Mock CAT – 7

Answers and Explanations

1	a	**2**	d	**3**	b	**4**	c	**5**	c	**6**	c	**7**	b	**8**	b	**9**	c	**10**	c
11	d	**12**	a	**13**	c	**14**	d	**15**	d	**16**	b	**17**	b	**18**	c	**19**	b	**20**	d
21	a	**22**	c	**23**	a	**24**	a	**25**	b	**26**	a	**27**	c	**28**	b	**29**	d	**30**	b
31	b	**32**	c	**33**	b	**34**	a	**35**	c	**36**	b	**37**	b	**38**	a	**39**	d	**40**	c
41	a	**42**	b	**43**	a	**44**	b	**45**	c	**46**	b	**47**	c	**48**	c	**49**	d	**50**	a
51	b	**52**	b	**53**	b	**54**	b	**55**	a	**56**	a	**57**	b	**58**	a	**59**	d	**60**	c
61	a	**62**	b	**63**	c	**64**	b	**65**	b	**66**	c	**67**	a	**68**	c	**69**	c	**70**	b
71	c	**72**	c	**73**	d	**74**	d	**75**	b	**76**	c	**77**	a	**78**	c	**79**	c	**80**	d
81	d	**82**	a	**83**	c	**84**	b	**85**	c	**86**	c	**87**	a	**88**	d	**89**	c	**90**	d
91	a	**92**	c	**93**	c	**94**	b	**95**	a	**96**	b	**97**	d	**98**	d	**99**	b	**100**	a
101	b	**102**	d	**103**	c	**104**	d	**105**	b	**106**	c	**107**	a	**108**	c	**109**	c	**110**	b
111	d	**112**	b	**113**	b	**114**	d	**115**	c	**116**	b	**117**	b	**118**	d	**119**	d	**120**	c
121	c	**122**	a	**123**	b	**124**	b	**125**	c	**126**	d	**127**	d	**128**	c	**129**	b	**130**	c
131	c	**132**	b	**133**	b	**134**	a	**135**	a	**136**	d	**137**	c	**138**	a	**139**	c	**140**	d
141	b	**142**	a	**143**	c	**144**	d	**145**	d	**146**	c	**147**	d	**148**	b	**149**	b	**150**	c
151	d	**152**	c	**153**	c	**154**	d	**155**	b	**156**	c	**157**	b	**158**	d	**159**	d	**160**	c
161	a	**162**	c	**163**	b	**164**	d	**165**	a	**166**	d	**167**	d	**168**	c	**169**	a	**170**	d

Scoring table

Section	Question number	Total questions	Total attempted	Total correct	Total wrong	Net score	Time taken
RC	1 to 30	30					
EU	31 to 60	30					
QA	61 to 100	40					
DI + DS	101 to 140	40					
AR + LR	141 to 170	30					
Total		170					

1. a The author lists this in the first para of the passage when he mentions "Over the course of the nineteenth century…", and the Protestant section is not mentioned in this context. Besides option (a) the rest are corroborated by the rest of the para making it the correct choice.

2. d This issue is taken up by the author in the last para where he clearly mentions "A burgeoning population…….to depart", making choice (d) correct.

3. b The second para mentions the figures as mentioned in choice (a), (c) and (d). Also, it mentions "Remarkably, by the year….." making choice (b) incorrect. This makes choice (b) the answer.

4. c The author mentions this period in history towards the end of the second para. "For their disloyalty…" making choice (c) correct.

5. c The author is describing certain events that occurred in history specifically with regard of to the migration pattern of a section of the population. There are n value judgments that have been passed and choice (c) is the most apt description of the tone.

6. c (c) is stated in the third paragraph. The protestants wanted to escape from the oppressive conditions.

7. b The last para sees the author talking about the new President's actions and his viewpoint. These are objective descriptions with no value judgment passed on them, making choice (b) correct.

8. b This paradox is mentioned in the fourth para. This begins with "This identity crisis…." And this is mentioned as an instance of the same.

9. c These banners are mentioned at the end of the second para. The author mentions in the last few lines the signals about prosperity and opportunities in South that they want to highlight. This makes choice (c) correct. The rest of the options are not borne out by the passage.

10. c These are mentioned in the fifth para. Besides option (c) others are mentioned, making it the correct choice.

11. d The seventh para talks about the occurrence of a set of events. Choice (d) correctly mentions the chronology, making it the correct choice.

12. a In the ninth para, the author looks at the various explanations for the crisis and besides the external factors he then goes on to mention the critical matter of the political leadership which is believed to have exacerbated the situation. This makes choice (a) correct.

13. c These set of statements occur in the first para. Choices (a), (b) and (d) are mentioned in the passage. Choice (c) is not correct since it mentions England as one of the stages for the 'Blood or Belonging' politics which is not mentioned in the para. This makes choice (c) correct.

14. d The fifth para mentions "The multiplicity of problems…." Making all these choices correct thereby option (c) is correct.

15. d The second para deals with this type of movement. "But what all…." Makes choice (d) incorrect as it mentions the clique as the actor against which the movement is directed.

16. b The author makes this point in the second para. "Under the influence of the …" makes choice (a) correct. Choices (c) and (d) are similarly borne by the passage. "In the late twentieth…" makes choice (b) incorrect since this mentions the 19th century as the time of genesis of the attack. This makes choice (b) correct.

17. b (a), (c) and (d) were clearly stated in the last para of the passage. (b) is a point the writer does not subscribe to.

18. c The fifth para mentions the street gangs. 'The network of street gangs……." The role served is dual and choice (c) is correct.

