
- Option (3) is the best one as it sums up nicely the idea of Wigler's work on genetic basis of autism being the focus of the entire discussion.
22. **(3)** Option (1) represents one of the ideas which were explored by Pagel (paragraph 3) in the course of his research to prove his point. So it is part of the whole, certainly not the whole itself. Option (3) could have been correct, had there been no better option. It is quite general and does not pinpoint the topic within linguistic research, which by itself, is a vast topic. There is no controversy at all being discussed here, thereby ruling out option (4). In fact, the entire passage talks of complete agreement on the issue between the two sets of researchers. Option (2) is not factually wrong, but also is only a part of the focus of this entire passage.
- Thus option (3) happens to be the best one in the sense that it is all-encompassing, beyond any doubt and is very clearly mentioned in the first two paragraphs.
23. **(1)** The last few lines emphasize the idea of evolution of words in language like that of species in biological evolution. A suitable closing line should be one that either negates or corroborates the idea most logically. Option (2) does not make any logical sense as there is no confusion at all either hinted at or suggested here. Option C is a misleading one as in the passage, the author does not even hint at the fact there is some competition among words. So is true of option (5).
- Hence option (1), which carries forward the idea appropriately (note the word *constantly* in the last line, which supports *all the more* in the option), is the most suitable answer.
24. **(1)** Since *eat* is higher-frequency word in contrast with *cost* in general, it should evolve into a regular form much slower than *cost*, in terms of the passage. So I is wrong. II is correct because the last line of paragraph 5 clearly mentions this idea. The idea contained in III is not supported by the contents of the passage. The only thing mentioned in paragraph 3 is the fact both Spanish and English have the same high-frequency words. Hence III is an incorrect choice here. Thus the right answer choice is (1).

25. (1) Both the sets of researchers are working in a concerted effort to prove the same point. There is no idea of any opposing camps of thought or their reconciliation here. Thus option (2) is wrong here. Even option (3) is wrong as the question has not been left unanswered.

Option (4) could be faulted on the ground that the evidence being discussed is not scattered; it is highly organized and systematic and is coming from identifiable sources. Option (5) is pretty general and is factually wrong too as there is no specific question the author is trying to answer.

In the given circumstances, therefore, option (1) is the best one as it nicely sums up the entire passage without being far-fetched or inaccurate.

26. The maximum profit they will earn individually will be when 3rd has sold all his watermelon @ 3 per piece. The total earning of fruit seller with 27 melons = 3 x 27 = 81. For the fruit sellers with 33 and 29 melons they will sell 23 and 25 respectively @ 3 per melon and rest @ Rs.1 each to get same amount of Rs. 81. **Answer: (5)**

27. Put suitable values of x and y say x = 4 and y = 11 to solve. **Answer: (2)**

28. The series is

$$1 \times 2^0 + 2 \times 2^1 + 4 \times 2^2 + 8 \times 2^3 + 16 \times 2^4 + \dots$$

$$1025 = 1 \times \frac{(2^n - 1)}{2 - 1}$$

$$\text{or, } 2^n = 1026$$

$$\text{or, } 2^n = 1024 + 2$$

$$\text{or, } 2^n = 2^{10} + 2$$

$$\text{or, } n = 10 \quad \text{Answer: (4)}$$

29. Let the 6 digits number = abcdef.

$X / (a + b + c + d + e + f)$ has the maximum values if $b + c + d + e + f = 0$ **Answer: (1)**

30. Solve with option and move backward. **Answer: (4)**

31.

Remainders/ divisors	Number	Quotient
329	1380	4
64	329	5
9	64	7
1	9	9

Answer: (2)

32. $ab = a + b + 3$

$$ab - a - b = 3$$

$$a(b - 1) - b + 1 = 3 + 1$$

$$a(b - 1) - 1(b - 1) = 4$$

$$(a - 1)(b - 1) = 4$$

Now this is very simple think of two integers whose product is 4.

$$2 \times 2$$

$$1 \times 4$$

$$4 \times 1$$

So total three positive integer sets and three negative integers. **Answer: (2)**

33. $\frac{\text{Actual}}{\text{Titan}} = \frac{60}{55}$, $\frac{\text{Titan}}{\text{HMT}} = \frac{60}{55}$, $\frac{\text{HMT}}{\text{Citizen}} = \frac{60}{65}$

$\frac{\text{Actual}}{\text{Citizen}} = 1.0985$

$\frac{2}{\text{Citizen}} = 1.0985$

Or, citizen = 1.8206 = 1 : 49 : 14.

