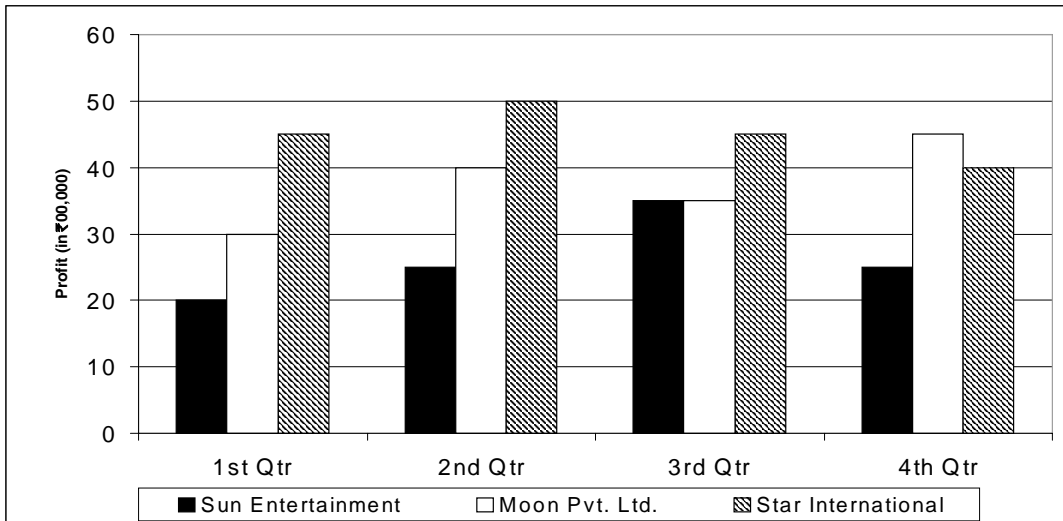


CMAT Sample Paper - 2

Section – I : Quantitative Techniques & Data Interpretation

1. A person invested ₹1,00,000 at 8% simple interest for 5 years and reinvested the amount received at 10% simple interest for 2 years. What was the final amount received by him?
(a) ₹1,56,000 (b) ₹1,60,000 (c) ₹1,68,000 (d) ₹1,70,000
2. A 100 liters spirit water solution contains 75% spirit. Find the amount of water to be added to convert it into 60% spirit solution.
(a) 15 liters (b) 25 liters (c) 40 liters (d) 20 liters
3. Ajay started a firm with a capital of ₹28,000. After 5 months, Boman joined him and invested ₹40,000 in the firm. Chirag was also added as a new partner with an individual investment of ₹56,000 after 7 months of commencement. If at the end of the year, the profit of the firm is ₹32,000, what is the share of Boman?
(a) ₹12,000 (b) ₹8,000 (c) ₹14,000 (d) ₹10,000
4. The price of a machine increases by 20% in a year and decreases by 15% in the following year. What is net percentage increase/decrease in the price of the machine?
(a) 1% increase (b) 2% increase (c) 1% decrease (d) 2% decrease
5. The question given below is followed by two statements, I and II. Mark the answer using the following instructions:
Mark (a) if the question can be answered by using statement I alone, but not by using statement II alone.
Mark (b) if the question can be answered by using statement II alone, but not by using statement I alone.
Mark (c) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.
Mark (d) if the question cannot be answered even by using both the statements together.
- Q. In a class, the ratio of boys to girls is 13 : 10. How many boys are there in the class?
I. The number of boys is 30% more than the number of girls.
II. The number of girls is 15 less than the number of boys.
6. A person covers 180 km, 240 km and 300 km by car, train and bus respectively. Find the average speed of the whole journey if the speed of car, train and bus is 60 km/hr, 80 km/hr and 50 km/hr respectively.
(a) $63\frac{1}{3}$ km/hr (b) 60 km/hr (c) $62\frac{1}{3}$ km/hr (d) 62 km/hr
7. When two students of a class with strength of 40 students were expelled, the average age of the class which was 18 years did not change. If one of the students was 14 years old, what was the age (in years) of the second student?
(a) 22 (b) 24 (c) 26 (d) 20

8. The bar graph given below shows profit (in ₹00,000) of three companies for four quarters of the financial year 2011-12.



Which company recorded the highest percentage increase in profit over the previous quarter during any of the four quarters?

- (a) Sun Entertainment (b) Moon Pvt. Ltd. (c) Star International (d) Both (a) and (b)
9. If the natural numbers starting from 1 are written one after the other to form a 121-digit number, then what will be the last digit of the resultant number?
 (a) 5 (b) 3 (c) 6 (d) 7
10. Four tables and 3 chairs cost ₹3,200 whereas 5 tables and 7 chairs cost ₹5,300. What is the price of a table?
 (a) ₹600 (b) ₹500 (c) ₹480 (d) ₹300
11. Find the value of 'a' in the equation $3x^2 - (3a + 2)x + 7 = 0$, if one of its root is 4.
 (a) $\frac{35}{3}$ (b) $\frac{47}{12}$ (c) $\frac{10}{3}$ (d) $\frac{11}{3}$

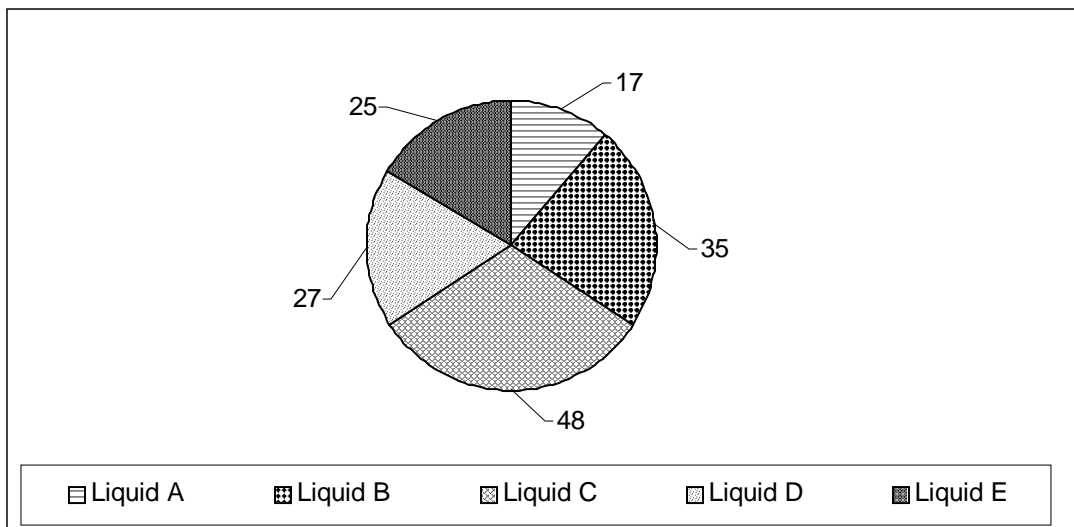
12. The table given below shows the number of students admitted across various courses in 5 elite institutes in the year 2012.

