

# CAT 2016 Question Paper with Solution

## INSTRUCTIONS

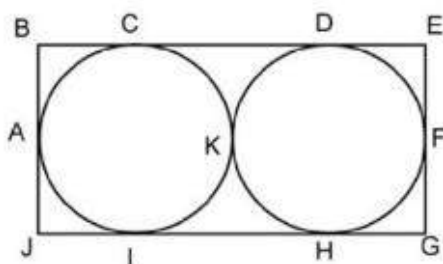
1. Read the instructions given at the beginning/end of each section or at the beginning of a group of questions very carefully.
2. This test has two sections with 60 questions – 30 questions in each section. The TOTAL TIME available for the paper is **140 minutes**. The time available for each section is 70 minutes and you cannot return to the first section once you have started the second section.
3. You are expected to show your competence in both the sections.
4. All questions carry three marks each. Each wrong answer will attract a penalty of one mark.

## SECTION – I

Number of Questions = 30

**DIRECTIONS** for questions 1 to 6: Answer the questions independently of each other.

1. Two friends, P and Q, regularly go for a walk in a park. The park has paths laid out for walkers as shown in the figure below, with two identical circular paths touching each other, enclosed perfectly within another rectangular path.



Everyday, both P and Q start simultaneously from the point A. P continuously walks along the rectangular route A B C D E F G H I J A, whereas Q continuously walks along the route A C K H F D K I A (describing a figure of '8' in each round). The radius of each of the circular paths is 5 m. What is the ratio of the speeds of Q and P, if they meet for the first time (after the start) when P completes exactly 5 rounds and Q completes exactly 4 rounds?

- (A)  $4\pi : 15$  (B)  $15 : 5\pi$   
(C)  $15 : 4\pi$  (D)  $5\pi : 16$

3. If  $p, q, r, s$  are four positive numbers, and  $f(x) = |p+q| - |p-q| + |r+s| - |r-s|$ , then  $f(x)$  is equal to  
(A)  $\text{Min}(p, q) + 2 \text{Max}(r, s)$   
(B)  $\text{Max}(p, q) + 2 \text{Min}(r, s)$   
(C)  $2 \text{Max}(p, q) + 2 \text{Max}(r, s)$   
(D)  $2 \text{Min}(p, q) + 2 \text{Min}(r, s)$
4. There are five blue chairs and four pink chairs in a class of nine students, comprising five boys and four girls. Before lunch, the five boys sat on the blue chairs and the four girls sat on the pink chairs. If after lunch, no girl sat on the same chair on which she was sitting before lunch, but all the girls sat on pink chairs, in how many ways can all the students be seated?  
(A)  $3^4 5!$  (B)  $15(5!)$  (C)  $4!(5! - 1)$  (D)  $9(5!)$
5. Given  $a, b, c, d$  are distinct prime numbers such that  $X = a^p b^q c^r d^s$  has 2016 factors;  
 $Y = b^p d^q a^r c^s$  has 168 factors;  
and  $Z = c^q b^r d^s a^p$  has 288 factors.  
What is the minimum possible value of  $p+q+r+s$ ?  
(A) 23 (B) 29 (C) 25 (D) 26
6. Amit borrowed ₹21,000 from Vinay at 10% p.a., under compound interest, compounded annually. If Amit has to repay the loan in two equal annual instalments, find the amount that he needs to pay in each instalment.  
(A) ₹12,100 (B) ₹12,600  
(C) ₹12,705 (D) ₹12,000

2. Two of the vertices of a regular pentagon drawn on the co-ordinate plane are known to be (10, 20) and (17, 40). What is the ratio of the maximum possible area to the minimum possible area of such a

pentagon?  $\cos 36^\circ = \frac{\sqrt{5}+1}{4}$ .

- (A)  $4 - \frac{\sqrt{5}}{2}$  (B)  $2 + \frac{\sqrt{5}}{2}$   
(C)  $\frac{3}{2} + \frac{\sqrt{5}}{2}$  (D)  $3 + \frac{2}{\sqrt{5}}$

Mark D if the question cannot be answered even when both the statements are used together.

