Answer Key XAT 2013

Part - I

Verbal and Logical Ability, Decision Making, Quantitaive Ability and Data Interpretation

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

Part - II

General Awareness

1	A	**2**	A	**3**	C	**4**	D	**5**	E	**6**	D	**7**	B	**8**	E	**9**	A	**10**	B
11	B	**12**	A	**13**	E	**14**	E	**15**	C	**16**	E	**17**	B	**18**	B	**19**	D	**20**	C
21	C*	**22**	A	**23**	E	**24**	E	**25**	D	**26**	A	**27**	C	**28**	C	**29**	B	**30**	A

Solutions XAT 2013

1. A* In Inductive logic, a general statement is constructed or derived from a specific example. Here, statement 1 talks of some 'new laws' being vague and thus providing great latitude to officials down the bureaucratic chain. Statement 2 is a kind of opinion or conclusion that, based on the specific example of statement 1, generalizes that law is open to manipulation on political grounds. However, the reverse of it is also true. That is, statement 1 can also be deduced from statement 2, which is given in option D. However, XAT is likely to pick option A as the correct answer.

2. B Statement 1, in essence, states that publicly financed science endeavors should have their fruits freely available. Statement 3 mentions a medium through which this is possible. It states how internet revolution and technology will help in making it a reality. Thus, statement 3 is a facilitating (supporting) condition for what is demanded in statement 1. Other options cannot be definitely concluded and are hence incorrect. Option B is the correct choice.

3. D All the statements in the given question are related to each other. Statement 1 talks of the ignorance of business schools in doing their job which can be related to both statements 2 and 3. Similarly, statement 2, which talks of the bigger picture, that is how the political debate on capitalism has been taken over by people who have special interests, can depend on statement 1 and 3. Statement 3 gives an instance of the government favoring certain institutions over the others; this can stem from both statements 1 and 2. Thus, option D is the correct answer.

4. A The given sentence begins with an indefinite article 'a' that should be placed before 'wolf'. Similarly, 'a lamb' follows. The next blank requires a definite article 'the' as the 'wolf' mentioned previously has gone astray from that particular 'fold' in which it was kept. The next two blanks each require the article 'the' as the 'wolf' and the 'lamb' talked about are the ones introduced in the beginning of the sentence.

5. D 'A' should come in the first and the third blank as it introduces some 'bat' and some 'weasel' being talked about in the sentence. The second blank should have 'the' before ground. 'The' will fit in the fourth and the sixth blank as it modifies the nouns 'bat' and 'weasel' already mentioned in the sentence. Enemy is preceded by 'the' in the fifth blank. The last two blanks will have 'a' before bird and mouse respectively as bird and mouse here refer to the general class of birds and mice and not some particular bird and mouse.

6. B 'As' would fit in the second blank as 'like usual' is incorrect. 'Like' is used to compare two things while 'as' is used to compare two actions. The last two blanks will have 'out' and 'to' respectively. One blows 'out' one's nose and 'dared' has to be followed by 'to' here. This eliminates the rest of the options. Other words in option B also fit in the given sentence. 'Little' is used in the sense of negligible and 'help of the bar' means to take things from the bar. Hence, option B is the correct answer.

7. B 3 and 4 form a mandatory pair as the author's comment about being right refers to his act of identifying one of the men as the beggar, as mentioned in 3. Statement 2 describes how the author is trying to move towards the bank and 'position' himself behind a bush of broom. The author states that he 'was scarcely in position' in statement 1. Thus, statement 1 and 2 form a mandatory pair. These pairs are given only in option B which is the correct answer.

8. C This question can be easily solved using mandatory pairs. 2 and 5 is one such mandatory pair. 'Almost at the same time' in 5 refers to the time when 'another sound came from the top of the hill' as mentioned in statement 2. This is followed by statement 3 where 'the last signal' refers to the gun shot of statement 5. 5 is followed by 4 as 4 carries forward the idea of 'Pew' being deserted which is previously talked about in statement 5. Statement 1 fits in the end; 'he' refers to Pew and statement 1 states what he exclaims when left behind by the others.

9. E 1 and 3 is a mandatory pair as 'these are simply the wrong questions' in 3 refers to the questions asked in statement 1. This rules out options B, C and D. Statement 4 begins the sequence as it introduces the topic of 'few historians' which are later referred as 'these same historians in statement 2. Hence, option E gives the correct sequence.

10. B The correct sentence should have no comma after 'requires' as all the qualities stated should be treated as objects in the sentence; each separated by a comma and the last one following the conjunction 'and'. This is given in option B which is the correct answer.

11. B The italicized part is a comparison between how the passage of time appears to someone standing still and to a person who is traveling. Thus, both the sides of the comparison must have the subject 'person' to whom the passage of time 'appears' in different conditions as mentioned in the sentence. This eliminates options A and C and D. Only option B illustrates this point and maintains a parallel structure of the sentence. Option E is incorrect because it is not parallel in structure ('standing still' and 'travels' both are in different verb forms). Option B is the correct answer.

12. D 'Savings' here is treated as a plural and hence the auxiliary verb 'have' should be used to maintain subject verb agreement. This eliminates option A and B. Option E is incorrect as the tense in the given sentence is present perfect while that in the option is present perfect continuous. Similarly, option C is incorrect as the tense in this option is present continuous which conveys a different meaning with respect to the original sentence which is in present perfect. Option D is correct.