Institute \ Courses	PGDM	BBA	ENGG.	MBBS
A	216	72	300	112
B	150	100	400	150
C	200	128	200	172
D	184	100	216	100
E	250	150	284	116

Number of students admitted in the five institutes in MBBS is what percent of the total number of students admitted in institutes A and B together?

- (a) 43.33% (b) 50% (c) 61.8% (d) 74%
13. The question given below is followed by two statements, I and II. Mark the answer using the following instructions:
Mark (a) if the question can be answered by using statement I alone, but not by using statement II alone.
Mark (b) if the question can be answered by using statement II alone, but not by using statement I alone.
Mark (c) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.
Mark (d) if the question cannot be answered even by using both the statements together.
- Q. The average marks of three students X, Y and Z were 2025. What were the marks of each student?
I. Y and Z together secured 1324 marks.
II. X and Z together secured 1355 marks.
14. The remainder when 25^{82} is divided by 27 is
(a) 2 (b) 25 (c) 1 (d) 0
15. The average of 5 numbers is 150. The largest number exceeds the smallest number by 100. If the five numbers are in arithmetic progression, find the smallest number.
(a) 100 (b) 150 (c) 170 (d) 135
16. Find the volume of water (in litres) that is flowing through a cylindrical pipe of diameter 14 meters in a minute, if water is flowing at the rate of 30 km per hour.
(a) 7.7×10^7 (b) 1.54×10^6 (c) 1.54×10^7 (d) 7.7×10^6
17. Find the number of ways in which 14 persons can sit on 14 chairs such that 3 particular persons always sit together.
(a) $14!$ (b) $14! \times 3!$ (c) $11!$ (d) $12! \times 3!$

18. Three dice are rolled simultaneously. What is the probability of getting a sum which is more than 15?
- (a) $\frac{7}{216}$ (b) $\frac{5}{108}$ (c) $\frac{1}{6}$ (d) $\frac{7}{36}$
19. The pie-chart given below shows quantities (in ml) of different liquids – A, B, C, D and E – in a mixture.

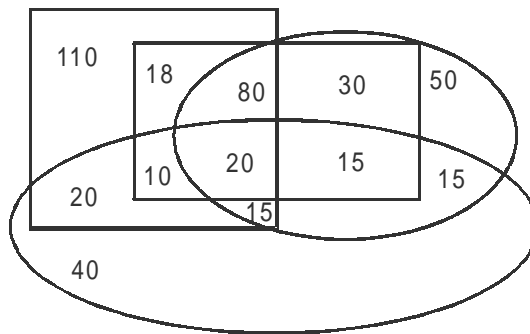


- If the quantity of liquid C is doubled, keeping the quantities of rest of the liquids constant, find the percentage of liquid E in the final mixture.
- (a) 16.67% (b) 33.33% (c) 12.5% (d) 18%
20. If $f(x) = x^2 - 3x + 2$ and $g(x) = x^3 - 2x$, find the value of $g(f(x))$, for $x = 4$.
- (a) 214 (b) 204 (c) 212 (d) 202
21. The digit at the unit place of the product $12^{13} \times 13^5 \times 14^2$ is
- (a) 6 (b) 4 (c) 0 (d) 2
22. A work gets completed in 10 days if either 5 men and 4 women work on it or 7 men and 3 women work on it. How long will 10 men take to complete the work?
- (a) 9 days (b) 10 days (c) 14 days (d) 13 days
23. Two successive discounts of 20% and $y\%$ are given on marked price such that the selling price is ₹800. If the marked price of the article is ₹1,200, find the value of y .
- (a) $13\frac{1}{3}\%$ (b) 17% (c) $16\frac{2}{3}\%$ (d) $11\frac{1}{9}\%$

24. If two pipes can fill a cistern of capacity 1,00,000 liters in 20 hours and 30 hours respectively, find the time taken by both of them to fill 75,000 liters of water in it.
(a) 24 hours (b) 9 hours (c) 20 hours (d) 12 hours
25. A train travelling at a certain speed can cross a person standing on the platform in 10 seconds, while it takes 2 seconds more for the same if it travels slower by 18 km/hr. Find the length of the train.
(a) 400 m (b) 250 m (c) 300 m (d) 200 m

Section – II : Logical Reasoning

26. While speaking to a lady, Aryan said “You are the mother of the daughter of the only son of the wife of the father of my sister’s father”. How is the lady related to Aryan?
 (a) Mother (b) Aunt (c) Sister (d) Cannot be determined
27. Find the next term in the series: 25, 52, 38, 83, 50, 5, 126, ____
 (a) 36 (b) 111 (c) 534 (d) 621
28. A cube is painted red on all of its faces and then cut into 64 identical smaller cubes. How many of these smaller cubes have exactly two faces painted red?
 (a) 12 (b) 16 (c) 24 (d) 32
29. A is to the South of B who is to the East of C. E is to the East of D who is to the North of C. What is the direction of D with respect to A?
 (a) North-west (b) West (c) East (d) South-west
30. Find the next term in the series: B6D, C9F, E15J, H24P, ____
 (a) L27X (b) K27X (c) K36X (d) L36X
31. In the diagram given below, Square represents the number of families having VCR, Rectangle represents the number of families having scooter, the smaller Oval represents the number of families having TV and the bigger Oval represents the number of families having Maruti Car.



How many families are there with all the four things?

- (a) 40 (b) 30 (c) 35 (d) 20

32. The following is an illustration of an input and the outputs at the subsequent steps of a rearrangement in a word arrangement machine.
Input: Danish will be appearing for the examination
Step I: will Danish be appearing for the examination
Step II: will the Danish be appearing for examination
Step III: will the for Danish be appearing examination
Step IV: will the for examination Danish be appearing
(Step IV is the last step for this input)
- If the input is "Suresh and Ramesh are very funny men", then which step will be the final step?
(a) Step IV (b) Step V (c) Step VI (d) None of these
33. In a marriage, Ram saw a girl and told his father that the girl is the granddaughter of the father of the only child of the lady whom I address as grandmother. How is the girl related to Ram?
(a) Aunt (b) Cousin (c) Sister (d) Cannot be determined
34. Five students – A, B, C, D and E – are standing in a row from left to right in ascending order of their heights. A is neither the shortest nor the tallest; exactly 3 students are shorter than D and exactly 3 students are taller than E. If C is at the extreme right end, then the correct order from left to right is
(a) BDAEC (b) BEADC (c) EBADC (d) BAEDC
35. Each of the four different games was played on a different day from Monday to Thursday. Hockey and Cricket were not played on two consecutive days. Ludo was played after Hockey but before Chess. Which game was played on Tuesday?
(a) Cricket (b) Hockey (c) Ludo (d) Either (b) or (c)
36. Five lectures of one hour each are scheduled from 1:00 p.m. to 6:00 p.m. in a day. L1 and L2 are scheduled just after L3. L4 is scheduled just after L5. Exactly two lectures were scheduled between L2 and L5. Which lecture was scheduled from 3:00 p.m. to 4:00 p.m.?
(a) L5 (b) L3 (c) L4 (d) Cannot be determined
37. Five friends are sitting in a row such that E is adjacent to A but not adjacent to C. B is at one of the extreme ends. Exactly two friends are sitting between E and B. Who is definitely sitting adjacent to D?
(a) E (b) C (c) A (d) B
38. In a certain code language, "alpha beta gamma" means "He gives chocolates", "theta delta gamma" means "Harry gets chocolates" and "alpha delta phi" means "He gets nothing". What is the code for "nothing"?
(a) gamma (b) phi (c) delta (d) alpha
39. In a certain code language, if TAIT is coded as 0110, then the code for RAHANE is
(a) 011101 (b) 110101 (c) 011101 (d) 010101