19. b The last para carries the author's views on the causes of the occurrence of eating disorders. Choice (a) is incorrect as the decade mentioned here is the 50s as opposed to 60s as mentioned. Choice (c) is not addressed and choice (d) is incorrect as it qualifies the opposition to the Western notions to be the Eastern notions, which is not mentioned. Choice (b) is close to what the author has stated in the closing lines of the passage, making it the correct choice.

20. d To check the veracity of these statements one needs to look at the second para. "A second possible.." makes choice (a) correct. " In human cultures…." Makes choice (b) correct. "A third possibility…." Makes choice (c) correct. Choice (d) is not borne out by the passage and is the correct choice.

21. a The key here is to locate this particular sentence, which is then followed by "It is difficult to understand…" making choice a correct. Rest of the choices are not mentioned in this context.

22. c The fourth para talks about the issue of the development of identity. Choices (a), (b) and (d) are mentioned in the para. The period of adolescence is mentioned as the most crucial for the formation of identity but not as the final stage making choice (c) correct.

23. a This aspect is mentioned in the fourth para as well. "The process of identity formation…..expectations". Although a superficial reading would make choices (b), (c) and (d) seem to be potential cases of disturbing the identity, but these are not "most radical" except choice (a) which fits the two criteria mentioned in the passage. This makes choice (a) correct.

24. a In the second para, the author mentions "For one thing….." and then uses the term differential tolerance. Choice (a) is correct.

25. b The last para talks about this experiment to showcase the principle of self-consistency. The correct interpretation of it is choice (b). "But each track…."

26. a This issue is addressed in the second para. The first line of para one "Self consistency…" makes choice (b) true. Third sentence mentions the fact that this is understood to be a true human ability and makes choice (c) true. Choice (d) is also corroborated by the passage. Choice (a) is the contrary of what the author states as mentioned in "Free will never….". This makes choice (a) correct.

27. c The author mentions this in the first para, line three. "The universe…..then so be it". The relevance of this is mentioned in the later lines. The rest of the options are not borne out by the passage. This makes choice (c) correct.

28. b The author gives this hypothetical example to explicate upon the principle of consistency and mentions that one can go back in the past but not change the course of events and gives Titanic collision as an example. This makes choice (b) correct.

29. d The sixth para mentions these examples and choice (d) is not mentioned making it the correct choice.

30. b This chronology is mentioned in the seventh para. The correct sequence according to the para is choice (b).

31. b The para begins with the description of a girl climbing onto Santa's lap. Out of the given options, D seems apt as the next sentence followed by C where the reason for recommending Gimbel's is mentioned. This is followed by B and E ending with F. This makes choice (b) correct.

32. c The first line is mentioning an observation, which is then explicated upon later. Sentence E which is describing what the new mood is like should be the next sentence. Sentence B, mentions one more noticeable change in the American mood, sentence D surmises about the reason behind that. Sentence C makes a point about the current situation and is the second last sentence (sentence of uses "Even….in these…"). This makes choice (c) correct.

33. b Sentence A begins by describing the situation at Islamabad and the phenomenon of "people to people" diplomacy. Sentence C talks more on that by commenting on the nature of the people. Sentence D mentions Laloo Prasad Yadav as one of those people and sentence B provides more information about his background. Sentence E mentions that nevertheless he became a hit in Pakistan with F ending with talking about why the Pakistanis were charmed by him. This makes choice (b) correct.

34. a The first sentence describes the author at Bea's doorstep. B, C and D describe the sequence of events and E and F are the effects of the experience. Thus (a) is the correct choice.

35. c The first sentence describes a person and a personality trait, which is further furnished with details in sentence B. Sentence E describes what this commitment involved and sentence D is a quote from her. Sentence C then summarises it with the last sentence ending on extrapolating this to be the philosophy of the way she lives. This makes choice (c) correct.

36. b AB forms the mandatory pair, 'E' follows 'C' and CD summarizes the experience, making (b) is the most appropriate choice.

37. b CD forms the mandatory pair. C mentions a press conference and D elaborates on the same A discusses a journey after 3 weeks of the event, B follows and E is the befitting conclusion of the same.

38. a Sentence B starts off by looking at the dynamics of a customer – enterprise relationship. Sentence D details that and then sentence C states the benefits the customers would perceive in continuing with this relationship. Sentence A then summarises this particular part of the discussion. This makes choice (a) correct.

39. d Sentence C describes a certain culture, B indicates the preference for dentures, D describes the preference A summarizes the issue, thus (d) is correct.

40. c Out of the given options, D seems most apt as the statement that should begin the para because the rest are all talking about one movie in particular but sentence D is talking about a genre and then mentions a specific movie. Sentence C then goes on to describe what this movie is all about, and sentence A talks about one of the impacts of the film and sentence B builds on that by carrying on an opinion about Vin Diesel. This makes choice (c) correct.

41.a Sentence B introduces Bollywoodisation and lays down the context in which it would be talked. Sentence D then mentions the scope of the same, and sentence A gives specific examples which support this. Sentence C then raises a question regarding the appropriateness of using this term in the manner, which is described in the para. This makes choice (a) correct.

42. b Gauche means juvenile, not sophisticated and Blandness describes the quality of being boring.

43. a Divisiveness means Creating dissension or discord. "Divisive history" is a common usage and combine that with the fact that inspite of these multiple ideas, there is continuity. This makes choice a correct. Choice (b) uses colony as the second word, which does not fit in, sentence c nationalist bridge does not make any sense and choice (d) is also wrong as the second word is out of context.

44. b Caricature means representing a subject in a manner where his/her distinctive features or peculiarities are deliberately exaggerated to produce a comic effect. Patrician means A person of refined upbringing. This fits in as it seems to be a description of a person.