13. E From the first paragraph, it can be inferred that 'those very bodies or embodiments' refers to either one's life form in the current life or to a similar form or embodiment in a future life. Thus, 'future existences' does not refer to either of the three statements and option E is the answer.

14. C The first statement of the passage merely states that one has to reap the fruits of one's actions at some point in time after those actions have been committed. However, this not necessarily mean that such consequences are important.

The conclusion, therefore, may or may not follow. Option C is the correct answer.

15. C The first premise states that people may, and do, often lower their expectations of performance and achievement in order to maximize their sense of satisfaction since 'lower expectations often lead to greater satisfaction'. Option C, which states that satisfaction depends on actual achievement and not expectations thus contradicts the first premise.

16. B The second premise states that 'people with a long term orientation are likely to be less inclined to lower expectations in the hope of temporarily feeling better.' This implies that those with a belief in the law of karma are not easily swayed by temporary feelings. Thus, statement 1 is consistent with the premise. Statement 2 can be directly inferred from the second premise. Statement 3 does not follow from the given premise. Thus, option B is the correct answer.

17. B "Disconfirmation sensitivity' has been mentioned as a tendency to be more satisfied when products performs better than expected or more dissatisfied when products perform worse then expected. It is also mentioned that consumers prone to be disconfirmation sensitive have lower expectations. Thus, on the basis of the premises mentioned in the passage, it can be inferred that disconfirmation sensitive consumers are likely to have more extreme reactions to products. Thus, in the given case the manager can said to be definitely disconfirmation sensitive. Thus, option B is the answer.

18. A Option A is the answer as it details a situation which is analogous to the one described in the passage, where Fermi estimated the minimum yield of the nuclear blast by using confetti.

19. D Option A is incorrect as it is not implied in the passage. Options B and C are negated as the passage does not mention that quick estimate is used to arrive at exact values of an estimate. Option D is the correct choice as quick estimate is used to estimate

20. C Statements 1 and 4 cannot be inferred from the passage. Since the passage talks about Fermi's focus on estimating various physical quantities, statements 2 and 3 can be inferred as being closest to capturing the central idea of the passage. Option C is the correct answer.

21. E Statement 1 cannot be inferred as the passage is silent on the nature of Fermi's Nobel Prize contribution. It merely mentions that Fermi was 'one of the atomic scientists' who observed the first detonation of the atomic bomb from base camp. There is nothing in the passage to conclude that Fermi's students considered him to be a genius. Thus, statement 2 also cannot be inferred. While the passage mentions the yield of the atomic blast being measured in kilotons, it does not say that this is the only unit for making such a measurement. Thus, none of the statements 1, 2 or 3 can be inferred from the passage and option E is the answer.

22. D The first paragraph clearly states that when it comes to drawing any conclusion about the universality of scientific belief, 'a single negative instance is sufficient to prove that the belief is false,' and that 'we can sometimes deduce that a universal scientific belief is false but we can never induce that a universal scientific belief is true.' Option D is in line with this and is the answer.

23. E The statement implies that the 'asymmetry' between verification and falsification is not always in favor of the capability of falsification for rejecting a scientific belief as against that of verification for acceptance of a scientific belief. Thus, option E is the answer.

24. D The passage mentions that no matter how many instances are used to verify a theory, it takes just one case of falsification to disprove a claim. Thus, clearly, falsification is better hen verification in disproving any claims. Therefore, option D is the answer. Option A is not supported by the information in the passage. Options B, C and E are contrary to what is mentioned in the passage.

25. A Options C, D and E are contrary to what is stated in the passage. Option B cannot be inferred from the information in the passage. Option A is, however, is correct as the passage mentions that 'a single negative instance is sufficient to prove that the belief is false, for such an instance is logically incompatible with the universal truth of the belief.

26. B The passage talks about the 'alleged inadequacy of neoclassical economics' when it comes to capitalist thinking. Only option B is congruent with this line of thought, and is the correct answer. Options A and E are contrary to what is stated in the passage while options C and D cannot be inferred from the passage.

27. D The passage clearly states that 'it would be foolish to construe religion or romance or even scientific enquiry as solely explicable by reference to the laws of economics.' Option D is congruent with this point mentioned ni the passage and is the answer.

28. C According to the passage Soros believes that 'the state can manipulate many aspects of human life', the only rider being that 'it does not settle into any one policy firmly, unbendingly'. Thus it can be inferred that Soros accepted the idea of state intervention provided that such intervention did not ossify into something static. Thus, option C is the answer.

29. E 'Critical rationalism' finds mention in the passage as that attribute which 'Soros himself regarded as central to all human thinking'. There is no information in the passage that can be used to infer either of the options A, B, C or D. Therefore, option E is the answer.

30. D 'Deterministic lawfulness' here refers to the assertion that it is possible, on the basis of economic principles, to establish a cause effect relationship between events. Option D is in keeping with this and is the correct answer.