40. Find the odd one out.
 (a) 324 (b) 861 (c) 529 (d) 676
41. If '#' means addition, '\$' means subtraction, '&' means multiplication and '*' means division, then find the value of: $4 \& 6 * 20 \# 3.6 * 2 \$ 1.5 \& 5$.
 (a) -5 (b) -3.75 (c) -2.25 (d) -4.5
42. Each of the five students – A, B, C, D and E – appeared for at least one among the five MBA entrance tests. At least one among them appeared for each test. B appeared only for MAT and CAT. D did not appear for ATMA and XAT. A did not appear for XAT and CMAT. B and A did not appear for any common test and the same is true for A and E. Each student appeared for a different number of tests. How many students appeared for CAT?
 (a) 1 (b) 2 (c) 3 (d) 4
43. In the following sequence, how many letters are immediately preceded by a number and immediately followed by a symbol?
 B@D4%UP1!M8*HE&9W6N#L7P\$
 (a) 0 (b) 1 (c) 2 (d) 3
44. Four friends – Gopal, Kishan, Madhav and Vishnu – own different cars among – I-10, I-20, Ritz and Getz – in no particular order. The cars are of different colours – Yellow, Blue, Green and Red. It is also known that:
 (i) I-20 is either a red or a green coloured car.
 (ii) Kishan owns either Ritz or Getz.
 (iii) Gopal owns I-10 and Vishnu owns a yellow coloured car.
 (iv) Neither I-10 nor Getz is a blue coloured car.
- Which of the following combinations of friend-car-colour is definitely correct?
 (a) Kishan-Ritz-Blue (b) Vishnu-Ritz-Yellow
 (c) Madhav-I-20-Red (d) Gopal-I-10-Green
45. Find the wrong number in the series: 6, 15, 35, 99, 143, 221
 (a) 143 (b) 99 (c) 35 (d) 15

46. In the given question, a statement followed by two assumptions numbered I and II is given. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumptions is/are implicit in the statement.

Mark your answer as:

- (a) if only assumption I is implicit
- (b) if only assumption II is implicit
- (c) if neither I nor II is implicit
- (d) if both I and II are implicit

Statement:

Even in developed economies, monetary policy acts with a lag.

Assumptions:

- I. Monetary policy takes longer to act in developing economies than in developed ones.
- II. Both developed and developing economies make their monetary policies.

47. In the given question, a statement followed by two assumptions numbered I and II is given. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumptions is/are implicit in the statement.

Mark your answer as:

- (a) if only assumption I is implicit
- (b) if only assumption II is implicit
- (c) if neither I nor II is implicit
- (d) if both I and II are implicit

Statement:

An advertisement : "Fly X airways whenever you decide to go places. Our fares are lower than train fares."

Assumptions:

- I. People prefer to travel by air when the fares are reasonable.
- II. The fares of other airlines are costlier than those of X airways.

48. In the given question some statements followed by four conclusions numbered I, II, III and IV are given. You have to take the given statements to be true even if they seem at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follow from the given statements, disregarding commonly known facts.

Statements:

- i. All rats are cows.
- ii. No cow is white.

Conclusions:

- I. No white is rat.
- II. No rat is white.
- III. Some whites are rats.
- IV. All cows are rats.

- (a) Only II and IV follow
- (b) Only IV follows
- (c) Only I and II follow
- (d) None follows

49. In the given question, a statement is given, followed by two conclusions I and II. Consider the statement and decide which of the conclusions follow from the statement.

Mark your answer as:

- (a) If neither conclusion I nor II follows
- (b) If only conclusion II follows
- (c) If only conclusion I follows
- (d) If both conclusions I and II follow

Statement: Workers feel highly motivated when they get a sense of involvement by participating in the management of the company.

Conclusions:

- I. Workers should be motivated about work.
- II. Workers should be allowed to participate in the management of the company.

50. In the given question, a statement is given, followed by two conclusions I and II. Consider the statement and decide which of the conclusions follow from the statement.

Mark your answer as:

- (a) If neither conclusion I nor II follows
- (b) If only conclusion II follows
- (c) If only conclusion I follows
- (d) If both conclusions I and II follow

Statement: Power consumption in every family has doubled during the last five years.

Conclusions:

- I. There has been a lot of development in the society.
- II. Power rates have become cheaper.

Section – III : Language Comprehension

51. There are two blanks in the following sentence. From the pairs of words given, choose the one that fills the blanks most appropriately. The first word in the pair should fill the first blank.

At the best of times, the _____ profile of the country undermines stability: the minorities—the Tajiks, the Hazaras and the Uzbeks dominate the North; the Pashtoons, on the other hand, are a _____ majority in the South and East.

- (a) popular, gross
(b) people, minute
(c) demographic, gargantuan
(d) leotard, motley

52. There are two blanks in the following sentence. From the pairs of words given, choose the one that fills the blanks most appropriately. The first word in the pair should fill the first blank.

Urdu poetry has a/an _____ quality, which makes people explode with cries of Wah! even though they do not fully _____ what is being said.

- (a) oblique, sing
(b) pious, undervalue
(c) surreptitious, hear
(d) uncanny, comprehend

53. There are two blanks in the following sentence. From the pairs of words given, choose the one that fills the blanks most appropriately. The first word in the pair should fill the first blank.

He also expressed strong _____ about _____ judicial powers on an officer of the rank of joint secretary to the government.

- (a) support, conniving
(b) reserve, covering
(c) refusal, converting
(d) reservations, conferring

54. There are two blanks in the following sentence. From the pairs of words given, choose the one that fills the blanks most appropriately. The first word in the pair should fill the first blank.

We must therefore use some _____ to render a Pastoral delightful; and this consists of exposing the best side of a shepherd's life, and in concealing its _____.

- (a) illustration, joys
(b) method, waggery
(c) idyllic, sorrows
(d) illusion, miseries

55. There are two blanks in the following sentence. From the pairs of words given, choose the one that fills the blanks most appropriately. The first word in the pair should fill the first blank.