(Adventitious means not inherent but added extrinsically. Ineluctable means not to be avoided or escaped; inevitable).

45. c Anachronistic means something that is outdated and schadenfreude means pleasure derived from others' misfortunes. Momentum means keeping up at a certain pace which fits in with the context. (Other words – lascivious - Given to or expressing lust, chronological - Arranged in order of time of occurrence.)

46. b The meaning of conundrum is a riddle that continues to baffle which fits in with what the sentence is trying to highlight, the dilemma of the Poles. Also, imperative, means something that is dictated by the circumstances and would necessarily occur. Look at the meanings of the other words which do not fit with the import of the sentence (Diatribe – abusive denunciation, Perfidy – Calculated violation of trust).

47.c (a) is the antonym of the correct answer (c), options (b) and (d) can be rulled out.

48. c The first part is talking about an encouraging development, and the second part mentions though indicating a departure in intensity with reference to the development.

49. d (d) is correct option. (a) is incorrect since "dissents" means 'to disagree' (b) does not include 'countrified', (c) has faulty parallelism.

50. a (a) is correct, "…while retaining the text" corroborates "…contrasted markedly"

51. b (d) is incorrect "revelation" means to reveal, (c) does not convey the complete sense, (a) misplaced modifier.

52. b (c) and (d) are incorrect "attenuated" means to reduce (a) the tense is incorrect.

53. b (b) is correct, "to be" a is used correctly in relation to "it is"

54. b (b) is correct. Pronoun subject agreement.

55. a (a) is correct, a singular subject "a batsman" will take a singular subject "the Indian", (b), (c) and (d) can be ruled out.

56. a B elaborates natural understanding explified in 1, A elaborates perception of sensation described by fatigue in 2, D describes the shrewdness of politicians in 3, C is obviously related to the mental faculty.

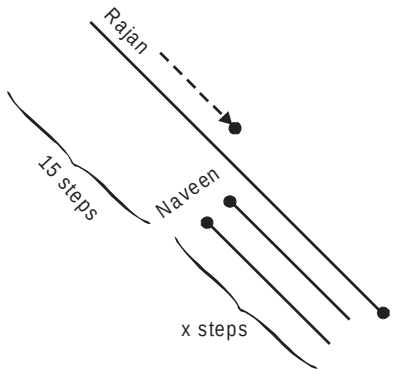
57. b C describes firmness in friendship and its result in 1, its essential to firmly fix your paraclute string, thus D goes with 2, A involves little effort, B defines permanency.

58. a B means disposal, C implies progress, D means relocation and A defines going forward.

59. d Anger rises from within thus B goes with 1, A implies an increase in number, D implies a physical swelling, C involves increase in volume.

60. c C indicates removal, D means to register, B indicates a musical note, A involves punching and hitting.

61. a



Let the time taken be 't'.

For Rajan $\Rightarrow$ $t = \frac{15}{s}$

For Naveen $\Rightarrow$ $t = \frac{x}{4s} + \frac{x}{2s}$

Where,
s = speed of escalator
3s = speed of Naveen only
s + 3s = speed of Naveen when going down (4s)
3s – s = speed of Naveen when going up (2s)

$\therefore \frac{15}{s} = \frac{x}{4s} + \frac{x}{2s}$

$\therefore$ x = 20 steps

62. b Let AB = CD = a and x, y be the lengths of the perpendiculars from P on AB and CD respectively, then

Area of (ΔPAB + ΔPCD) = $\frac{1}{2}ax + \frac{1}{2}ay$

$= \frac{1}{2}a(x+y) = \frac{1}{2}ah$

$= \frac{1}{2}$ × (area of parallelogram)

Given area of parallelogram = 20 units

Area of $(\Delta PAB + \Delta PCD) = \frac{1}{2} \times 20$ = 10 units

63. c The largest such number is 9876 and the smallest number is 1024. Hence, the difference between the two is 8852 which is also the maximum difference between two such numbers.

64. b PZ : ZQ = 2 : 3
Hence PQ : ZQ = 5 : 3
ΔPQS and ΔZQX are similar triangles

So, $XZ = \frac{3}{5}SP = \frac{3}{5}RQ$

So, $XQ = \frac{3}{5}SQ$

So, $\frac{XZ}{RQ} = \frac{XY}{YQ} = \frac{3}{5}$

$\therefore YQ = \frac{5}{3}XY$

XQ : SQ = 3 : 5

$XY + \frac{5}{3}XY : SQ = 3 : 5$

$(XY)\frac{8}{3} : SQ = 3 : 5$

$\therefore XY : SQ = \frac{9}{40}$

65. b Let a, b, c, d, e, f be 2(n), 2(n + 1), 2(n + 2), 2(n + 3), 2(n + 4), 2(n + 5) respectively. The smallest power of 2 that divides this product would be when there are as few powers of 2 in the product n(n + 1) (n + 2) (n + 3) (n + 4) (n + 5). This is possible when we choose n in such a way that there is no multiple of 8 in any of the values n to n + 5. So take a sequence n = 50 or 57 to n + 5 = 55 or 62. We will find that this product is divisible by 2^{10}. So the minimum value of k = 10. Similarly for maximum value of k, the maximum value of 2n should be 512 so k = 17.

Hence arithmatic mean = $\frac{10+17}{2} = 13$

66. c Let n fill pipes, 12 – n = drain pipes

In 1 hour, each fill pipe will fill $\frac{1}{8}$th of the tank

In 1 hours, 'm' fill pipes will fill $\frac{n}{8}$th of the tank

In 1 hour 12-m drain pipes will drain $\frac{12-n}{6}$ of the tank

All 12 pipes kept open it takes 24 hours to fill the tank.