Answer: (1)

34. Total number of way of putting 6 balls in eight squares = ${}^8C_6 = 28$.

Number of ways of putting 6 balls so that one column remains vacant = 2.

Required number of ways = 28 – 2 = 26.

Answer: (2)

35. Since x + 1 divides $ax^2 + bx + c$

$a(-1)^2 + b(-1) + c = 0$

$a + c = b$

1	2	3	4	5	6	7	8
1	3	4	5	6	7	8	
1	4	5	6	7	8		
1	5	6	7	8			
4	1	5	6	7	8		
4	2	6	7	8			

Total twelve equations are possible.

Answer: (2)

36. Area, $\Delta = \frac{1}{2} a L_1 = \frac{1}{2} b L_2 = \frac{1}{2} c L_3$

$L_1 = \frac{2\Delta}{a}$, $L_2 = \frac{2\Delta}{b}$, $L_3 = \frac{2\Delta}{c}$

$\frac{1}{L_1} + \frac{1}{L_2} + \frac{1}{L_3} = \frac{a+b+c}{2\Delta} = \frac{P}{\Delta}$

Answer: (3)

37. Go through the options and put the value of n = any of the values from these 1, 2, 3, 4 and verify the options. **Answer: (1)**

38. $G.M \leq A.M$

$(x/y \times y/z \times z/x)^{1/3} \leq \frac{\frac{x}{y} + \frac{y}{z} + \frac{z}{x}}{3}$

$3 \leq \frac{x}{y} + \frac{y}{z} + \frac{z}{x}$ **Answer: (1)**

39. Talking in terms of divisibility by 4 we have four types of numbers.

$4n$ type = 8, 28.....428, number of terms, $n = \frac{428 - 8}{20} + 1 = 22$

$4n + 1$ type = 13, 33.....433, number of terms, $n = \frac{433 - 13}{20} + 1 = 22$

$4n + 2$ type = 18, 38.....438, number of terms, $n = \frac{438 - 18}{20} + 1 = 22$

$4n + 3$ type = 3, 23.....443, number of terms, $n = \frac{443 - 3}{20} + 1 = 23$

Taking all the terms from $4n + 3$ types and one each from $4n$ type and $4n + 2$ type. Therefore total number of terms in S is 25. **Answer: (5)**

40. **Answer: (4)**

41. Divisibility by 875 means divisible by 125 and 7 both.

By 125 the last three digits could be 000, 125, 250, 375, 500, 625, 750 or 875.

Possible values for z is either 3 or 8.

$$8xyz75 \text{ is divisible by 7 if } 8 \times 3^5 + a \times 3^4 + b \times 3^3 + c \times 3^2 + 7 \times 3^1 + 5 \times 3^0 \\ = 1970 + 81a + 27b + 9c$$

But $a = b \Rightarrow 1970 + 108a + 9c$

For $c = 3$

$1997 + 108a$ is divisible by 7. Therefore $a = 4$

Possible solution $\{4, 4, 3\}$

For $c = 8$

$2042 + 108a$ is divisible by 7. Therefore $a = 3$

Possible solution $\{3, 8\}$ **Answer: (2)**

42. $|x - |4 - x|| - 2x = 4$

The only solution for this is at $x = 0$, we get $4 - 0 = 4$. **Answer: (2)**

43.

Event	MYSORE	INDORE	BANGALORE
Choosing a word	1/3	1/3	1/3
Choosing consecutive 3 letters as ORE	1/4	1/4	1/7
Combined probability	1/12	1/12	1/21

Required probability $\frac{1/21}{1/12 + 1/12 + 1/21} = \frac{2}{9}$ **Answer: (1)**

44. The required answer will be given by 172 (in the unit's digit) + 170 (in the tens digit) + 144 (in the hundreds digit) = 486. **Answer: (2)**