International _____ does not deter the Taliban from going ahead with the _____ of the 2000 year old Buddha statue.

- (a) accusation, pulverization
(b) outrage, destruction
(c) contention, shattering
(d) concurrence, leveling

56. Choose the alternative which best expresses the meaning of the idiom/phrase given in bold.

The poet **drew on his fancy** not his knowledge of nature, when he wrote his poem on birds.

- (a) Used his imagination (b) Used his aptitude
(c) Used his understanding (d) Used his skill

57. Choose the alternative which best expresses the meaning of the idiom/phrase given in bold.

Very ambitious people do not like **to rest on their laurels**.

- (a) Be impatient (b) Be motivated
(c) Be unhappy (d) Be complacent

58. Choose the alternative which best expresses the meaning of the idiom/phrase given in bold.

They **made no bones about** acknowledging their debt to his genius.

- (a) Demanded compensation for (b) Did not have any faith in
(c) Did not have any hesitation in (d) Had problems in

59. Choose the alternative which best expresses the meaning of the idiom/phrase given in bold.

During the last moments of his life, the criminal **made a clean breast of everything** he had done.

- (a) Confessed without reserve (b) Fought for
(c) Showed his contempt to (d) Faced bravely

60. In the following question five sentences A, B, C, D and E are given. You have to arrange them in a logical order to make a coherent paragraph.

- A. During the first four decades of our independence, our exports of manufactured goods grew at an annual rate of 0.1 percent until 1985; as a result, India's share of world trade fell by four-fifths, or 80 percent, from 1947 to 1987.
B. So our ideas of self-reliance combined a Nehruvian concern for distributive social justice with a profound mistrust of the international economic forces that had enslaved the country for 200 years.
C. For years, India seemed perversely proud of its declining foreign trade.
D. This was perhaps understandable in the post-colonial context, because India's closed and statist economic policies were principally a political and cultural reaction to British imperialism.
E. After all, the East India Company had come to trade and stayed on to rule.

- (a) ADEBC (b) CADEB (c) CDEAB (d) ADECB

61. In the following question five sentences A, B, C, D and E are given. You have to arrange them in a logical order to make a coherent paragraph.
- A. Obviously when the raging inflation is underpinned to a large extent by food prices, the determination of procurement prices for paddy and wheat has an enormous contextual significance.
 - B. After the last winter crop, the government claims to have procured ample quantities of wheat for sustaining the public distribution system.
 - C. The high procurement price has been an effective inducement.
 - D. While some of these might be revisited in the light of satisfactory harvests and procurement, the delay in fixing the MSPs is retrograde. For paddy, the MSP, even if ad hoc, has now been announced, but for other major crops the prices are yet to be declared.
 - E. The government's other measures to contain food prices included a ban on the export of non-basmati rice and a few other commodities.
- (a) BCDEA (b) ABEDC (c) ABCED (d) DCEAB

62. There are two blanks in the following sentence. From the pairs of words given, choose the one that fills the blanks most appropriately. The first word in the pair should fill the first blank.

What emerged from the conference was that language is a constantly evolving _____, and Britain's tongue, _____ from being destroyed, was experiencing exciting change.

- (a) exercise, fresh (b) entity, far (c) form, weary (d) transition, saved

63. The question below has an underlined part. Choose the option that most appropriately replaces the underlined part.

The Russian music of the nineteenth century is richer and more varied than France.

- (a) is rich and more varied than France.
- (b) is richer and more varied than the music of France.
- (c) is more rich and varied than France.
- (d) is more rich and more varied than is the music of France.

64. In the question below, four different ways of writing a sentence are indicated. Choose the grammatically correct way of writing the sentence.

- (a) After he had missed two buses, as they were full and no one got down, Mani, who was at the head of the queue, was determined to get into the third as it pulled up.
- (b) Having missed two buses, as they were full and no one got down, Mani, who was at the head of the queue, was determined to get into the third as it pulled off.
- (c) Missing two buses, as they were full and no one got down, Mani, who was heading the queue, was determined to get into the third as it pulled off.
- (d) Missing two buses, as they were full and no one got down, Mani, who was at the head of the queue, was determined to get into the third bus as it pulled up.

68. Read the following argument/passage carefully and answer the question that follows.

Blogs compete with mainstream media every day. In some cases, they have become more trustworthy as sources of information than some old school practitioners. Oregon's shield law does not recognize the blog as a "medium of communication" worthy of special protection. Such a narrow definition of journalism is archaic. It shouldn't matter whether the person calls himself a journalist or not, nor where he publishes a story. The quality of the story and the integrity of the method of reporting should count. By that standard, some bloggers would qualify as journalists while some deadwood reporters at newspapers would fail.

Which of the following summarizes the argument?

- (a) Instead of focusing on who is doing the publishing, it is more important to look at how they are doing it.
- (b) The quality of the story and the integrity of the method of reporting are more important criteria than whether the person who has done it is a journalist or a blogger.
- (c) Bloggers and journalists are no different from each other.
- (d) Journalism needs to broaden its line of thought.

69. Read the following argument/passage carefully and answer the question that follows.

Tom: Within democracies voters are entitled to know the 'down-side' to a candidate – and the other side is obviously well placed to voice it. To stifle one's ability to voice negative things about a candidate would be to obstruct democracy and limit free speech.

Riddle: Negative ads produce the politics of the personal, since the easiest ad is an attack-ad which focuses on the personality or personal qualities of one's opponent.

A negative advertisement is one that focuses upon a rival product, in this case a rival election candidate or party, in order to point out its flaws and to persuade the public not to buy it (or vote for it). On the basis of the given debate between Tom and Riddle, identify the main issue of debate.

- (a) Whether negative advertisement strengthen democratic governance.
- (b) Whether the practice of negative advertisements is good for democracy and politics.
- (c) Whether negative advertising needs to be banned.
- (d) Whether negative advertising produces the politics of the personal.

70. Read the following argument/passage carefully and answer the question that follows.

“Most cancer cells rely almost exclusively on glucose to fuel their growth,” says Guy Perkins of the University of California at San Diego. With the researcher Rudy Yamaguchi of Kyushu University in Fukuoka, Japan, Perkins found the cells would take up a similar sugar called 2-deoxyglucose. But this sugar physically dislodges a protein within the cell that guards a suicide switch. Once exposed, the switch can be activated by a drug called ABT-263. This kills the cell by liberating proteins that order it to commit suicide.

Which of the following summarizes the above argument?

- (a) Researchers have tricked glucose-eating cancer cells which leaves a “suicide” switch within the cells open to attack.
 - (b) Cancer can now be treated by using a sugar to dislodge proteins.
 - (c) Researchers have tricked glucose-eating cancer cells into consuming a sugar that essentially poisons them - it leaves a “suicide” switch within the cells open to attack.
 - (d) The treatment for cancer has been discovered.
71. Read the following argument/passage carefully and answer the question that follows.