31. C From statement I: On the basis of the given information, sales figure for three different markets – online stare, super market and book store – can be computed, but nothing can be inferred about initial costs.
Therefore, statement I alone is not sufficient to answer the question.
From statement II: On the basis of given information ratio of initial costs for the three markets can be computed, but nothing can be said above the actual figures.
Therefore, statement II alone is not sufficient to answer the question.
From statements I and II: On combining both the statements, all the required figures for computing profit can be calculated. Hence, both the statements together are sufficient.

For questions 32 to 34:

Based on the information provided in the questions, the break-up for the additional cost for three different market will be as shown in the following table.

Retail Format	Red	Yellow	Green	Voilet
Online	$₹5500\times\frac{200}{272}$ $=4000$	$3100\times\frac{50}{100}$ $=₹1550$	$4800\times\frac{50}{80}$ $=₹3000$	$2600\times\frac{50}{80}$ $=₹1500$
Super Market	$5500\times\frac{65}{275}$ $=₹1300$	$3100\times\frac{20}{100}$ $=₹620$	$4800\times\frac{21}{80}$ $=₹1260$	$2400\times\frac{21}{80}$ $=₹1050$
Book Store	200	930	540	450

Hence, additional cost, viz., 3-markets:
Online Store = 4000 + 1550 + 3000 + 1500 = 10050
Super Market = 1300 + 620 + 1260 + 1050 = 4230
Book Store = 200 + 930 + 540 + 450 = 2120

Since sales and initial cost are allocated in similar ratio among all of the three markets given in the statement I and II of the previous question, we can finalize following table:

	BnC Ltd	Online Store	Super Market	Book Store
Sales	60000	30000	10000	20000
Initial Cost	39000	19500	6500	13000
Contributions	21000	10500	3500	7000
Additional Cost	15800	10050	4230	2120
Profit/Loss	5200	450	3500 – 4230 = – 730 (Loss)	₹ + 4880

32. D

33. B

34. A

35. C As the probability of getting incorrect answers is quite high in comparison to getting right answers for the students of the class in the test, in case students sitting next to each other go for cheating, then probability of them getting same incorrect answers for multiple questions is quite high. Therefore, by tracking pattern of incorrect answers, it is possible to detect whether cheating took place or not.

36.* Probability of the first student of the group of three getting incorrect answer of 1st question $=\frac{4}{5}$

Probability of the second student of the group getting the same incorrect answer of 1st question as that of the first student $=\frac{4}{5}\times\frac{1}{5}$.

Probability of the third student of the group getting the same incorrect answer of 1st question as that of the first student $=\frac{4}{5}\times\frac{1}{5}$.

Therefore, the probability of all the three getting same incorrect answer of 1st question

$$=\frac{4}{5}\times\frac{4}{5}\times\frac{1}{5}\times\frac{4}{5}\times\frac{1}{5}=\frac{4^3}{5^5}$$

Hence, the probability $=\left(\frac{4^3}{5^5}\right)^4=\frac{4^{12}}{5^{20}}$.

Note: Right answer is not given among the options.

37. * Since we want to know exact number of students from each section, statements II, III and IV or I, III and IV are must. Only options A, C and D satisfy this condition.
Option A: Since total number of students is less than 15, many cases are possible.
Option C: Since total number of students is less than 15, respective number of students in section A, B, C and D can be 5, 4, 3, 2 or 5, 4, 3, 1.
Option D: Since total number of students is less than 15, number of students in four sections can be 5, 4, 3, 2 or 6, 4, 3 and 1.

38. A The correct combination of ranks as per the given conditions (in rank order) is
Esha, Devroopa, Ankita, Chanchal, Bhagyashree.
Clearly, none of the first student's estimates were correct as per the combination. In case of the second students, he guessed the ranks of exactly two persons corectly (Chanchal and Bhagyashree and exactly two students correctly followed their immediate predecessors (Ankita and Bhagyashree).

39. B The passage states that "a fear had gripped the population" and "The common man was scared of the retribution". This explains that although people were grieving because of corruption and there was a feeling of resentment toward the corrupt, people were unable to do anything as they were scared. This makes statement 1 correct. Shambhu challenged the administration without regard to personal safety and sat on hunger strike for many days. His actions affected the government and helped in gathering support from the citizens. Thus statement 2 is also correct. Options 3 and 4 have not been mentioned as the reasons for the support gathered by Shambhu. Although media supported Shambhu, the passage does not tell us that they did so as they were starving for newsworthy issues. The correct answer is B.

40. C Shambhu insisted that only people that had an unblemished character should be allowed to hold office. If this is followed then people who have been indirectly associated with instances of corruption will also be excluded from holding office. People thought that Shambhu was laying a lot of stress on past and the standards set by him were unrealistic. Hence he lost support. Option C is correct.

41. E The minister tried to justify his actions by stating that these actions have benefited people. But, this is not a reason enough to perpetrate corruption of any kind. Also, the media has accused the minister of receiving kickbacks in exchange of incorrect allocations. This makes it all the more difficult for the minister to proclaim his act as justifiable. Hence, option E is correct.

42. B The minister had said-"the media cannot act as the reporter, prosecutor and Judge". It is not clear from the case whether the media was doing one or all of the stated and there is a possibility that the statement made by the minister be factually incorrect. Hence, correct answer is option B.