7. If the points scored in a basketball match are always whole numbers, did Ajay score the highest number of points for his team in the basketball match?  
I. All the seven players who played for Ajay's team in the match scored points and Ajay scored 35 points out of a total of 74 points scored by his team.  
II. Ajay scored 32 points in the match but his team lost to their opponents who scored a total of 60 points.

**DIRECTIONS for questions 8 to 10:** Answer the questions on the basis of the information given below.

A company has five clients – A, B, C, D and E. The number of hours of work done for each client and the billing rates for each client are given, for each year from 2004 to 2009, in the following tables:

Client	Number of hours					
	Year					
	2004	2005	2006	2007	2008	2009
A	25,000	27,500	29,500	32,000	28,000	30,000
B	15,000	18,000	23,000	30,000	32,000	29,000
C	24,000	26,000	28,000	27,000	30,000	32,000
D	16,000	18,000	19,000	26,000	24,500	22,000
E	18,000	21,500	23,500	30,000	42,000	36,000

Client	Billing rates					
	(in ₹ per hour)					
	Year					
	2004	2005	2006	2007	2008	2009
A	400	450	525	600	500	550
B	300	350	350	400	450	500
C	250	350	300	450	500	300
D	300	250	300	400	450	500
E	450	500	600	550	350	450

Revenue = Number of hours of work × Billing rate per hour

**DIRECTIONS for question 7:** The question is followed by two statements, I and II. You have to decide whether the information provided in the statements is sufficient for answering the question.

Mark A if the question can be answered by using only one of the statements.

Mark B if the question can be answered by using either statement alone.

Mark C if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.

**DIRECTIONS for questions 11 to 17:** Answer the questions independently of each other.

11. Two persons A and B work on a certain job on alternate days. If A works on Day 1, the job gets completed in 17 days. If B works on Day 1, the job gets completed in  $17\frac{3}{4}$  days. If both of them work together on the job, then the job will be completed in  
(A)  $8\frac{4}{7}$  days (B)  $5\frac{4}{5}$  days  
(C)  $8\frac{4}{5}$  days (D)  $6\frac{3}{7}$  days

12. If  $5^a = 6$ ,  $6^b = 7$ ,  $7^c = 8$ ,  $8^d = 9$  .....  $24^f = 25$ , then the product  $abcde \dots f$  =

- (A)  $\frac{25}{4!}$  (B)  $\frac{24!}{5}$  (C) 5 (D) 2

13. Everyday Sheldon saves ₹41 in a shelf at 10:00 a.m. His friend Cooper checks the amount in the shelf everyday at 10:00 p.m. and if the amount in the shelf is more than or equal to ₹100, Cooper takes ₹100 from it. On January 1<sup>st</sup> of a certain year, Sheldon observed that the amount in the shelf was exactly one rupee before saving the amount for that day. If after some days Sheldon noticed that for the first time in that year the shelf was empty when he opened it to save the amount for that day, and he stopped saving money from that day onwards, what was the total amount taken by Cooper from the shelf in that year?  
(A) ₹2297 (B) ₹5700 (C) ₹1600 (D) ₹2300

14. If  $A = \{1, 2, 3, 4, \dots, 19, 20\}$ , then how many subsets of A are possible such that the product of all the elements of the subset is even  
(A)  $2^{10} - 1$  (B)  $2^{10} - 2^9$   
(C)  $2^{20} - 2^{10}$  (D)  $2^{10} (2^{10} - 1) - 1$

15. Gautham, who was traveling in a 400 metre long train, standing exactly at the midpoint of the train, sees a pole pass by him at 8:00 a.m. He immediately starts to walk 100 m towards the engine, after which he immediately turns back and walks 50 m, and then turns back and walks 25 m, and so on. If the speed of train is 45 km/hr and Gautham walks at a uniform speed of 5 m/s, how far is Gautham from the pole when he stops walking?