45. $(a + b + c)(b + c - a) = \alpha bc$

$$b^2 + c^2 - a^2 + 2bc = \alpha bc$$

Cos A. $2bc + 2bc = \alpha bc$

$$2 \cos A + 2 = \alpha$$

$$2(\cos A + 1) = \alpha$$

$$-1 \leq \cos A \leq 1$$

$$0 \leq \alpha \leq 4$$
 Answer: (2)

46. $\angle NMO = a$

$\angle NPO = a$ (angles on the same chord and in the same segment are equal)

In $\triangle NMO$, $NO = NM$

$\therefore \angle NMO = \angle NOM = a$

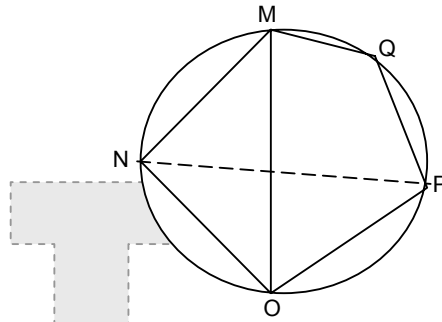
In $\triangle NOP$, $NO = OP$

$\therefore \angle NPO = \angle ONP = a$

In $\triangle MNP$, $\angle MNP = 180 - 3a$

$\angle MNP + \angle MQP = 180$

$\angle MQP = 3a$. **Answer: (4)**



47. abcdefg be the seven digit number.

a could get any value from 1 to 9 therefore total number of ways = 9

b could get any value from 0 to 9 therefore total number of ways = 10

Similarly for **c, d, e, f**.

abcdef could be either odd or even.

If **abcdef** is odd g could be either 1/3/5/7/9 total possibilities for g are 5.

If **abcdef** is even g could be either 2/4/6/8 or 0 total possibilities for g are 5.

Total such seven digit numbers = $9 \times 10^5 \times 5 = 4500000$ **Answer: (1)**

Solutions 48 – 49:

Let the HCF be a

Then the numbers are 5a, 5b, 5c and 5d. (a, b, c and d are co-prime when taken in pair)

Product = 5^4 a.b.c.d and LCM = 5 a.b.c.d

Product = 5^3 LCM = $25 \times 4620 = 577500$

$4620 = 5.a.b.c.d$

$a.b.c.d = 924 = 3 \times 4 \times 7 \times 11$

Numbers corresponding to this are 15, 20, 35 and 55.

Difference between the greatest and the smallest number = $55 - 15 = 40$

48. **Answer: (3)**

49. **Answer: (4)**

50. If Anju George covers 1600 m, PT Usha covers 128 m less.

If Anju George covers 200 m, PT Usha covers $\frac{128}{8} = 16$ m less.

Also for 200 meter of Anju, Shiny travel 4% = 8 m less.

So we have

	Anju	PT Usha	Shiny	Lead
Distance covered	200 m	184 m	192 m	8 m
			(1.5 mile) = 2400 m	x

By proportion $\frac{192}{2400} = \frac{8}{x}$

$x = \frac{2400 \times 8}{192} = 100$ m Lead as percent of a mile = $\frac{100}{1600} \times 100 = \frac{100}{16} = 6 \frac{1}{4} \%$. **Answer: (4)**

Solution 51– 55:

Days/Batch	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇
Monday	x	✓	✓	x or ✓	✓	x	x
Tuesday	✓	✓	✓	x	x	✓	x
Wednesday	x	x	✓	x or ✓	✓	x	x
Thursday	✓	x	✓	x	✓	x	x
Friday	x	✓	x	x	x	✓	x
Saturday	✓	✓	x	x	✓	x	x
Sunday	x	x	x	x	x	x	✓

From the Grid made above we can have

51. **Answer: (4)** 52. **Answer: (3)**
 53. **Answer: (2)** 54. **Answer: (3)**
 55. Total number of classes in a week = 19

Number of faculty = 4

$$\text{Ratio of Classes per faculty} = \frac{19}{4} = 4.75$$

Option (5) is correct

Solutions 56 – 59:

56. From both the sentences we get individual runs of player & catches dropped and taken

Name	Runs	Taken	Dropped
Aakash	50	2	1 (Man of the Match)
Biplab	50	2	3
Chirag	35		

Answer: (4)