Eamon McCrory at University College London used fMRI to scan the brains of 20 outwardly healthy children who had been maltreated and 23 “controls” from safe environments. During the scans, the children, aged 12 on average, viewed a mixture of sad, neutral and angry faces. When they saw angry faces, the maltreated children showed extra activity in the areas of brain known to be involved in threat detection and anticipation of pain. Combat soldiers show similar heightened activity.

The argument can be best summarized in which of the following ways?

- (a) Minds of children respond to some situations in a pattern similar to that found in adults.
 - (b) The brains of children from violent homes function like those of soldiers when it comes to detecting threats.
 - (c) The ability to adapt to threats is present in children as well as adults.
 - (d) Certain areas of the human brain show heightened activity in response to threats.
72. Read the following argument/passage carefully and answer the question that follows.

Reema: Teenage pregnancy is a stressful experience, it would be sensible for a pregnant unmarried teenage girl to seek advice from a responsible adult. Parental involvement laws would make notification of pregnancy and consent for abortion from one or both parents mandatory.

Reeta: Obtaining parental consent necessarily imposes a delay in the abortion process, which increases the likelihood of complications: generally speaking, the earlier in pregnancy an abortion takes place, the safer it is. Necessary safeguards such as judicial waivers introduce even more delays - at least 22 days in the US.

Which of the following best depicts the way in which Reeta responds to Reema’s argument?

- (a) She opposes Reeta’s idea by suggesting some complications.
- (b) She defends the practice by citing evidence to show the time delay.
- (c) She justifies her opposition to the idea on the premise that delay due to consent may endanger mother’s health.
- (d) She agrees to Reema’s idea but introduces evidence to show that it is harmful for the pregnant teenager.

73. Read the following argument/passage carefully and answer the question that follows.

Doctor X: Anorexia Nervosa is an eating disorder defined as severe, self-inflicted starvation and loss in body weight to at least 15% below that expected for the individual's sex and height. Anorexia is typically associated with women and body image and is thought to be made worse by unrealistic media portrayals of the female body. Mortality varies between 5% and 18%. Patients who are dangerously thin need to be force-fed through a naso-gastric (through the nose) tube.

Doctor Y: Force-feeding has negative consequences. If the patient is dangerously thin and is then force-fed, it can lead to Hypophosphataemia (reduction of phosphates in the blood) which causes heart failure. Anorexics are characterized by self-denial and often do not come forward voluntarily. They are even less likely to do so if they are faced with the possibility of force-feeding.

Which of the following most accurately expresses the issue between Doctor X and Doctor Y?

- (a) Whether anorexia nervosa leads to other potentially fatal diseases.
- (b) Should dangerously thin anorexia nervosa patients be force-fed.
- (c) Is force-feeding dangerous for the health of patients.
- (d) Whether self-abnegation is a big problem in patients of anorexia nervosa.

74. Read the given argument carefully and answer the question that follows.

Productive capacity varies from person to person. The price to purchase it varies with the capacity of the employer. The employer keeps buying units of a person's potential/capacity, or not buying it, depending on the money he pays to encourage/discourage it. The use of money, aka financial incentive, permits two things that the absence of it does not. It allows the employer to recruit people from a more valuable talent pool, and it motivates the people that have been recruited to produce more value than they would without it.

Which of the following must be true if the given argument is true?

- 1. The employer does not "buy" a person's full productive capacity with the initial salary he offers him.
- 2. Productive capacity of a person is not fixed.

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

75. Read the given argument carefully and answer the question that follows.

Ratings agencies were one of the major culprits of the financial crisis — bestowing top-notch, triple-A ratings on thousands of mortgage-backed securities that proved to be worth less than junk when the housing bubble burst. It has taken three years, but the nation's banking regulators have now made a good proposal to remove the raters as the official arbiters of financial reliability and replace them with a set of objective, transparent criteria to determine the riskiness of assets in the trading portfolios of the nation's 30 biggest banks

Which of the following strengthens the argument?

1. Ratings agencies were paid millions by the companies and banks whose securities they rate.
2. Regulators — and the financial system — need a more objective way to assess risk.

(a) Only 1

(b) Only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

88. Which of the following personalities has been appointed as the chief economist and senior vice president of The World Bank?
(a) Raghuramji Raman (b) Kaushik Basu (c) C Rangarajan (d) Y C Deveshwar
89. 16th NAM (Non-Aligned Movement) summit was held at:
(a) Tehran (b) Baghdad (c) Cairo (d) Riyadh
90. Recently, Supreme Court directed to which of the following group to refund around 17400 crore rupees to their investors within three months with 15 per cent interest?
(a) Reliance Capital (b) JAYPEE Finances
(c) Sahara (d) HDFC Investments
91. Which of the following countries topped the medal tally in London Olympics?
(a) China (b) Russia (c) USA (d) South Korea
92. Recently, The 'Bloomberg Markets' magazine has included which Indian personality in the list of 50 most influential people in the finance category?
(a) Chanda Kochar (b) Sikha Sharma
(c) Kiran Majumdar Shaw (d) Mamta Banerjee
93. Which of the following banks has announced that it is going to launch its services on social media platform 'Facebook' in order to expand its internet banking services?
(a) SBI (b) HDFC (c) PNB (d) ICICI
94. Recently, which of the following countries has unanimously passed a resolution to label the Haqqani network as a foreign terrorist group?
(a) France (b) UK (c) USA (d) Russia
95. Which of the following personality is current CAG?
(a) Pradeep Kumar (b) Bikram Singh (c) Vinod Rai (d) V S Sampath
96. Lawson's Bay beach is located in which of the following states?
(a) Tamilnadu (b) Andhra Pradesh (c) Odisha (d) Kerala
97. Parthasarathi Shome heads the expert committee on:
(a) Black Money (b) Money Laundering
(c) General Anti Avoidance Rules (GAAR) (d) Coal blocks allocation
98. Pavagadh Mountain is located in which of the following states?
(a) Rajasthan (b) Madhya Pradesh (c) Gujarat (d) Maharashtra
99. Recently, scientist have claimed the – vitamin has a potential role in the prevention and treatment of TB infection?
(a) Vitamin A (b) Vitamin B (c) Vitamin C (d) Vitamin D
100. The Xenon pickup cab has been launched by:
(a) Tata Motors (b) Mahindra & Mahindra
(c) Volvo (d) Hyundai

Answers

1	c	2	b	3	d	4	b	5	b	6	b	7	a	8	a	9	a	10	b
11	b	12	a	13	c	14	b	15	a	16	a	17	d	18	b	19	c	20	b
21	a	22	d	23	c	24	b	25	c	26	a	27	d	28	c	29	a	30	d
31	d	32	b	33	c	34	b	35	c	36	b	37	a	38	b	39	d	40	b
41	d	42	d	43	c	44	a	45	b	46	c	47	a	48	c	49	d	50	c
51	c	52	d	53	d	54	d	55	b	56	a	57	d	58	c	59	a	60	b
61	a	62	b	63	b	64	a	65	d	66	c	67	c	68	b	69	b	70	c
71	b	72	c	73	b	74	c	75	a	76	a	77	d	78	d	79	a	80	c
81	c	82	a	83	d	84	b	85	b	86	d	87	c	88	b	89	a	90	c
91	c	92	d	93	d	94	c	95	c	96	b	97	c	98	c	99	d	100	a

1. c Interest for the first 5 years

$$= \frac{100000 \times 8 \times 5}{100} = ₹40,000$$
Interest for the last 2 years

$$= \frac{140000 \times 10 \times 2}{100} = ₹28,000$$
Hence, final amount received by him = 140000 + 28000
= ₹1,68,000.