$\therefore$ In 1 hour, $\frac{1}{24}$th of tank gets filled will all pipes open

$\therefore \frac{n}{8} - \frac{12-n}{6} = \frac{1}{24}$

$\therefore n = 7$

67. a AP = DR and AP || DR

$\therefore$ APRD is a parallelogram and PR || AD.

Since ΔPRS and parallelogram PRDA have the same base and altitude

$\Delta PRS = \frac{1}{2}$ × area of PRDA

Similarly $\Delta PQR = \frac{1}{2}$ × area of PBCR

Area of quadrilateral PSRQ

$= \frac{1}{2}$ × area of PRDA + $\frac{1}{2}$ × area of PBCR

$= \frac{1}{2}$ × area of ABCD $= \frac{1}{2}$ × 16 units = 8 units

68. c Use the choices. For x = 16, the largest power of 3 that would divide it is 6. Then check with 18.
In fact if x = 18, x ! is divisible by 3^8 as well.

69. c $\boxed{M : W = 3 : 5} \Longleftrightarrow$ 20% milk $\}\times$ P times

Set the operation be repeated P-times

$\frac{W}{T} = \frac{5}{8}\left(1 - \frac{1}{5}\right)^P = \frac{8}{25}$

$\Rightarrow \left(\frac{4}{5}\right)^P = \frac{64}{125}$

$\Rightarrow \boxed{P = 3}$

So, the operation must be done 3-times.

70. b The average of the first 2n –1 terms is the nth term.
The average of the first 2n terms is the average of the nth and the n + 1 th term.
Since they are in an A.P the (n + 1)th term is 18 if the nth term is 12 and the average of the nth and the (n + 1)th term is 15.
The average of all the 2n + 1 terms is equal to the (n + 1)th term.
Hence the sum of the 2n + 1 terms = 18 × (2n + 1)
= 36n + 18.

71. c The number is 2100010006.
Hence the sum of the numbers is 10.

72. c Let a multiple of 3 be written as abc. The values of a, b, c would change depending on the values of the multiples. The sum of all possible values of a, b, c is also same the values of X, Y, Z respectively where X(100) + Y (10) + Z gives the sum of all the first 150 multiples of 3. X denotes the sum of all the digits in the hundred's place, Y denotes the sum of all the digits in the tenth's place and z denotes the sum of all the digits in the unit's place.
Sum of the digits = X + Y + Z
Z = 15 (1 + 2 + 3 + … + 9 + 0) = 15 × 45 = 675.

Reason : If you take a set of 10 consecutive multiples of 3 the units digits would have all the possible digits from 0 to 9. Hence since there are 150 multiples of 3, there are 15 such sets .

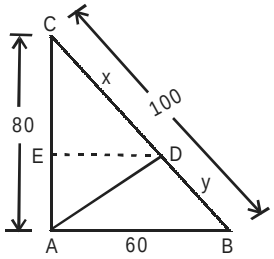
X is easier to find because there are 33 multiples of 3 in 100's, there are 34 multiples in 200's, 33 multiples in 300's and in the first 51 numbers of 400 i.e till 450 there are 17 multiples of 3.
Hence X = 33 (1) + 34(2) + 33(3) + 17(4) = 268.

The sum of the 150 multiples of 3 is 33975 = 100 (x) + 10 (Y) + Z.
So we get Y = 650.

Hence the sum of the digits = 268 + 650 + 675 = 1593.

73. d There are only 3 ways
(1G, 3R ; 3G, 1R) or (2G, 2R ; 2G, 2R) or (4R ; 4G)

74. d



80 + AD + x = 60 + AD + y
y – x = 20 ..... (i)
Given x + y = 100 ..... (ii)
∴ By (i) and (ii)
x = 40 y = 60
By Basic proportionality theorem, we have

$$AE = \frac{60}{100} \times 80 = 48 \text{ units}$$

$$ED = \frac{40}{100} \times 60 = 24 \text{ units}$$

From right angle triangle ADE,

$$AD = \sqrt{48^2 + 24^2} = 24\sqrt{5} \text{ units}$$

75. b Let CP for the fruit dealer be Rs. x, then SP including tax should be x × 1.1 × 1.3 × 1.15 × 1.25 × 0.96 = 161
CP = Rs. 81.58

76. c By a standard result we must have 999 < CA < 3003 ... there are 2003 triangles.

77. a Number of integers which divides 4 or 5 or 6 but not by 16 or 25 or 36 =

$$\left[\frac{1000}{4}\right]+\left[\frac{1000}{5}\right]+\left[\frac{1000}{6}\right]-\left[\frac{1000}{20}\right]-\left[\frac{1000}{30}\right]-\left[\frac{1000}{12}\right]$$

$$+\left[\frac{1000}{60}\right]-\left[\frac{1000}{16}\right]-\left[\frac{1000}{25}\right]-\left[\frac{1000}{36}\right]$$

$$+\left[\frac{1000}{400}\right]+\left[\frac{1000}{900}\right]+\left[\frac{1000}{144}\right]-\left[\frac{1000}{7200}\right]$$

= 250 + 200 + 166 – 50 – 33 – 83 + 16 – 62 – 40 – 27 + 2 + 1 + 6 – 0 = 346

78. c There are 22 houses and not more than 4 people stay in each house.
∴ Maximum population is 4 × 22 = 88
Men : Woman : : 5 : 4
33 man are farmers
∴ Population is greater than 78.
The population should be a multiply of 9
∴ Population is 81.