43. D* The correct answer to this questions should have been 'both corporate managers and the minister'. The head of the nation should not have been accused as he was the one to identify the discrepancy in the allotments. Since the correct answer is not given in the answer choices, XAT is most likely to pick D as the correct answer.

44. C Loss of retail customers does not necessarily mean loss of revenue. It is important to understand that this reduction in retail customers may be by design and an organizational objective. The organization may have been trying to shift its customer base from retail to commercial and their success in doing so can account for the increase in revenue. Hence answer choice C is correct.

45. A The reason why doctors have not embraced the surgery has to be linked to its potential side effects. Answer choice A tells us that the surgery can result in serious complications including death and this is a reason enough for the doctors to not recommend its use. Options B and C tell us the prevalence and effects of obesity which do not explain why doctors are wary of the discussed mode of treatment. Option D talks about how other methods like dieting are not very effective. Option E is irrelevant as it talks about cost and financing, something which the doctor may not be concerned with.

46. A The caselet does not give any reason to fire or demote kale. The immediate course of action should be to investigate the accusations against Kale. If the charges are proved correct, Kale should be transferred as he can work effectively when working alone. In order to help Kale better, Marathe can suggest family counseling as a long term solution. Family problems may be affecting Kales work as well but there is nothing in the passage to suggest that. Hence, the correct sequence is 2, 1, 5.

47. E The only solution that pertains to personal problems (since it deals with family issues) is mentioned in statement 5 of the previous question – "Marathe should suggest Kale to visit a family counselor." Therefore if Marathe has to agree with Lakhote's opinion of not addressing the personal problems of employees then this solution (statement 5) becomes invalid. Hence, the correct answer is option E.

48. C Option A is negated because the major concern was Kale's inability to work competently in a team and not his conflicting responsibilities at home and office. Kale was facing personal problems at home and option B states that employees' problems at home affect their performance at work. This strengthens the argument rather than weakening it by citing one more reason to sack Kale. Option D is incorrect because if it holds true than it wipes out the possibility of sending Kale to some other location for work and does leave the management with the only option of sacking him. Option E is eliminated because it again strengthens the argument as the caselet clearly says that Kale was emotionally unstable. Option C is the correct choice as the report in the journal indicates that most managers find it difficult to work in a group. Even if Kale is sacked and a new manager is hired in his place, it is likely that the new manager may face the same problem (of not being able to work in a group). And hence it will not be a good business decision to sack Kale. Therefore, option C weakens the argument and is the correct answer.

49. E Appreciation by boss can never be demotivating for an employee. It will rather boost the morale of an employee and motivate him to work to hard. Hence, Vardarajan's declining involvement cannot be attributed to the fact that his bosses appreciated him. Thus, option E is the most unlikely reason for his declining involvement in work. Options A, B, C and D, if true, could be considered as likely reasons for Vardarajan's disinterest in work and hence are incorrect.

50. A Since Vardarajan does not find his work challenging so the first step that should be taken to motivate him will be to give him a more challenging assignment. Next step in the series would be to transfer him from the Projects Department to Training Department so as to give him a change of roles and responsibilities. This may prove to be beneficial as he would get a break from his routine tasks and will have an opportunity to explore new avenues. If all this fails then the best possible thing will be to give him a long break from work and send him on a vacation for two months. This will give him time to for self introspection and he can start afresh when he joins back. Hence, the sequence will be 1,2,3 which is given by option A. Statement 4 is irrelevant as Vardarajan is not facing this kind of problem at work.

51. B Option A is incorrect because promoting Vardarajan will not address the issue at hand. The problem can only be addressed by keeping the performance assessment system transparent and by ensuring impartiality in reviewing performance of each employee. Thus, the correct answer is given by option B. Options C, D and E are negated for the same reason as A i.e. the issue cannot be resolved by addressing Vardarajan's case alone but by fairly judging the performance of all the employees in the organization.

52. C The caselet presents a complicated problem making it difficult to find out the guilty. The best way to proceed in cases like these is to launch an investigation into the matter so as to find out that who is at fault. Thus, the most appropriate course of action to be followed is presented by option C – Vijya should constitute a fact finding committee to investigate the matter and then decide about the next step to be taken. Options A and B are inappropriate because these steps could be taken only after finding out the person at fault. Option D is eliminated as involving the corporate recruiters in the matter will only aggravate the issue and bring a bad name to the college. An effort should be made to try and solve the problem internally rather than publicizing it.

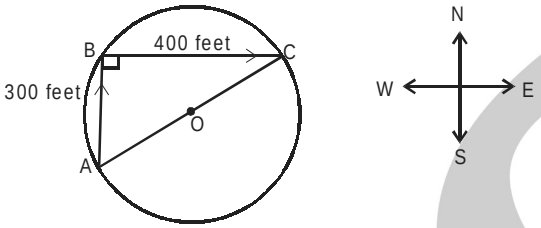
53. D Option D is the correct answer. It is advisable to start from the scratch and shortlist candidates from the fresh set if bio-data. Since the fresh set contains the verified grades of the students so there are no chances of any discrepancy this time. Option A is incorrect as it is an extreme step and should not be taken when there is an option of screening the candidates again. Option B can be negated because the HR managers's contact may not have the correct information. Furthermore it does not address the problem of recruitments from that college. It is unethical for an HR manager to recruit candidates even after knowing that that the information presented in their bio-data's is not authentic. This will show his disloyalty towards the organization. Option E is incorrect as it reduces the pool of students to be recruited from.