- (A)  $666\frac{1}{3}$  m (B)  $633\frac{1}{3}$  m  
(C)  $533\frac{1}{3}$  m (D)  $566\frac{2}{3}$  m

8. The maximum revenue earned by the company from any single client in any single year was from client  
(A) A. (B) B. (C) C. (D) E.
9. Considering the total revenue earned by the company from each of the five clients over the given period, the minimum revenue (in ₹ crore) earned from any client was  
(A) 4.04 (B) 4.74 (C) 5.98 (D) 6.03
10. For which of the following clients is the percentage increase in revenue from 2004 to 2009 the highest?  
(A) A (B) B (C) D (D) E
17. What is the remainder when 853853853..... upto 100 digits is divided by 1001?  
(A) 641 (B) 718 (C) 0 (D) 530

**DIRECTIONS for questions 18 and 19:** Answer the questions on the basis of the information given below.

All the 600 employees working in an IT company were surveyed for their preference of beverage between coffee and tea. The proportion of employees in each department who prefer each beverage is given below:

Department	Beverage preferred	
	Coffee	Tea
Accounts		0.7
Strategy	0.4	
IT		0.5
Administration		
Total	0.585	

The number of employees working in the Accounts, Strategy, IT and Administration departments were in the ratio of 6 : 3 : 7 : 4 respectively.

18. In which department is the number of employees who prefer coffee the least?  
(A) Accounts (B) Strategy  
(C) IT (D) Administration
19. The highest difference in the number of employees who prefer tea across any two departments is  
(A) 60 (B) 69 (C) 51 (D) 72

**DIRECTIONS for questions 20 to 23:** Answer the questions independently of each other.

20. In a society, 50 people know Telugu, 40 know Hindi and 30 know English. The number of people who know Telugu and Hindi is 15. The number of people who know Hindi and English is 8 and the number of people who know Telugu and English but not Hindi is 4. If each member of the society knows at least one of the three languages, what is the number of people in the society?  
(A) 93  
(B) 87  
(C) 96  
(D) Cannot be determined

16. Ram and Shyam invested ₹36,000 and ₹54,000 respectively to start a business together. At the end of every year, Ram got a fixed amount as annual salary from out of the year's profit, for managing the business. After Ram was paid his salary, the remaining profit was distributed to both of them in the ratio of their investments. If at the end of the first year, the total amounts received by Ram and Shyam were in the ratio of 3 : 2, then what percent of profit did Ram receive as salary?  
(A) 25% (B)  $33\frac{1}{3}\%$  (C) 20% (D) 50%

23. A shopkeeper bought an article at ₹1000 and marked up its price by  $x\%$ . If he then gave a discount of  $\frac{2x}{5}\%$  and still got a profit percentage of  $\frac{2x}{5}\%$ , find the amount of discount given?  
(A) ₹200 (B) ₹300 (C) ₹500 (D) ₹600

**DIRECTIONS for questions 24 to 27:** Answer the questions on the basis of the information given below.

On a certain national holiday, Ramran had nothing much to do, and so decided to take a ride in a city bus. Therefore, he went to Worli Bus station (WBS), and boarded an empty bus which was to go to Thane Bus Station (TBS). As the bus was an executive service, it had only five intermediate stops in between. Since he was idling away his time while the bus was still parked at WBS, he decided to take note and keep track of the number of passengers, other than himself, who boarded and got off the bus at different stops. He noted down these values at each stop and finally, when the bus reached TBS, he had the following information with him. He also observed that no person got off at the same stop at which he/she boarded

Bus Stop	Number of passengers who	
	Boarded	Got Off
WBS (First stop)	16	0
Bandra	11	8
Andheri	15	14
Borivli	18	9
Juhu	18	17
Goregaon	8	13
TBS (Last stop)	0	.

- All the remaining passengers got off the bus at the last stop.
24. What is the maximum number of passengers who travelled from WBS to TBS in the bus?  
(A) 6 (B) 4 (C) 7 (D) 5
25. At most how many passengers who boarded the bus at Andheri got off at Juhu?  
(A) 9 (B) 11 (C) 13 (D) 14



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IT		0.5
Administration		
Total		0.585

The number of employees working in the Accounts, Strategy, IT and Administration departments were in the ratio of 6 : 3 : 7 : 4 respectively.