57. Using given data and each statement independently we can answer the question. **Answer: (3)**
 58. Only statement (A) gives unique answer. **Answer: (1)**
 59. Both A & B are required to get n = 5. **Answer: (4)**
 60. The possible routes and their lengths are as follows:

Route	Length in km
BACDB	15 + 13 + 21 + 28 = 77
BADCB	15 + 24 + 21 + 12 = 72
BCADB	12 + 13 + 24 + 28 = 77
BCDAB	12 + 21 + 24 + 15 = 72
BDACB	28 + 24 + 13 + 12 = 77
BDCAB	28 + 21 + 13 + 15 = 77

The least distance is 72 km along B A D C B or B C D A B. **Answer: (2)**

61. The two villages may be A, B; A, C; A, D; B, C; B, D OR C, D.

Distance from the two other villages to the above pairs of villages are:

AB : Residents of C will prefer to go to B instead of A since B is nearer (12 km)

Than A (13 km). Similarly residents of D will prefer to go to A instead of B

Since A is nearer (24 km) than B (28 km).

∴ Total distance to be covered by residents of C and D = 12 + 24 = 36 km.

Similarly for other combinations of villages we can obtain the total minimum distances as follows.

A, D : BA + CA = 15 + 13 = 28

B, C : AC + DC = 13 + 21 = 34

B, D : CB + AB = 12 + 15 = 27

C, D : AC + BC = 13 + 12 = 25

The least total distance is for C, D.

∴ Suitable villages will be C and D. **Answer: (4)**

62. AB = 15

AC = 13

and BC = 12

AE = 8 (given)

Using the cosine formula, we have

$$BC^2 = AB^2 + AC^2 - 2 AB \cdot AC \cos A.$$

$$12^2 = 15^2 + 13^2 - 2 \times 15 \times 13 \times \cos A$$

$$\therefore \cos A = \frac{15^2 + 13^2 - 12^2}{2 \times 15 \times 13} = \frac{225 + 169 - 144}{2 \times 15 \times 13} = \frac{250}{30 \times 13} = \frac{25}{39}$$

In $\triangle AEC$, again

$$EC^2 = AE^2 + AC^2 - 2 \times AE \times AC \cos A = 8^2 + 13^2 - 2 \times 8 \times 13 \times \frac{25}{39} = 64 + 169 - \frac{400}{3}$$

$$= \frac{192 + 507 - 400}{3} = \frac{299}{3} = 99 \frac{2}{3} = 100 \text{ (approx).}$$

∴ EC = 10 km nearly. **Answer: (1)**

63. Bus fare on route ABD = Rs. $(15 + 28) \times 0.25$

$$= \text{Rs. } 43 \times 0.25$$

$$= \text{Rs. } 10.75$$

Bus fare on route ACD = Rs. $(13 + 21) \times 0.18 = \text{Rs. } 34 \times 0.18 = \text{Rs. } 6.12$

Route ACD is less expensive by Rs. $(10.75 - 6.12) = \text{Rs. } 4.63$. **Answer: (2)**

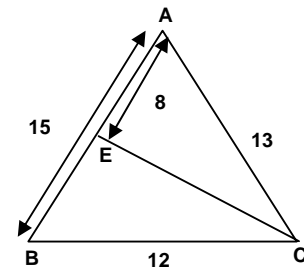
64. Consider $\triangle ABC$

From key to question (164), $\cos A = \frac{25}{39}$ ∴ $\sin A = \frac{30}{39} = 0.76$

∴ Distance of the village from A is "R" where R is circumradius, given by the

Formula $\frac{BC}{2 \sin A}$ (Using the sine formula viz $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = 2R$)

$$= \frac{12}{2 \times 0.76} = 7.89 = 8 \text{ km. Answer: (3)}$$



65. From the main statement we get that Sridhar is taller than Srinath by 1 ft & B alone gives that Srikanth is taller than Srinath by 1½ ft. Hence we can conclude that Sridhar is shorter than Srikanth. Hence B alone is sufficient but A alone is not sufficient. **Answer: (1)**
66. A tells us that EB is the median and hence we can say that E is the mid point of the hypotenuse AC. But we cannot get the length of the hypotenuse. Hence statement (A) alone is not sufficient. (B) gives the length of AE but does not mention anything about the point E. Hence statement (B) alone is not sufficient. When we take both the statements together we know E is the midpoint of AC and AE = 2.5 cm and hence AC = 5 cm. **Answer: (3)**
67. (A) gives us the side of the equilateral triangle and hence we can calculate the area. (B) gives us the altitude of the equilateral triangle and hence we can calculate the area. Hence both the statements are individually sufficient. **Answer: (2)**