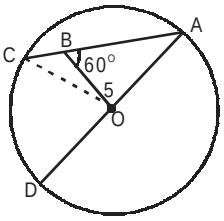
79. c $\frac{a}{b} = \frac{2^x \cdot 3^y}{2^l \cdot 3^m} = 2^{x-l} \cdot 3^{y-m}$

Possibilities of x – y are negative or non negative and y – m are also negative or non-negative.

$2^{x-l} \cdot 3^{y-m}$ fails to integer when one or both of x – l, y – m is negative.

∴ Possibility = $\frac{1}{4}$

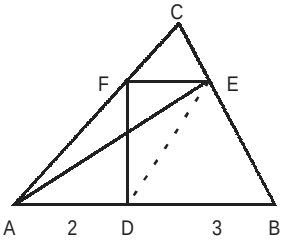
80. d



Consider the half circle ACDO.
Let 2θ = 60° = ∠ABO = CD.
Then ∠CAD = θ, since it is an inscribed angle.
Draw in CO.
Since ΔCOA is isosceles triangle, ∠ACO = θ.
In ΔCBO, ∠CBO = 120° and ∠BOC = 30°
Therefore ∠BCO = 30° so ΔCBO is isosceles triangle.
Hence BC = 5 units.

81.d Statement I is not true for x = –2, y = –3.
Statement II is always not true for all values of x and y.
Statement III is not true when x = y = 0.
∴ All are not always true.

82. a



Draw line DE
Since, Area of ΔABE = Area of ΔADE + Area of ΔDBE and Area of quadrilateral DBEF = Area of ΔFDE + Area of ΔDBE
Area of ΔADE = Area of ΔFDE (∴ Area ΔABE = Area of quadrilateral DBEF)
DE || AC (∴ Area of ΔADE and ΔFDE are on same base

and area are equal)

Area of $\Delta ABE = \frac{3}{5} \times$ Area of ΔABC

Area of $\Delta ABE = \frac{3}{5} \times 10 = 6$ units

83. c For positive integers a × b × c = a + b + c, there is only one solution. The values of a, b, c are 1, 2, 3 not necessarily in the same order. Hence $a^2 + b^2 + c^2 = 14$.

84. b We have

$$\underbrace{111....1}_{2n \text{ terms}} - \underbrace{22....2}_{n \text{ terms}}$$

$$= \left(10^{2n-1} + 10^{2n-2} + ... + 10 + 1\right)$$

$$- 2\left(10^{n-1} + 10^{n-2} + ... + 10 + 1\right)$$

$$= \frac{10^{2n} - 1}{10 - 1} - \frac{2\left(10^{n} - 1\right)}{10 - 1}$$

$$= \frac{1}{9}\left(10^{2n} - 2.10^{n} + 1\right)$$

$$= \left(\frac{10^{n} - 1}{3}\right)^2 = \left(\frac{33...3}{\text{n times}}\right)^2$$

Put n = 2
$\therefore 11 - 2 = 9 = 3^2$
Check the options.

85. c Let the CP of each item is Re 1.
The total revenues is $2^1 + 2^2 + 2^3 + \ldots\ldots + 2^{10}$

$= 2 \times \frac{2^{10} - 1}{2 - 1} = 2048 - 2 =$ Rs. 2046.

Hence the profit percentage is 20360%.

86. c

	Day	Rate
A	x – 60	$\therefore 3(x - 60) = x$
B	x	$\Rightarrow x = 90$

	Days	Rate	Work
A	30	$3 + \frac{1}{3} \times 3 = 4$	90 units
B	90	$1 + \frac{1}{2} \times 1 = \frac{3}{2}$	90 units
A & B	—	$4 + 1.5 = \frac{11}{2}$	90 units

$\therefore$ No of days required by A and B is $\frac{90}{\left(\frac{11}{2}\right)} = \frac{180}{11}$

$= 16\frac{4}{11}$ days.

87. a The probability of heads in the fourth toss should also be same as $\frac{1}{2}$ since the coin is unbiased. It does not matter what the other tosses have been.

88. d There are 25 prime numbers in the first 100 natural numbers. Out of these there are 6 powers of 2, 4 powers of 3, 2 powers of 5 and 2 powers of 7.
Hence in all there are 35 such numbers.

89. c For any convex polygon, the sum of the interior angles is (2n – 4) 90°
(2n – 4) 90° < (n – 3) 90 + 3 × 180°
Or 2 (n – 2) < n – 3 + 6
Or n < 7.

90. d As the given month is not January and is a perfect cube, so the month must be 8th. i.e. August.
Date is just less than a perfect square. So date may be 3, 8, 15 or 24. But 24 has maximum number of factors, so the date must be 24th of August.

91.a $8 = 40^{6/x}$ and $5 = 40^{6/y}$

So $40 = 40^{(6(x+y)/xy)}$. This proves that $\frac{x + y}{xy} = \frac{1}{6}$

92. c Assume x be the distance of each interval and s is the average speed of 2nd part of the journey.

Then $\frac{x}{20} + \frac{x}{s} + \frac{x}{12} = \frac{3x}{16}$

$$\frac{3}{16} - \frac{1}{20} - \frac{1}{12} = \frac{1}{s}$$

$$\frac{3}{16} - \frac{2}{15} = \frac{1}{s}$$

$$\frac{13}{240} = \frac{1}{s}$$

$$s = \frac{240}{13} \text{km/hr}$$

93. c Let the required sum be S
$\therefore S = 1 + 3x + 6x^2 + 10x^3 + 15x^4 + ... \infty$ ... (i)
$\therefore xS = x + 3x^2 + 6x^3 + 10x^4 + 15x^5 + ... \infty$ ... (ii)
Subtracting (ii) from (i), we get
$S(1 - x) = 1 + 2x + 3x^2 + 4x^3 + 5x^4 + ... \infty$
$= T$ (say) ... (iii)
$\therefore xT = x + 2x^2 + 3x^3 + 4x^4 + 5x^5 + ... \infty$ ... (iv)
Subtracting (iv) from (iii) we have
$T(1 - x) = 1 + x + x^2 + x^3 + x^4 + ... \infty$

$$= \frac{1}{1 - x}$$

$$\therefore T = \frac{1}{(1-x)^2} \qquad \therefore S = \frac{1}{(1-x)^3}$$

94. b Probability of a student wearing a ring = 0.2 = P (R)