2. b Amount of spirit = 75 liters
Amount of water = 25 liters
Let x liters water to be added to convert it into 60% spirit solution. Then,

$$\frac{75}{100+x} \times 100 = 60$$

$$\Rightarrow 7500 = 6000 + 60x$$

$$\Rightarrow 60x = 7500 - 6000$$

$$\Rightarrow x = \frac{1500}{60} = 25 \text{ liters.}$$

3. d The ratio in which profit will be shared among Ajay, Boman and Chirag
= 28000 × 12 : 40000 × 7 : 56000 × 5
= 6 : 5 : 5

Hence, share of Boman = $\frac{5}{16} \times 32000 = ₹10,000$.

4. b Let the original price of the machine be ₹100.
Price after 20% increase = 100 + 20% of 100 = ₹120
Price after 15% decrease in the following ear
= 120 - 15% of 120 = ₹102
∴ Net increase in the price of the machine = 102 - 100 = ₹2
Hence, price of the machine increases by 2%.

5. b Let the number of boys be 13x and the number of girls be 10x.

From statement I:

It is given that the number of boys is 30% more than that of girls. But, we don't have any information regarding the total number of students. So we can't give the answer from statement I alone.

From statement II:

It is given that number of girls is 15 less than the number of boys.

So $3x = 15 \Rightarrow x = 5$

Therefore, the number of boys can be found.

Hence, from statement II alone we can answer the question.

6. b Time taken to cover 180 km by car = $\frac{180}{60} = 3$ hrs

Time taken to cover 240 km by train = $\frac{240}{80} = 3$ hrs

Time taken to cover 300 km by bus = $\frac{300}{50} = 6$ hrs

Total time taken to complete the whole journey
= 3 + 3 + 6 = 12 hrs

Average speed = $\frac{\text{Total distance}}{\text{Total time taken}}$

$$= \frac{180 + 240 + 300}{12}$$

$$= \frac{720}{12} = 60 \text{ km/hr.}$$

7. a Sum of ages of 40 students = 40 × 18 = 720
Since 2 students left, sum of ages of 38 students = 38 × 18 = 684
∴ Sum of ages of 2 students = 720 - 684 = 36
Hence, age of the second student = 36 - 14 = 22 years.

Alternate Method:

As average age did not change,

∴ Sum of ages of these two students = 18 × 2 = 36 years.

Hence, age of the second student = 36 - 14 = 22 years.

8. a The profit of Sun Entertainment increased from ₹25 lakh in 2nd quarter to ₹35 lakh in 3rd quarter i.e., an increase of 40%, which is the highest among the all.

9. a Numbers from 1 to 9 will give the first 9 digits and numbers from 10 to 65 will give the remaining 112 digits.

Hence, last digit of the resultant number = 5.

10. b Let the price of a table and a chair be ₹x and ₹y respectively.

According to the question,

$$4x + 3y = 3200 \quad \dots (i)$$

$$5x + 7y = 5300 \quad \dots (ii)$$

From equations (i) and (ii), we get

$$x = 500 \text{ and } y = 400$$

Hence, price of a table = ₹500.

11. b Since 4 is a root of $3x^2 - (3a+2)x + 7 = 0$,

$$3 \times (4)^2 - (3a+2)(4) + 7 = 0 \Rightarrow a = \frac{47}{12}$$

12. a Number of students admitted in MBBS in the five institutes = $112 + 150 + 172 + 100 + 116 = 650$
 Total number of students in institute A = 700
 Total number of students in institute B = 800

$$\text{Hence, required percentage} = \frac{650}{1500} \times 100 = 43.33\%$$

13. c $\frac{X+Y+Z}{3} = 2025 \Rightarrow X+Y+Z = 6075$

From statement I, $Y + Z = 1324$

From statement II, $X + Z = 1355$

Hence, using both the statements together we can answer the question.

14. b The remainder when 25^{82} is divided by 27 is the same as the remainder when $(-2)^{82}$ is divided by 27. Now, using Remainder Theorem,
 $(-2)^{82} = 4^{41} = (4^4)^{10} \times 4 = (256)^{10} \times 4$
 When 256 is divided by 27, the remainder is 13.
 $\Rightarrow 13^{10} \times 4 = 169^5 \times 4$
 When 169 is divided by 27, the remainder is 7.
 $\Rightarrow 7^5 \times 4 = 49^2 \times 7 \times 4 = 49^2 \times 28$
 When 49 is divided by 27, the remainder is 22 or -5 and when 28 is divided by 27, the remainder is 1.
 $\Rightarrow (-5)^2 \times 1 = 25$ is the remainder when 25^{82} is divided by 27.

15. a Let the smallest number be 'a'.
 \therefore Largest number = $a + 100$

$$S_n = \frac{n}{2}(a_1 + a_n)$$

$$\Rightarrow 750 = \frac{5}{2}(a + a + 100)$$

$$\Rightarrow a = 100$$

Hence, smallest number = 100.

16. a Length of water that has flown out of the pipe in a minute = speed of water \times time

$$= 30 \text{ km/hr} \times 1 \text{ minute} = 30 \times \frac{1}{60} = \frac{1}{2} \text{ km} = 500 \text{ m}$$

Volume of water flown out in a minute = Volume of cylindrical pipe

$$= \pi r^2 h = \frac{22}{7} \times (7)^2 \times 500 = 77000 \text{ m}^3$$

$$= (77000 \times 1000) \text{ l} = 7.7 \times 10^7 \text{ litres.}$$

17. d Since 3 particular persons always sit together, they will be considered as a single identity.