54. B On being asked about information regarding pay packages of graduating students, the senior does not reveal much information and rather cautions you not to believe in any sort of rumors. He also said that for any further information the college authorities should be contacted directly. Thus option B presents the most suitable course of action for seeking further information about placements. Option A is incorrect because the senior has already warned you that believing in rumors will do you no good. The information that you get by networking with students may not be authentic. Option C can be eliminated because contacting the HR managers is beyond the purview of discussion held between the potential entrant and the senior. Option D is incorrect because the senior has advised to contact the student body and not any individual representing the body. Approaching the President directly may not prove to be of any help. Option E is negated for the same reason as option A.

55. D Option A is inappropriate as it will be unprofessional on Vijya's part to suppress this information by not paying heed to the phone call. Options B and C are negated because it is unethical to shrug off the responsibility by absenting onself from work or by putting it on someone else. Option E is eliminated as it is not feasible to constitute a committee for every issue. Furthermore, this will only prolong things and will delay the matter. Option D is the correct answer. Since the matter cannot go unreported so it is advisable to consult the Director (Vijya's senior) and seek his opinion on the issue.

56. D Let Prof. Mandal reaches to the market by walking in t minutes and by auto in T minutes.
$\therefore$ t + T = 90 and 2T = 30
$\Rightarrow$ T = 15 and t = 75
$\therefore$ 2t = 2 × 75 = 150
Hence, the required time is 150 minutes.

57. A Let O be the center of the pool and A and C are starting and ending point for the fish respectively.



In right angled ΔABC,
$AC^2 = AB^2 + BC^2$
$\Rightarrow AC^2 = 300^2 + 400^2$
$\Rightarrow$ AC = 500
Radius of the pool = OA = 250 feet
Hence, the area of the pool $= \pi \times (250)^2 = 62500\pi$ square feet.

58. E Let the rate of interests for younger and older sons be a% and b% per annum respectively.

$$\therefore \frac{7.5 \times a \times (21-12)}{100} = \frac{7.5 \times b \times (21-15)}{100} = 21 - 7.5 = 13.5$$

$$\Rightarrow a = \frac{13.5 \times 100}{7.5 \times 9} = 20\% \text{ and } b = \frac{13.5 \times 100}{7.5 \times 6} = 30\%.$$

59. A Let the number of pages read by Chulbul be x. Therefore the number of pages read by Albela and Bob will be 2x and (78 – 3x).
$\therefore$ 2x × 2 = 3 × (78 – 3x) $\Rightarrow$ x = 18
Hence, the number of pages = 78 – 3x = 78 – 3 × 18 = 24

Alternate method:
LCM of (2 minutes, 3 minutes and 4 minutes) = 12 minutes
Total number of pages, Albela, Bob and Chulbul can read in 12 minutes = 6 + 4 + 3 = 13
78 pages can read by all three in $\frac{78}{13} \times 12 = 72$ minutes
Hence, the number of pages that Bob should read in 72 minutes $= \frac{72}{12} \times 4 = 24$.

60. C Let the required distance be x km.
20 + 8 × 5 + 4 × 8 + (x – 14) × 2 = 102
$\Rightarrow$ x = 19.

61. E As $\frac{(a^2+a+1)}{a} = a + 1 + \frac{1}{a} \geq 3$ (For any positive number a, $a + \frac{1}{a} \geq 2$)

$\therefore$ Minimum value of $\frac{(a^2+a+1)}{a}$ is 3
Hence, the minimum value of
$\frac{(a^2+a+1)(b^2+b+1)(c^2+c+1)(d^2+d+1)}{abcd}$ is 243.

62. D Sum of the six positive integers = 15 × 6 = 90
Since mode is 18 and the number of terms in the sequence is is 6 i.e. even, the median will be the average of the two middle most terms (when integers are arranged in ascending/ discending order of the sequence) i.e. these two terms must be equidistant from the median, e.g. (17, 19) or (16, 20) and so on.
The largest term will be maximum only if second largest term along with the only mode is least possible. For this to happen, 3rd and 4th largest terms must be as closest as possible to 18 i.e. their value should be 19 and 17 respectively and mode (with frequency 2) must be 1. Therefore, the value of the second largest term will be 20.
Hence, the largest term = 90 – (1 + 1 + 17 + 19 + 20) = 32.

63. B* To reach to the found conclusion, the number of apples bought must have been 2 or 3.
Let the number of fruits used of each kind for making the blend be x.
Case I: Juice obtained from 2 apples was equal to juice obtained from 1 orange.

The percentage $= \frac{x}{x+2x} \times 100 = 33.3\%$

Case II: Juice obtained from 3 apples was equal to juice obtained from 2 orange.

The percentage $= \frac{x}{x + x \times \frac{3}{2}} \times 100 = 40\%$

Note: Though question has asked for unique percentage of apple juice in the blend, but there are two such values. Going by the options, there is only one of two possible values is present among the option, hence this should be the most appropriate answer.