Solutions 68 – 71:

As from the given information it can be digged out that person with initial investment of 1 lakh, can't have 7 or 8 lakh as final investment and person with 2 lakh initial investment will not end with 8 lakhs. Also having 8 lakh as final investment, never started with 1 or 2 lakh and same with 7 lakh not started with 1 lakh.

Names	Initial					Re-investment					Final Investment				
	1	2	3	4	5	1	2	3	4	5	4	5	6	7	8
Isha		x						x	x	x				x	
Shweta		x				x	x	✓	x	x				x	x
Aman	x	✓	x	x	x	x	x	x	x	✓	x	x	x	✓	x
Rakesh		x				x	x	x	✓	x				x	
Deepak		x						x	x	x				x	

- Isha not have 6 or 8 as final investment as his final value is initial of Deepak.
- Deepak's initial investment can't be 1 or 3 lakh as equal to final of Isha.
- Shweta initial investment can't be 4 and 5 as her final not equal to 7 and 8 respectively.
- Isha has not started with 4 or 5 lakh.

Names	Initial					Re-investment					Final Investment				
	1	2	3	4	5	1	2	3	4	5	4	5	6	7	8
Isha		x		x	x			x	x	x			x	x	x
Shweta		x		x	x	x	x	✓	x	x				x	x
Aman	x	✓	x	x	x	x	x	x	x	✓	x	x	x	✓	x
Rakesh		x				x	x	x	✓	x				x	
Deepak		x						x	x	x				x	

Finally

- Person starting with 5 lakh will reinvest only 1 lakh.
- As he didn't have option of reinvestment of 2 lakh or 3 lakh. So Shweta's final will not be at 6 lakh.
- Table gives Shweta initial as 1 lakh and final 4 lakhs.
- We have Isha initial 3 lakh and final as 5 lakh.
- Deepak's reinvestment will be 1 lakh and initial as 5 lakh which is Isha's final as according to conditions.

Names	Initial					Re-investment					Final Investment				
	1	2	3	4	5	1	2	3	4	5	4	5	6	7	8
Isha	x	x	✓	x	x	x	✓	x	x	x	x	✓	x	x	x
Shweta	✓	x	x	x	x	x	x	✓	x	x	✓	x	x	x	x
Aman	x	✓	x	x	x	x	x	x	x	✓	x	x	x	✓	x
Rakesh	x	x	x	✓	x	x	x	x	✓	x	x	x	x	x	✓
Deepak	x	x	x	x	✓	✓	x	x	x	x	x	x	✓	x	x

68. Answer: (2)
 69. Answer: (1)
 70. Answer: (2)
 71. Answer: (3)

Solution 72 – 75:

All the graph after analyzing can be concluded in the following chart.

Game	Total player nominated	International player	National player	Total women	Total men
Hockey	$\frac{90^\circ}{360^\circ} \times 72 = 18$	$\frac{2}{3} \times 18 = 12$	6	3	15
Cricket	$\frac{80^\circ}{360^\circ} \times 72 = 16$	$\frac{3}{4} \times 16 = 12$	4	2	14
Wrestling	$\frac{60^\circ}{360^\circ} \times 72 = 12$	$\frac{1}{2} \times 12 = 6$	6	4	10
Athletics	$\frac{75^\circ}{360^\circ} \times 72 = 15$	$\frac{2}{5} \times 15 = 6$	9	3	12
Kabaddi	$\frac{55^\circ}{360^\circ} \times 72 = 11$	$\frac{1}{1} \times 11 = 11$	0	0	11

72. Answer: (3)
 73. Answer: (2)

74. Total women = $3 + 2 + 4 + 3 + 0 = 12$.

Total players of wrestling = 12. **Answer: (3)**

75. Since we only know total women players but not the national or international women player nominated for Hockey for Arjun Award 2006. So cannot be determined. **Answer: (5)**