\therefore Total number of identities to be arranged = $(14 - 3) + 1 = 11 + 1 = 12$

Hence, required number of arrangements = $12! \times 3!$

18. b Total number of outcomes = $6^3 = 216$

Now a sum more than 15 can be obtained in the following ways:

$(5, 5, 6), (5, 6, 5), (6, 5, 5), (6, 6, 5), (6, 5, 6), (5, 6, 6), (6, 6, 6), (6, 6, 4), (4, 6, 6)$ and $(6, 4, 6)$

Thus, there are 10 favourable outcomes

$$\text{Hence, required probability} = \frac{10}{216} = \frac{5}{108}$$

19. c Total quantity of the mixture initially = $17 + 35 + 48 + 27 + 25 = 152 \text{ ml}$

Required percentage

$$= \frac{25}{152 + 48} \times 100 = 12.5\%$$

20. b $f(4) = 4^2 - 3(4) + 2 = 6$

Hence, $g(f(4)) = g(6) = 6^3 - 2(6) = 204$.

21. a $12^{13} \times 13^5 \times 14^2$

Units digit of $12^{13} = 2$

Units digit of $13^5 = 3$

Units digit of $14^2 = 6$

Units digit of $12^{13} \times 13^5 \times 14^2$

$$= \text{Units digit of } 2 \times 3 \times 6 = 6.$$

22. d Let the work (in units) done by a man and a woman in a day be 'm' and 'w' respectively and the total work to be done be 100 units.

$$10 \times (5m + 4w) = 100 \quad \dots(i)$$

$$10 \times (7m + 3w) = 100 \quad \dots(ii)$$

From equations (i) and (ii), we get, $m = \frac{10}{13}$

Hence, time taken by 10 men to complete the work

$$= \frac{100 \times 13}{10 \times 10} = 13 \text{ days.}$$

23. c Total discount given = $1200 - 800 = ₹400$

S.P. after 1st discount of 20%

$$= 1200 - 20\% \text{ of } 1200 = ₹960$$

S.P. after 2nd discount of y%

$$= 960 - y\% \text{ of } 960$$

According to the question,

$$960 - y\% \text{ of } 960 = 800$$

$$\Rightarrow 960 - \frac{960y}{100} = 800$$

$$\Rightarrow y = \frac{160 \times 100}{960} = \frac{50}{3} \% \text{ i.e. } 16\frac{2}{3}\%$$

24. b Part of tank filled by both the pipes in one hour

$$= \frac{1}{20} + \frac{1}{30} = \frac{3+2}{60} = \frac{5}{60} = \frac{1}{12}$$

So time taken to fill the tank by two pipes = 12 hrs

$$\text{Now, part of tank that has to be filled} = \frac{75000}{100000} = \frac{3}{4}$$

Hence, $\frac{3}{4}$ th part of the tank will be filled in

$$\frac{3}{4} \times 12 = 9 \text{ hrs.}$$

25. c Let length of the train be 'x' m. Then,

$$\frac{x}{10} - \frac{x}{12} = 18 \times \frac{5}{18}$$

$$\Rightarrow \frac{x}{60} = 5 \Rightarrow x = 300 \text{ m.}$$

26. a Aryan's sister's father's father is his/her grandfather and his/her grandfather's only son is his/her father. Aryan's father's wife is his/her mother. Hence, the lady is the mother of Aryan.

27. d 25, 52, 38, 83, 50, 5, 126, __

It consists of two series:

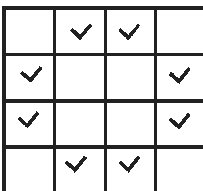
Series I : 25, 38, 50, 126, __

Series II: 52, 83, 5, __

Numbers in the second series have been obtained by reversing the order of the digits of the numbers in the first series.

Hence, the next term will be reverse of 126, i.e., 621.

28. c In the figure given below shows a face of the larger cube that is cut into 64 identical cubes.



The middle cubes at each edge of the larger cube have exactly two faces painted.

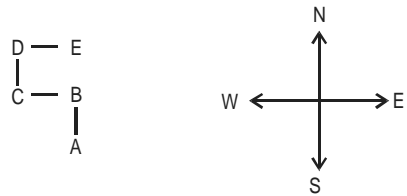
Since number of edges of a cube = 12

Hence, number of smaller cubes has exactly two faces painted red = $12 \times 2 = 24$.

Alternate solution:

Number of cubes = $12(n - 2) = 24$, where 'n' is the number of cubes in a row or a column.

29. a The arrangement of the 5 persons is as follows:



Hence, D is to the North-west of A.

30. d The alphabetical position of the first letter is increasing by +1, +2, +3, +4.

The alphabetical position of the second letter of a term is double of the first letter of that term.

The digit in the middle is increasing by +3, +6, +9, +12. Hence, the term following H24P will be L36X.

31. d Number of families having all the four things is 20.

32. b Every step involves the arrangement of one word in reverse alphabetical order.

Step I: very Suresh and Ramesh are funny men

Step II: very Suresh Ramesh and are funny men

Step III: very Suresh Ramesh men and are funny

Step IV: very Suresh Ramesh men funny and are

Step V: very Suresh Ramesh men funny are and

Hence, Step V is the final step.

33. c Ram's one of the parents is the only child of the grandmother of the girl. Hence, the girl is the sister of Ram.

34. b From left, D will be at the 4th position and E will be at the 2nd position. Now, A is not at any of the extreme ends, therefore, he has to be at the 3rd position from left. Also, C is at the extreme right end. So, the correct order is BEADC.

35. c The two possible cases are:

Day	Monday	Tuesday	Wednesday	Thursday
Case I	Hockey	Ludo	Cricket	Chess
Case II	Hockey	Ludo	Chess	Cricket

Hence, Ludo was played on Tuesday.

36. b The only possible case is:

Time	Lectures
1:00-2:00	L5
2:00-3:00	L4
3:00-4:00	L3
4:00-5:00	L2
5:00-6:00	L1

Hence, L3 was scheduled from 3:00 p.m. to 4:00 p.m.

37. a The two possible cases are:

First to last (left to right)					
Case 1	B	C	A/D	E	D/A
Case 2	D/A	E	A/D	C	B

Hence, E is definitely sitting next to D.

38. b From first and second statements, we find "chocolate" means *gamma*.
 From second and third statements, we find "gets" means *delta*.
 From first and third statements, we find "He" means *alpha*.
 From the third statement, we find "nothing" means *phi*.

39. d Here, letters at the odd number of positions in English alphabet are coded as 1 and the ones at even number of position are coded as 0.
 So A = 1, B = 0, C = 1, D = 0, ... and so on.
 Hence, the code for RAHANE is 010101.

40. b Except 861, all others are squares of natural numbers.

41. d Given expression is:
 $4 \times 6 \div 20 + 3.6 \div 2 - 1.5 \times 5$
 Applying BODMAS, we get

$$\frac{4 \times 6}{20} + 1.8 - 7.5 = 1.2 + 1.8 - 7.5 = -4.5.$$

42. d

	MAT	CAT	ATMA	XAT	CMAT
A	X	X	√	X	X
B	√	√	X	X	X
C	√	√	√	√	√
D	√	√	X	X	√
E	√	√	X	√	√

Hence, 4 students appeared for CAT.

43. c Only N and P satisfy the given conditions.