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19. The highest difference in the number of employees who prefer tea across any two departments is  
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 (A) 93  
 (B) 87  
 (C) 96  
 (D) Cannot be determined

23. A shopkeeper bought an article at ₹1000 and marked up its price by  $x\%$ . If he then gave a discount of  $\frac{2x}{5}\%$  and still got a profit percentage of

$\frac{2x}{5}\%$ , find the amount of discount given?

- (A) ₹200 (B) ₹300 (C) ₹500 (D) ₹600

**DIRECTIONS** for questions 24 to 27: Answer the questions on the basis of the information given below.

On a certain national holiday, Raman had nothing much to do, and so decided to take a ride in a city bus. Therefore, he went to Worli Bus station (WBS), and boarded an empty bus which was to go to Thane Bus Station (TBS). As the bus was an executive service, it had only five intermediate stops in between. Since he was idling away his time while the bus was still parked at WBS, he decided to take note and keep track of the number of passengers, other than himself, who boarded and got off the bus at different stops. He noted down these values at each stop and finally, when the bus reached TBS, he had the following information with him. He also observed that no person got off at the same stop at which he/she boarded.

Bus Stop	Number of passengers who	
	Boarded	Got Off
WBS (First stop)	16	0
Bandra	11	8
Andheri	15	14
Borivili	16	9
Juhu	18	17
Goregaon	8	13
TBS (Last stop)	0	*

\* All the remaining passengers got off the bus at the last stop.

24. What is the maximum number of passengers who travelled from WBS to TBS in the bus?  
 (A) 6 (B) 4 (C) 7 (D) 5
25. At most how many passengers who boarded the bus at Andheri got off at Juhu?  
 (A) 9 (B) 11 (C) 13 (D) 14

21. If  $T = 2\cos^4\theta + \sin^2\theta + 3$ , then the range of T is

- (A)  $\left[\frac{1}{2}, 5\right]$  (B)  $[2, 3]$   
(C)  $\left[\frac{31}{8}, 5\right]$  (D)  $\left[\frac{31}{7}, 4\right]$

22. Amol purchased some bananas, oranges and mangoes such that the number of bananas was not less than half the number of mangoes and the number of oranges was not less than one-third the number of bananas. If the prices (in ₹) of each banana, orange and mango are 12, 16 and 10 respectively, and Amol selected the numbers of fruits of each variety so as to minimize the average cost of all the fruits purchased, which among the following can be the total number of fruits purchased by him?  
(A) 75 (B) 70 (C) 73 (D) 77

29. Find the sum of the series  $S = \frac{1}{\sqrt{1}+\sqrt{3}} + \frac{1}{\sqrt{2}+2} + \dots$

$$\frac{1}{\sqrt{3}+\sqrt{5}} + \frac{1}{2+\sqrt{6}} + \dots + \frac{1}{\sqrt{119}+\sqrt{121}}$$

- (A) 5 (B)  $\frac{2\sqrt{15}+1}{2}$   
(C)  $5 + \frac{2\sqrt{15}-1}{\sqrt{2}}$  (D)  $\frac{10+2\sqrt{30}+\sqrt{2}}{2}$

26. At most how many passengers who boarded the bus at any stop got off at the immediately next stop?  
(A) 57 (B) 63 (C) 65 (D) 69

27. At most how many passengers who boarded the bus at any stop got off at the third stop after that?  
(A) 15 (B) 12  
(C) 17 (D) 18

**DIRECTIONS** for questions 28 to 30: Answer the questions independently of each other.

28. If  $\log_2(\log_4 2^{a-b}) = 2\log_2(\sqrt{a}-\sqrt{b}) + 1$ , what percentage of a is b?  
(A) 44.44%  
(B) 36%  
(C) 60%  
(D) Cannot be determined

30. In a very large grass field there is a rectangular plot, of dimensions 15 m × 5 m, fenced on all four sides. If at one corner inside the plot, a goat is tied with a rope of length 10 m, calculate the area (in sq.m.) over which the goat can graze. (The goat cannot cross the fence)

- (A)  $25\pi$  (B)  $\frac{25\pi}{4}$   
(C)  $\frac{100\pi+150\sqrt{3}}{12}$  (D)  $\frac{100\pi+25\sqrt{3}}{4}$

## SECTION – II

### Number of Questions = 30

**DIRECTIONS** for question 1: There are two blanks in the question. From the pairs of words given below the sentence, choose the pair that fills the blanks most appropriately.