Probability of a student wearing a necklace = 0.3 P (N)
Probability of a student wearing neither a ring nor a necklace

$= P(\bar{R} \cap \bar{N}) = 0.6$

$\Rightarrow 1 - P(R \cup N) = 0.6$

$\Rightarrow P(R \cup N) = 1 - 0.6 = 0.4$

$\therefore$ Probability of a student wearing ring or necklace = 0.4

95. a Smallest four digit number in all base is 1000.

96. b $(x^2 + 2xy + 3) + (y^2 + 2xz - 3) + (z^2 + 2yz + 3)$

$= (x^2 + y^2 + z^2 + 2xy + 2yz + 2xz) + 3$

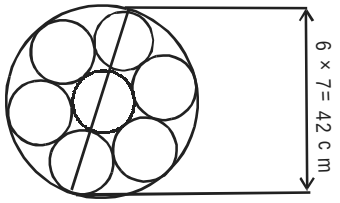
$= (x + y + z)^2 + 3$
$= 9 + 3 = 12$
So their product will be maximum when they individually equal to each other or equal to 4.
So answer = 4 × 4 × 4 = 64.

97. d The above arrangement is possible only if there is an equal size circle inscribe between all small circles

Area of the bigger circles = πr^2

$= \pi (21)^2$

$= \frac{22}{7} \times 21 \times 21 = 1386 \text{ cm}^2$



Total area small circles =

$6 \pi \times (7)^2 = 6 \times \frac{22}{7} \times 7 \times 7 = 924 \text{ cm}^2$

Shaded area = 1386 – 924 = 462 cm^2

98. d The equation holds true for all values of x from –6 to +6. This implies there are 13 integral values of x.

99. b $(N + 12)^2 = N^2 + 12^2 + 24$ N. For this expression to be divisible by N, 12^2 has to be divisible by N (or) N must be its factor. The total number of factors of 144 is 15. Hence there are 15 possible values of N.

100. a Because $\sqrt{(x+6)}$ is positive and is less than x.
So x is also positive.
Squaring we get $x^2 - x - 6 > 0$. The solution for this is $x > 3$ or $x < -2$. But since the value of x has to be positive $x > 3$ is the solution.

101. b Colgate Gel, Chennai.

102. d It is Babool in Chennai and Cibaca in Mumbai (Both Rs. 8)

103.c Pepsodent 2-in-1, 50 gm, Chennai

$= \text{Rs.} \frac{20}{50} \text{ per gm} = \text{Rs. } 0.40 \text{ per gm}$ is the costiest.

104.d Since the population ratio is not known it cannot be determined

105.b Percentage of MBA's in P and S is 20%
$\therefore$ Overall percentage as 20%

106.c R

107.a Engineers

108.c Percentage

$= \frac{(3.5) + (4 \times 2 \times 2) + (3 \times 3 \times 3) + (2 \times 4 \times 4)}{10}$

= 7.85%

109. c $D = \frac{15000}{1650} = \text{USD } 8.57$

110. b

Brand	Price/unit
A	$\frac{10,000}{500} = 20$
B	$\frac{20,000}{750} = 26.67$
C	$\frac{35,000}{1,000} = 35.0$

Order is C > B > A.

111. d Average = $\frac{100,000}{5000} \times 45 = \text{Rs } 900$

112. b CMC, ICICI, MTNL show continued growth.

113. b BHEL, Wednesday, Rs. 33 (on Friday it was Rs. 32)

114. d Sensex on Monday = 3550
Sensex on Friday = 3577
Difference = 27

115. c DSQ, from an observation of the table.

116.b CMC $\rightarrow$ +1400
HLL $\rightarrow$ – 100
ICICI $\rightarrow$ +5300
Total profit = Rs. 6,600.

117. b The sales value in 2002-03 = $\frac{80,00,000}{1.225}$

= Rs. 65,30,600

The average price of biscuits in 2003-04 $\approx \frac{80,00,000}{2,00,000}$

= Rs. 40/kg

Hence, sales volume in 2002-03 = $\frac{65,30,600}{40}$

$\approx$ 1,63,260 kgs.

118. d From the question, we can find that the all-India sales volume of B.I. Ltd. is $\frac{200,000}{1/3}$ = 600,000 kgs.

However, there is no data given for the share of western region in its all-India sales.

119. d We cannot find out the all-India biscuit sales (by value) for B.I. Ltd. as we are not given the share of the southern region sales (by value) in all-India sales. The previous question gives the share of sale (by volume) for the southern region.

120. c Rate per kg for each category =

$$\frac{\text{Value in degrees}}{\text{Volume in degrees}} \times \text{Constant}(k)$$

For Glucose = $\frac{60}{120}k$ = 0.5 k

For Marie = $\frac{75}{75}k$ = 1.0 k

For Nutritional = $\frac{50}{30}k$ = 1.67 k

For Cream = $\frac{120}{60}k$ = 2.0 k

For Others = $\frac{65}{75}$ = 0.85 k

Hence (c) is the correct option.

121.c Count the number of 4 under the Column — scoring details.