64. B Since each of Sara's friends has 25 friends including Sara, the number of friends of each of Sara's friends excluding Sara is 24. Also, at least two of her friends are connected. Therefore, in order to maximize the number of persons invited for the party, the number of Sara's friends who are connected must be least possible i.e. 2.
The maximum number of persons that Sara can invite
= 5 + (24 + 24 + 24) + (23 + 23) = 123.
Hence, the number of people invited for the party ≤ 123.

65. B Let the percentages of students who play none of the games, exactly one game, exactly two games, exactly three games and all the games be a, b, c, d and e respectively.

$\therefore$ a + b + c + d + e = 100 …(i)

and a + b + 2c + 3d + 4f = 310 …(ii)

The number of students who play all the games will be the minimum only if the number of students who play exactly three games is the maximum. In order to maximize the number of students who play exactly three games, the number of students who play at most two games should be 0.

$\therefore$ d + e = 100 …(iii)

and 3d + 4e = 310 …(iv)

Solving (iii) and (iv), we get,

d = 90 and e = 10.

Hence, the minimum number of students who play all the four games is 10%.

Alternate method:

The minimum percentage of students =

$100 - \{(100 - 70) + (100 - 75) + (100 - 80) + (100 - 85)\}$

= 10%.

66. D $p^q = q^p$

$\Rightarrow p^{\frac{q}{p}} = q$ (Given q = 9p)

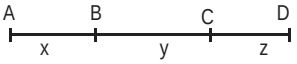
$\Rightarrow p^{\frac{9p}{p}} = 9p$

$\Rightarrow p^9 = 9p$

$\Rightarrow p(p^8 - 9) = 0$

$\Rightarrow p = \sqrt[8]{9}$. {p ≠ 0 as p is a + ve real number}

67. A



Let the starting point for all the three, the point at Hari gets off from the car, the point at which Ram picks up Shyam and the final point of the journey be A, C, B and D respectively.

Let AB = x, BC = y and CD = z.

$\therefore \frac{x}{5} = \frac{x + 2y}{25} \Rightarrow y = 2x$ …(i)

and $\frac{z}{5} = \frac{z + 2y}{25} \Rightarrow y = 2z$ ...(ii)

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

x : y : z = 1 : 2 : 1

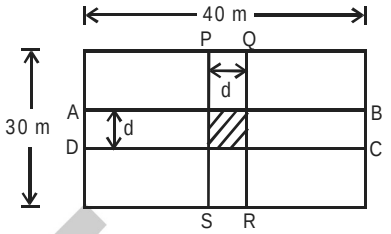
Therefore, x = z = 25 km and y = 50 km

Hence, the required time $= \frac{x + y + 2y + z}{25}$

$= \frac{25 + 50 + 100 + 25}{25} = 8$ hours.

68. A The part(the diagonals of the park are also the diagonals of the small rectangle formed at the intersection of the two roads) of question data make the question incoherent as this is not possible. However, the question can be answer by ignoring the part of the data.

Let the width of the road be d meters.



$\therefore$ Area of the roads $= \frac{1}{2} \times$ Area of the park

$\Rightarrow$ Area of rectangle ABCD + Area of rectangle PQRS – Area of shaded portion $= \frac{1}{2} \times 40 \times 30$

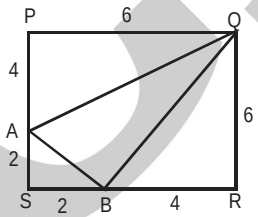
$\Rightarrow$ 40 × d + 30 × d – d × d = 600

$\Rightarrow d^2 - 70d + 600 = 0$

$\Rightarrow$ (d – 60)(d – 10) = 0

$\Rightarrow$ d = 10 meters. $[\because d \neq 60]$

69. C



Given, PA = 2AS and RB = 2BS

$\Rightarrow$ PA = 4, AS = 2, RB = 4 and BS = 2

$\therefore$ Area of ΔABQ

= Area of square PQRS – ΔAPQ – ΔASB – ΔBRQ

$= 6 \times 6 - \frac{1}{2} \times 4 \times 6 - \frac{1}{2} \times 2 \times 2 - \frac{1}{2} \times 4 \times 6$

= 36 – 12 – 2 – 12 = 10.

70. B The total number of numbers in the given range i.e. from 101 to 799 = 799 – 100 = 699.

The number of numbers in the given range which do not have 2 as one of there digits = 6 × 9 × 9 – 1 = 485

Hence, the required number of numbers = 699 – 485 = 214.

71. C p + q + r = 10

The product of p, q and r will be maximum if p, q and r are as symmetrical as possible. Therefore, the possible combination is (4, 3, 3).

Hence, maximum value of pq + qr + pr + pqr = 4 × 3 + 4 × 3 + 3 × 3 + 4 × 3 × 3 = 69.

72. E Let the number be 10a + b, where $a \neq 0$.

$\therefore 10a + b = a + b + ab$

$\Rightarrow 9a - ab = 0$

$\Rightarrow b = 9$ (since $a \neq 0$)

Therefore, an *interesting* number is of the form 'a9'. 9 such numbers are possible from 10 to 100.