1. Every year, as Mother's Day grows more consumerist and \_\_\_\_\_, I like it less; it's the worst of the heathen red-letter days that dot the modern calendar, \_\_\_\_\_ by supermarkets and greetings-card manufacturers to extend the "Occasion Day" gift-fest months past Christmas.  
(A) meretricious . . . promoted (B) eponymous . . . bolstered  
(C) vicissitudinous . . . advocated (D) blatant . . . faked

**DIRECTIONS** for questions 2 to 5: Read the following passage and answer the questions that follow it.

Literature today seems to emerge from an apolitical and borderless cosmopolis and it is often peopled by characters with exotic names and postmodern inclinations. Even the mildly adversarial idea of the "postcolonial" that emerged in the 1980s, when authors from Britain's former colonial possessions appeared to be "writing back" to the imperial centre, has been blunted. The announcement this month that the Man Booker, a literary prize made distinctive by its Indian, South African, Irish, Scottish and Australian winners, will henceforth be open to American novels is one more sign of the steady erasure of national and historical specificity.

Tim Parks, among others, has deplored the dominance of the "global novel" as practised by Haruki Murakami, Umberto Eco, Kazuo Ishiguro and Salman Rushdie. Marked by an internationally identifiable and translatable literariness, not to mention cuddly-bear politics, such fictions threaten to render obsolete, according to Parks, "the kind of work that revels in the subtle nuances of its own language and literary culture". More recently, the English critic Philip Hensher has complained that "a superficial multicultural aspect" of this year's Man Booker shortlist conceals "a specifically North American taste".



It's too easy to blame such fears of covert suburbanisation on a condescending Little-Englandism. Naguib Mahfouz, little read in the Anglophone world before his 1988 Nobel Prize in Literature, addressed a predominantly Egyptian public for much of his life. Today, it is the prospect of international success that tempts – and often shapes the work of – many aspiring writers from Asia and Africa. Gliding between exotically sited literary festivals, and often educated, or resident, in Europe or America, they can appear to embody the bland consensus of transnational elites, denuded of the differences and antagonisms that define a genuinely pluralist culture. Books don't sell on their own merits and are hostage to marketing ploys and dubiously judged literary awards. The literary festivals have flourished. You take an exotic location, a mobile and relatively wealthy expatriate audience, throw in the global aspirations of educated indigenous elites, the ubiquity of the English language, package it in boutique hotels serving Chardonnay and Canapés and you have the makings of a cerebral cornucopia with tropical characteristics. Authors are quizzed about the how and why of their oeuvres, rather than the meaning of their stories.

Soon after independence, things had begun to fall apart in Asia and Africa's fledgling nation-states. No one recoiled from postcolonial dysfunction more intensely and quickly than the indigenous bourgeoisie for which expatriation to the West – spiritual as well as physical – became an intense aspiration and an ideal. Western-style pedagogy had already produced many **deracinated** colonials in the tropics, who spent their time fantasising about eating apples in temperate climes – pretending "to be real". Literary fictionists were often expected to supply the myths and legends that an insufficiently imagined community needed in order to become cohesive and coherent.

But the homogenising and depoliticising effects of the "global novel" can also be exaggerated, to the point where every writer of non-western origin seems to be vending a consumable – rather than a challenging-cultural otherness. The Benetton-ish cosmopolitanism ascribed to them, or such hip self-identifications as "Afropolitan", risks obscuring the fact that military coups, civil wars, despotic regimes, fundamentalisms and economic calamities – still mould the themes and preoccupations of writers from Africa and Asia, and oblige them to explore social as well as intimate relationships.

Remarking once on the dazzling artistic vitality of crisis-ridden Europe in the early 20th century, the historian Perry Anderson worried that the "contemporary artist in the West" finds himself facing "the closure of horizons: without an appropriable past, or imaginable future, in an interminably recurrent present". This end-of-history gloom in the arts can seem as exaggerated as its political Fukuyama-ist counterpart: literature of appreciable quality continues to be produced by the chroniclers of pacified capitalist democracies. It is true, nevertheless, that writers from incompletely modern Asia and Africa still find themselves at historical crossroads – the place where Louis Vuitton coexists with child soldiers. And it is likely that a bolder cartography of the imagination will emerge from these revelatory conjunctures of countries "poised", as Arundhati Roy wrote in *The God of Small Things*, "between the terror of war and the horror of peace".