122.a The highest strike rate was that of Md. Kaif. Hence, Y. Singh had the second highest strike rate among Indian batsmen.

123.b The ranks as per the two systems are given in table below:

Sl. No.	Name	Ranks as per		
		Economy rate	Strike rate	Difference
1	Md. Sami	2	5	3
2	Shoaib Akhtar	4	2	2
3	Abdul Razzaq	1	3	2
4	Shoaib Malik	3	1	2
5	Shahid Afridi	5	4	1

124. b The total number of balls in the 50 over Indian innings = (39 + 21 + 35 + 80 + 56 + 55 + 29)
= 315 (300 balls + 15 extras from no-balls & wides)

Hence, required percentage = $\frac{80}{315}$ × 100% = 25.4%

125.c Total runs scored by Indian batsmen = (290 – 28)
= 262
Total balls faced by Indian batsmen = 315 (as in Q. no. 124)

Hence, net run-rate = $\frac{262}{315}$ = 0.83

126. d

Year	Sales value (Rs. million)
1999	8.2
2000	11.44
2001	11.875
2002	14.16
2003	17.78

From above, it is clear that the highest percentage growth was in year 2000.

127. d The total sales volume of cigarettes sold by TIC Ltd. in each year for the period 1999 to 2002, cannot be calculated form the given data. It can be calculated for 2003 only. Hence, data insufficient.

128. c Rate per pack in 1999 = Rs. 10.00
Rate per pack in 2003 = Rs. 14.00
Hence average annual percentage increase in rate per pack for the given period

$$= \frac{\frac{14-10}{10} \times 100}{4} = 10\%$$

129. b Total sales value of TIC Ltd in 2003 = Rs. 105 million
Total sales volume of TIC Ltd in 2003 = 0.215 × 265
$\approx$ 57 million sticks

Hence average rate per pack = $\frac{105}{5.7}$ = Rs.18.40

130. c Total sales value of cigarettes in 2003

$= \text{Rs.}\left(\frac{18.40}{10}\right)\times 265 = \text{Rs. } 48.76 \text{ crores}$

Hence value-wise market share of TIC Ltd in 2003

$= \frac{10.5}{48.76} = 21.5\%$

Short Cut:
Since the average rate per pack is same, the volume-wise market share will be same as value-wise market share.

131. c A. is true because the product is maximum when the values are equal.

B. is true because sum = $\frac{n(n+1)}{2}$ or sum of (n – 3) terms is $\frac{(n-2)(n-3)}{2} = \frac{n^2-5n+6}{2}$

C. is false because the number of zeroes in 50 ! at the end is 12.
D. is true because discriminate, D (=b^2 – 4ac) is negative.

132. b A. is true because $\frac{\log a}{\log b}\times\frac{\log b}{\log c}\times\frac{\log c}{\log a}=1$

B. is true. Here LHS = $3^{\sqrt{\log_3 7}} = x$

or $(\log_3 7)^{1/2}\times\log 3 = \log x$

or $\frac{\log 7}{\log 3}\times(\log 3)^2 = (\log x)^2$

or $\log 7\times\log 3 = (\log x)^2$ …(i)

And RHS $= 7^{\sqrt{\log_7 3}} = y$

or $(\log_7 3)^{1/2}\times\log 7 = \log y$

or $\frac{\log 3}{\log 7}\times(\log 7)^2 = (\log y)^2$

or $\log 7\times\log 3 = (\log y)^2$ …(ii)

From (i) and (ii), we get $(\log x)^2 = (\log y)^2 \Rightarrow x = y$

C is false because 12 = 2^2 × 3, number of factors = 3 × 2 = 6.
D is false the minimum number of total students = 50

($\frac{26\times n}{100} = \frac{13\times 2n}{100}$ so 2n has to be multiple of 100).

133. b A. (1,1) does not satisfy x + y = 1 ∴ It is false.
B. True. Standard result.
C is true because x^2 – 4x + 3 = 0 or x = 1 or 3.
D. is false because P ! – (P – 1) ! = (P – 1) (P – 1) !

134. a A. it is false the equation is x = 2.
B. (8,6) lies on $x^2 + y^2$ – 100 = 0 . ∴ It is false.
C. is true because number of diagonals = $^nC_2 - n$

= $^{11}C_2 - 11 = 44$

D is false because 2, 3 and 5 are not the roots of the equation.

135. a A. a = 2, b = –3 ∴ It is false
B. For all values $a^3 > b^3$ is true

C. it is false because if a = 3, b = 2 then $\frac{1}{3} \not> \frac{1}{2}$
D. If a = 2 and b = –3 then a + b < a – b ∴ It is false.

136. d From statement I, A or C or D can travel by an auto. So, it is not sufficient.
From statement II, C or D can travel by an auto. So, it is also not sufficient.
Combining the two statements also we do not get a unique answer.

137. c From statement I, q = 3 or 4 or 5

From statement II, $p \geq 5$

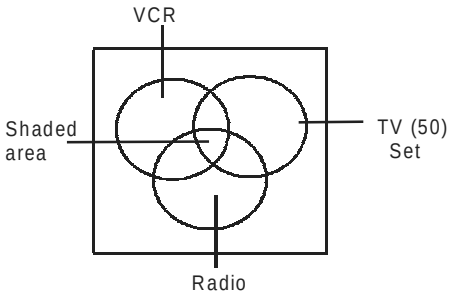
Combine both statement, we get $pq \geq 15$

138. a From statement I, it follows that
X = (M) (10) + N …(i)
Y = (N) (10) + M … (ii)
where M and N are each digits from 1 to 9, inclusive. Subtracting the equation (i) from the equation (ii), it follows that X – Y = (M – 10) 10 + (N – M), or X – Y = (M – N) 10 – (M – N).
Thus X – Y = (10 – 1) (M – N) = 9 (M – N), and $\frac{(X-Y)}{9}$ = M – N, which is an integer.