$\therefore$ The fraction $= \frac{9}{91} = 0.0989.$

73. B

	Priority 1	Priority 2	Priority 3
	Number of tasks completed	Total priority of tasks	Total number of days required
Option A	2(T1, T2)	1 + 2 = 3	3 + 5 = 8
Option B	3(T1, T2, T5)	1 + 2 + 4 = 7	3 + 5 + 2 = 10
Option C	3(T1, T4, T5)	1 + 3 + 4 = 8	3 + 4 + 2 = 9
Option D	3(T1, T2, T4)	1 + 2 + 3 = 6	3 + 5 + 4 = 12
Option E	3(T1, T3, T4)	1 + 5 + 3 = 9	3 + 3 + 4 = 10

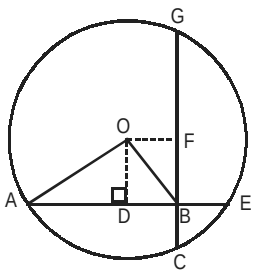
From the table, it is clear that Arun must complete tasks T1, T2 and T5.

74. E

	Priority 1	Priority 2	Priority 3	
	Number of tasks completed	Total priority of tasks	Total number of days required	Number of days required for background research
Option A	3(T1, T2, T3)	1 + 2 + 5 = 8	3 + 5 + 3 = 11	3 + 5 + 2 = 10
Option B	3(T1, T2, T5)	1 + 2 + 4 = 7	3 + 5 + 2 = 10	3 + 5 + 3 = 11
Option C	3(T1, T2, T4)	1 + 2 + 3 = 6	3 + 5 + 4 = 12	3 + 5 + 2 = 10
Option D	3(T1, T3, T4)	1 + 5 + 3 = 9	3 + 3 + 4 = 10	3 + 2 + 2 = 7
Option E	3(T1, T4, T5)	1 + 3 + 4 = 8	3 + 4 + 2 = 9	3 + 2 + 3 = 8

From the table, it is clear that Arun must complete tasks T1, T4 and T5.

75. A



Let BE be x cm and BG be y cm.
It is given, AB = 6 cm and BC = 2 cm
From intersecting chord theorem,
BG × BC = AB × BE

$\Rightarrow 2y = 6x$

$\Rightarrow y = 3x$

Now, $OD = BF = BG - GF = 3x - \frac{3x+2}{2} = \frac{3x-2}{2}$

and $AD = \frac{6+x}{2}$

In right angled ΔODA,

$OA^2 = OD^2 + AD^2$

$\Rightarrow 50 = \left(\frac{3x-2}{2}\right)^2 + \left(\frac{6+x}{2}\right)^2$

$\Rightarrow x^2 = 16$

$\Rightarrow x = 4$

In right angled ΔODB,

$OB^2 = OD^2 + BD^2 = 5^2 + 1^2 = 26$ cm.

76. E a = Probability of at least 1 of the 2 drawn cards being king =

1 – None of the 2 drawn cards being a king $= 1 - \frac{{}^4C_2}{{}^6C_2} = \frac{3}{5}$

b = Probability of none of the 2 drawn cards being king

$= \frac{{}^4C_2}{{}^6C_2} = \frac{2}{5}$

$\therefore$ The required ratio $= \frac{a}{b} = \frac{3}{2} = 1.5 \geq 1.25.$

77. E Given, $(xxx)_b = x^3$

$\Rightarrow (x \times b^2 + x \times b + x) = x^3$

$\Rightarrow (b^2 + b + 1) = x^2$

$\Rightarrow x \geq b$

But x is a digit in base b, therefore x < b

Hence, b cannot assume any value.

78. C $f(x) = x^4 + x^3 + x^2 + x + 1 = \frac{x^5 - 1}{x - 1}$

$f(x^5) = x^{20} + x^{15} + x^{10} + x^5 + 1$

$$\therefore \text{Rem}\left(\frac{f(x^5)}{f(x)}\right) = \text{Rem}\left(\frac{x^{20}-1+x^{15}-1+x^{10}-1+x^5-1+5}{\frac{x^5-1}{x-1}}\right)$$

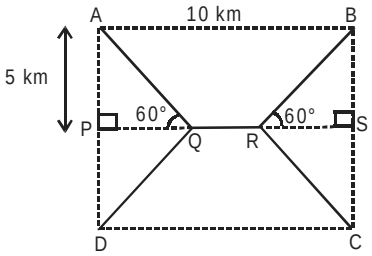
$$= (x-1)\text{Rem}\left(\frac{x^{20}-1}{x^5-1} + \frac{x^{15}-1}{x^5-1} + \frac{x^{10}-1}{x^5-1} + \frac{x^5-1}{x^5-1}\right) + \text{Rem}\left(\frac{5}{f(x)}\right)$$

$$= (x-1)\text{Rem}\left(\frac{(x^5)^4-1}{x^5-1} + \frac{(x^5)^3-1}{x^5-1} + \frac{(x^5)^2-1}{x^5-1} + \frac{x^5-1}{x^5-1}\right) + \text{Rem}\left(\frac{5}{f(x)}\right)$$

$= (x - 1) \times 0 + 5 = 5$

Hence, the remainder is 5.