2. The author discusses Mahfouz to drive home the point that
  - (A) his realist novels focussed public attention on Egypt's social, economic and political ills.
  - (B) today's postcolonial writers play to the international and elitist gallery.
  - (C) he achieved universal recognition only when he won the Nobel Prize.
  - (D) North America is not receptive to overly nationalistic literature.
3. Which of the following echoes the point of view expressed by the author in the penultimate paragraph?
  - (A) "Benetton-ish cosmopolitanism" symbolizes the impact of a West organized for profit and power on tradition minded societies.
  - (B) Having a global perspective on postcolonial issues helps Afropolitans camouflage their mixed cultural identity.
  - (C) The globalised Asian and African intelligentsia, once programmed to boost the West's most flattering self-images, is now politically more recalcitrant and internally diverse.
  - (D) Close examination may indicate that, in some 'global' novels, African and Asian writers attempt to cope with the traumas of the postcolonial world.

**DIRECTIONS** for questions 6 to 8: Answer the questions on the basis of the information given below.

In a Railway Station, the parcel supervisor processed five parcels – a Basket of Vegetables, a Motorcycle, a Computer, a Set of Magazines and a Bundle of Textiles – booked for five different destinations – Delhi, Mumbai, Chennai, Bangalore and Hyderabad. However, the clerk, while marking the destinations on the packages, made a mistake, as a result of which none of the packages reached its correct destination, i.e., the destination for which it was booked. The packages were loaded on to five different trains – Shatabdi Express, Rajadhani Express, A.P. Express, Himsagar Express and Durgam Express – each destined for a different city among the five intended destinations.

Further, it is known that

- (i) the Basket of Vegetables was not booked for Chennai and it was loaded on to Shatabdi Express.
- (ii) the Motorcycle, which was booked for Bangalore, reached Delhi.
- (iii) the Computer was booked for Hyderabad and A.P. Express goes to Hyderabad.
- (iv) the Bundle of Textiles was loaded on to Himsagar Express and either the Bundle of Textiles or the Set of Magazines was booked for Mumbai.
- (v) Rajadhani Express is the only train that goes to Bangalore.

4. It can be understood from the passage that
- (A) multiculturalism, political correctness, translatable literariness and native idioms can be attributed to the "Global novel".
  - (B) the author of the passage is a political leader in exile.
  - (C) the word 'deracinated' means "pulled up as if by the roots and displaced from one's accustomed geographical, social or cultural environment."
  - (D) in the first paragraph, the author upholds the literary fragment against the grand narrative of history and progress.
5. If you were to interview the author, what follow-up question would you ask him in order to further your understanding of the passage?
- (A) Is the global writer something of a contortionist these days?
  - (B) Can vitality in writing be achieved inspite of placidity of circumstance?
  - (C) Are writers' festivals the literary equivalent of a catwalk?
  - (D) Does Bennettonizing literature amount to seeking consensus and advertising the uniform and non-problematic rather than highlighting the different and the antagonistic that challenge a writer to write?
6. If Shatabdi Express goes to Chennai, at which of the following stations was the Bundle of Textiles unloaded?
- (A) Chennai
  - (B) Hyderabad
  - (C) Mumbai
  - (D) Cannot be determined
7. If the parcel booked for Mumbai reached Hyderabad, then the parcel booked for Delhi reached
- (A) Bangalore.
  - (B) Mumbai.
  - (C) Chennai.
  - (D) Either (B) or (C).
8. Which of the following parcels reached the station for which the Bundle of Textiles was booked?
- (A) The Basket of Vegetables
  - (B) The MotorCycle
  - (C) The Computer
  - (D) The Set of Magazines
- DIRECTIONS** for question 9: In the question, there are five sentences or parts of sentences that form a paragraph. Identify the sentence(s) or part(s) of sentence(s) that is/are correct in terms of grammar, punctuation, spelling and usage. Then, choose the **most appropriate** option.