44. a The given information can be shown with the help of the table given below.

Friend	Gopal	Kishan	Madhav	Vishnu
Car	I - 10	Ritz	I - 20	Getz
Colour	Green/ Red	Blue	Red/ Green	Yellow

Hence, option (a) is definitely correct.

45. b The series is:

$$2 \times 3 = 6$$

$$3 \times 5 = 15$$

$$5 \times 7 = 35$$

$$7 \times 11 = 77$$

and so on.

Where 2, 3, 5, 7, 11, 13 and 17 are prime numbers in increasing order.

Hence, the wrong number is 99.

46. c None of the assumptions are implicit because we cannot assume that some economies are called developing economies or underdeveloped economies. The implicit information is that there are economies other than developed economies but how they are addressed is beyond the scope of the given statement.

47. a Advertisement is specifically trying to attract the passengers by telling them that the fares of this Airline are lower than train fares which obviously shows that people prefer travelling by train mainly because of low fares otherwise they would have chosen to fly. There is no mention or hint of the fares of other airlines. Hence, only assumption I is implicit.

48. c Statements (i) and (ii) all rats are cows and no cow is white imply that no rat is white. Therefore, conclusions I and II follow.

49. d Both the conclusions follow because motivation comes only after some kind of participation in the main stream activities.

50. c Power consumption is an indicator of development and in no way depends on power rates. Hence, only conclusion I follows.

51. c 'Popular in option (a) is inconsistent with "undermines stability" in the sentence. Hence, option (a) is negated. In option (b) "people profile" is grammatically incorrect, in option (d) "leotard profile is also incongruous as 'leotard' is a close fitting one piece garment. Hence option (c) is the correct answer.

52. d In option (a) "do not fully sing what is being said" is logically incorrect. In option (b) 'pious' being related to "people explode with cries of Wah!" is also out of place. Hence, option (d) is the right answer.
53. d In option (a) "conniving judicial powers" would be inconsistent, in options (b) and (c) 'covering' and 'converting' judicial powers is also illogical. Hence option (d) is the answer.
54. d In option (a) and (b) "concealing its joys." and "concealing its waggy" are out of place. The sentence talks about the "Pastoral" life being delightful but not completely flawless. Hence, 'illustration', 'method' and 'idyllic' do not fit. Option (d) fits appropriately.
55. b 'Outrage' and 'destruction' are the most befitting words.
56. a 'Drawing on ones fancy' means using ones imagination.
57. d 'Resting on ones laurels' means being complacent with what one has done in life.
58. c 'Making no bones' about something means not having any hesitation in accepting something.
59. a 'To make a clean breast of everything' is to confess without reserve.
60. b A is an elaboration of the "declining foreign trade" mentioned in C. Hence, CA is a mandatory pair to which "Thus" in D refers. This gives us CAD hence, option (b) is the correct choice.
61. a The correct order should be BCDEA, BC is a mandatory pair because sentence B introduces procurement and sentence C gives further information about it. Sentence A is the concluding statement. Hence BCDEA is the correct order.
62. b 'Language' cannot be an exercise or transition. Hence a and d are ruled out. And 'c' can be ruled out on the basis of the second blank; weary does not fit the context.
63. b The comparison is between Russian music and music of France, therefore the adjectives should have a degree of comparison.
64. a We are talking of two actions: (i) Mani missed two buses; and (ii) Mani was determined to get into the third bus. And the two actions are happening one after the other, not simultaneously. This sense cannot be conveyed by the participle 'missing'. We require either the perfect participle 'having missed' or the clause 'after he had missed'. Hence 'c' and 'd' are ruled out. If a vehicle pulls off, it leaves the road in order to stop for a short time. For example; The car pulled off the motorway to fill up with petrol. Whereas if a vehicle pulls up, it simply stops; eg at a bus stop or at the traffic lights. Hence option 'b' should be ruled out.
65. d Option (a) is incorrect because of the use of present perfect continuous tense. Again, to run wildly does not have the sense of going astray. Hence, option (b) is also incorrect. As for option (c), when let is followed by the object and the infinitive, the word does not form a part of the infinitive.
66. c The Federal Reserve is concerned about the lenders and the effect on the housing market. The argument does not imply that the Reserve is concerned about the profits made by Fannie and Freddie. Thus, (1) strengthens the concerns of the Reserve and (2) does not.
67. c The psychological scientist considered his rating method to be analogous to a buggy thermometer where inaccuracies get adjusted to yield a fairly correct result.
68. b Option (a) is generic in nature and is negated. (c) and (d) are inferences that can be drawn from the passage and express the ideas that the author is most likely to agree with. But they do not capture the full meaning of the passage. Option (b) is the most appropriate choice.
69. b The scope of the term democratic governance has not been defined in the given debate. Thus, (a) cannot be correct. A clear hint about putting a ban on negative advertising is also not reflected in the debate. Thus, (c) is incorrect. (d) gives justice to the issue expressed by Riddle but fails to incorporate the opinion of Tom. Thus, (d) is negated. (b) expresses the issue most effectively.
70. c Option (c) presents the best possible summary of the given passage. It includes the mention of researchers who have succeeded in using the fuel used by most cancer cells to act as their weakness. Option (a) is close but is incomplete in expressing the full idea.
71. b (a) lacks the specificity presented in the passage and is generic in nature. (c) and (d) are conclusions that can be drawn from the passage but fail to capture its full message. (b) captures the essence effectively.
72. c Option (a) is incomplete and vague. Option (b) is incorrect because it is unclear that which practice is being defended by Reeta. (d) is incorrect because Reeta does not agree to Reema's argument. (c) expresses the response of Reeta most appropriately.
73. b The issue between Doctor X and Doctor Y is about the management and treatment of dangerously thin anorexia nervosa patients. Doctor X prescribes the method of force feeding whereas doctor Y opposes it by citing the risks and complications involved. (b) captures the issue most effectively. (c) is close but

deals with patients in general (the scope of the argument is limited to anorexia nervosa patients). Thus, it is negated.

74. c 2 can be inferred from the line "The employer keeps buying units of a person's potential, or not buying it, depending on the money he pays to encourage it." As the productive capacity can be increased or decreased on the basis of financial encouragement, it is not fixed and can vary. 1 cannot be inferred because a case is possible when an employee joined a firm with his highest productive capacity but his capacity declined with time due to absence of financial encouragement from the employer. Thus, (c) is the correct choice.

75. a The argument implies that the ratings were misleading. 1 supports the argument by discussing the benefit drawn by the rating agencies. 2 is incorrect because the system used by the agencies was not objective in nature so the question of making it more objective does not arise.

76. a 77. d 78. d 79. a 80. c

81. c 82. a 83. d 84. b 85. b

86. d 87. c 88. b 89. a 90. c

91. c 92. d 93. d 94. c 95. c

96. b 97. c 98. c 99. d 100. a