Thus, statement I, is sufficient.
Statement II, is not sufficient. For example if X = 53 and Y = 35, then X – Y = 18, which is divisible by 9; however, if X = 53 and Y = 46, then X – Y = 7, which is not divisible by 9.

139. c From statement I, Number of books < 10.
From statement II, Number of books = 6 or 12 or 18 …so on.
Combining both statement, we get number of books = 6.

140. d



The common area of TV set, VCR, Radio is not known ∴ It is not possible to calculate the number of houses with only TV.

For question 141 to 145:
From (I) Saptarsh has atleast 3 balls and the number of balls can be 3, 6, 9 12, 15, 18, 21 ...
From (II) Rushat has atleast 4 balls and the sequence can be 4, 8, 12, 16, 20, ...
From (III) Trivendra has atleast 5 balls and the sequence can be 5, 7, 9, 11, 13, 15 ....
The total number of balls is atleast 12 and atmost 24.
If total number of balls is even, then Saptarsh have an odd number of balls and vice versa.
Make different combinations
The total cannot be 13 because no numbers gives a sum of 13.
Total cannot be 12, 14, 15, 16 and 17 because the number of balls of each would be known .
∴ Contradicting statement (IV)

Total cannot be 18, 20, 21, 22, 23 or 24 because then no number of balls could be known for anybody. Contradicting statement (IV). So the total is 19.
If the total is 19 then Saptarsh much have even number of balls which is less than 19 – (4 + 5) = 10.
∴ Saptarsh much have 6 balls. Rushat and Trivendra together have 13 balls. Rushat can have either 4 or 8 balls. Trivendra can have either 9 or 5 balls.
∴ The number of balls with Rushat and Trivendra cannot be known. Speaker is Saptarsh.

141. b

142. a

143. c

144. d

145. d

146. c Output displayed can be in decimal only when X is a prime number. Hence, 4.121 is the square root of a prime number which is 17.

147. d Need to check the square of which natural number is close to 2406.
33 is too small, 47 is a prime number. Hence choice is between 48 and 49. It is actually square of 49 added with 5 which gives 2406.

148. b It will be 4 only as $(4)^2 - 2 = 14$. We do not consider 3, though $(3)^2 + 5 = 14$, as 3 is a prime number.

For questions 149 to 153:

Name	Category	Year of construction	Rented or not
Arpan	A	1990 to 1999	
Bunty	D	1970 to 1979	X
Chhotu	B	1980 to 1989	X
Dinku	C or E	Prior to 1970	
Eshwar	C or E	2000 onwards	

149. b

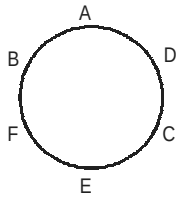
150. c

151. d

152. c

153. c

For questions 154 to 156:
Draw a circle in the following order A, D, C, E, F, B.



154. d

155. b

156. c

For questions 157 and 158:

Zebra	Monkey	Kangaroo	Giraffe
Second largest	Smallest	Third largest	Largest

157. b

158. d

For questions 159 and 160:
Cases which are not possible: (X_1, X_2), (X_1, X_3), (X_1, X_5), (X_1, X_6), (X_2, X_3), (X_2, X_4), (X_2, X_5), (X_3, X_4), (X_3, X_6), (X_4, X_6) and (X_5, X_6).
Cases which can be possible: (X_1, X_4), (X_2, X_6) or (X_3, X_5)

159. d

160. c

161. a (b) and (c) refute the argument. Hence, they cannot be valid. (a) flows naturally from the confidence evident in the second part of the argument.

162. c (a) and (b) are general observations that do not really lead anywhere. The argument concludes that the theory is an empty claim, and the supporting statement is found in (c) 'adaptations independent of rate of reproduction'.

163. b (a) is not the answer, it is a peripheral observation. (d) is a very pessimistic observation. (c) presents judgment of a very specific nature. (b) is the answer as it is almost a summary of what is given in the argument.

164. d None of the arguments is valid: for each we can find concepts which make the premises true but the conclusion false. For (a), substitute ''Every mathematician can add 2 and 3, but ...'' For (b), substitute, "Some Americans are black, and some Americans are white. Therefore ...'' For (c), substitute, "If someone is a doctor, they ...'' So whether an argument is valid depends not on the truth of the conclusion, but on its form: not on whether the conclusion is true or not, but on whether the truth of the premises makes the conclusion true.

165. a (b) is not the answer, it is an observation, not a conclusion. (c) very cleverly detracts from the argument. Bear in mind that Wallace did indeed believe in the theory of evolution before reversing his stand. So (a) is the answer. (a) also addresses the irony of the modern mind v/s the primitive mind.

166. d (a) is valid 'environmental' because the question is of prime importance for an ecologist. (b) is also stated in the argument. (c) is also right, if (a) and (b) are, and (d) is the answer, as there is no choice which includes only (a) and (b).

167. d (b) is quite in keeping with the doctrines of one's faith, but (a) and (c) are just convenient life-positions. Hence, (d) is the answer.

168. c If (a) and (b) are true, the argument need not be contemplated. (c) strongly supports the assertion in the argument.

169. a (b) and (c) are highly contradictory views (in the same vein). If it is true that God has designed our destiny, then man's free will cannot interfere with his fate. So (b) and (c) are flawed. (a) is a direct attack on Calvin's theory, hence is the answer.

170. d (c) supports Pangloss' point of view. (a) and (b) cannot be for the best, hence (d) is the answer.