79. B **(This question is one of the case of the famous Moterway Problem)**



In right angled triangle APQ,

AP = 5 km and $\angle AQP = 60^\circ$

$\therefore PQ = \frac{5}{\sqrt{3}}$ and $AQ = \frac{10}{\sqrt{3}}$

Hence, the required minimum length of the road = AQ + DQ + QR + RB + RC = 4 × AQ + QR

$= 4 \times \frac{10}{\sqrt{3}} + \left(10 - 2 \times \frac{5}{\sqrt{3}}\right) = 10 + 3 \times \frac{10}{\sqrt{3}} = 10\left(1 + \sqrt{3}\right)$

= 27.32 km.

80. C **Statement I:** 1000027 = 7 × 19 × 73 × 103
Hence, this statement is not true.

Statement II: Let $\sqrt[6]{6!} > \sqrt[7]{7!}$

$\Rightarrow (6!)^7 > (7!)^6$

$\Rightarrow 6! > 7^6$, which is not true.

Hence, this statement is true.

Statement III: Let 2x km be the total length of journey, then the time taken for one-half of the journey is 1hr.
If the average speed of the entire journey is 2x km/hr, then the time taken for the whole journey is 1 hr, which is not possible because 1hr is already spent on first half of the journey.
Hence, only statement III is true.

81. C We are to find the solutions for f(f(x)) = 15.
From the graph, f(4) = 15 and f(12) = 15.
The required solutions will be those values of x for which f(x) = 4 and f(x) = 12.
From the graph, the value of function f(x) is 4 at four different values of x, i.e. –8, 1, 7.5 and 10.
The value of the function f(x) is 12 at three different points, i.e. 3, 5 and 11.
Hence, the given equation has 7 solutions.

82. D It is clear from the graph that trains 1111, 2222, 4444 and 9999 take two hours or more than two hours to reach NNN from HHH while 7777 takes less than two hours to reach NNN from HHH.

83. A It is clear from the graph that 8800 takes less than three hours between AAA and NNN while 8888, 6666, 4444 and 3333 take more than three hours between AAA and NNN.

84. E The two trains that reach HHH around 9:00 AM are 1111 and 8888. 8888 reaches HHH at 8:15 AM whereas 1111 reaches after 10:00 AM. Hence, 8888 is better option among the two. The two trains to NNN from HHH around 6:00 PM are 8800 and 9900, but among the two 8800 does not stop at HHH. Therefore 9900 is the only choice.

For questions 85 to 88:
There are two tables for the teams: Table 1, gives 'Overall record' and Table 2, gives 'Home record'. Using these two tables, another table containing records of the teams for away matches can be calculated. e.g. CH played a total of 3 matches out of which it won 3. In home matches it won both the matches it played on the home turf. Hence, it must have played 1 match away from home and won it. Also, its goal difference is 6, which means the goals against for it must have been (8 – 6) i.e. 2.
Similar analysis of other teams leads to the following table:

Away							
Team	**M**	**W**	**D**	**GF**	**GA**	**Points**	**Rank**
CH	1	1	0	2	0	3	3
SW	1	1	0	5	0	3	2
WB	1	0	1	1	1	1	8
MC	1	0	1	2	2	1	7
MU	2	1	0	3	3	3	5
WH	1	0	0	0	3	0	10
EV	2	1	0	3	3	3	4
AS	2	1	1	2	0	4	1
WG							
NC	1	0	0	0	2	0	11
FU	2	0	0	2	6	0	9
ST	2	0	2	3	3	2	6
SU							

The cells which are left blank cannot be filled using the given data.

85. D Considering data pertaining to away matches, AS is the first ranking team with 4 points and SW is the second ranking team. (Points of all the teams CH, SW, MU and EV is 3, but the ranking of SW is highest among them on the basis of higher goal difference).

86. D Table 2 contains data related to top 13 teams and the teams WG and SU are not in the table. Thus, the teams WG and SU must have scored less than or equal to 1 points in home matches.
Therefore, in away matches:
the point of the teams WG = 3 to 4 and
the point of the teams SU = 1 to 2.
Hence, in away matches, the least number of teams with either 0 or 1 points is 5 and these are WB, MC, WH, NC and FU.

87. A The pos value (difference of home rank and away rank) for the team:
AS = 12 – 1 = 11
WB = 2 – 1 = 1
WH = 10 – 2 = 8
MC = 7 – 4 = 3
SW = 5 – 2 = 3
Hence, the pos value is the maximum for the team AS.

88. B On the basis of the given information, the goal difference for away matches of 11 out of the top 13 teams can be calculated. Nothing can be inferred about the goal difference for away matches of the rest of the teams. Therefore, on the basis of the given information, question cannot be answered. But if we consider teams for which data of goal difference for away matches is known, then the answer is 6 and the values are 2, 5, 0, –3, –2 and –4.

89. E Current account balance in 2010

$$= \frac{73555.34 \times (-3.268)}{100} = -2403.79.$$

Current account balance in 2005

$$= \frac{35662.2 \times (-1.272)}{100} = -453.62.$$

$$\therefore \text{Required ratio} = \frac{-2403.79}{-453.62} = 5.3.$$

90. C Nothing can be said about statements 1 and 2 as the absolute values of exports and imports cannot be determined. Imports decreased during the period 2005 to 2010. Hence, only statement 3 is true.

91. A The number of unemployed persons in 2006

$$= \frac{35662.2 \times 10^9}{32128.1} \times \frac{8.9}{100} = 100.2 \text{ million.}$$