9. (a) Ahmedabad's sveltering temperatures  
(b) keep usually visitors at a minimum,  
(c) but more than 100 officials from Baroda descended  
(d) last week in the city to investigate what State media  
(e) has dubbed Ahmedabad's biggest financial scandal in years.
- (A) Only c (B) c and d  
(C) a, b and e (D) Only d

**DIRECTIONS** for questions 10 to 12: Each of the following questions has a paragraph from which the last sentence has been deleted. From the given options, choose the sentence that completes the paragraph in the most appropriate way.

10. I have often wondered whether man's ability to think might not have arisen from a retrogressive evolutionary step. Instead of the brilliant, incisive and locked-on brain of an animal, some faulty gene gave a muddled, fuzzy indecisive brain that was always making mistakes. The locked-on brain has instant and precise recognition followed by appropriate action. The bee, the hawk, the deer

the numbers into a business decision based on the probability of alternative strategic assumptions.

- (A) Whole layers of management will think better of making decisions or leading; they will function as "relays" – human boosters for the faint, unfocussed signals that pass for communication in the traditional pre-information organization.  
(B) The large business, 20 years hence, is more likely to resemble a hospital or a symphony than a typical manufacturing company; the "quill pen" will be replaced by information technology and the "barefoot runners" by the telecommunication system; helping in a better analysis of strategic assumptions.  
(C) So the decision both presupposes a business strategy and challenges that strategy and its assumption; what was once a budget exercise becomes an analysis of policy.  
(D) Anyone with a spreadsheet or data-processing capacity should be able to quickly analyze a proposed capital-investment by understanding the expected rate of return, payout period, investment's expected productive life, cost and risk in case of failure and finally the opportunity cost.



have built-in circuitry that recognizes the situation and releases the appropriate action. A fuzzy and blurry brain takes much longer to recognize something. It has to learn from experience and to devise images and a sort of language in order to re-run experience at the moment of action. The fuzzy brain can also make mistakes that allow for inappropriate action and the crossing of lines that leads to creativity.

- (A) It could be that human matters are so complicated by interactive change and feedback loops that our ordinary linear thinking is unable to cope.
- (B) The human mind is incapable of taking meaningful and appropriate actions but man's relative stupidity is probably his greatest resource.
- (C) In order to make sense of a complex world, human thinking may have developed some habits and orthodoxies, which had a certain usefulness at first but then prevented further progress.
- (D) The incapacity of the human baby as compared to the operational efficiency of the fawn is remarkable.

Businesses especially large ones, have little choice but to become information based. The centre of gravity in employment is moving fast from manual and clerical workers to knowledge workers who resist the command-and-control model that business took from the military. So far most computer users still use the advanced data-processing technology only to do faster what they have always done before, crunch conventional numbers. But as soon as a company takes the first tentative steps from data to information; its decision processes, management structure and even the way its work gets done begins to be transformed. The availability of relevant information transforms the capital investment analysis from opinions into diagnosis, that is, into the rational weighing of alternative assumptions. Then the information transforms the capital-investment decision from an opportunistic, financial decision governed by

12. Most countries are still in the early phase of broadband development, with fewer than 10 percent of all households subscribing. A small number of early adopters, attracted by high-speed internet access – often no more costly than their current extensive use of narrow band – and by the convenience of keeping their telephones free while they surf, lead demand for the technology. Supply, however, is constrained: incumbents tend to delay any serious move into broadband until it starts competing for their valuable customers and, even then, need time to roll out networks to the population as a whole.

- (A) So many broadband providers disappeared after the dot-com boom that casual observers might think broadband itself has met with indifference from Internet users.
- (B) During this phase, companies in general should start tailoring their Internet-related business to the needs of broadband users and one option is to join with leading broadband operators to form partnerships that will help sell the technology.
- (C) Prices, given the early adopters' willingness to pay, therefore remain near their fairly high initial levels.
- (D) So far, faster and better access to the Internet is the sole killer application of broadband and to make serious profits from it, network providers must find something that excites users more.

**DIRECTIONS** for question 13: In the following question, the word in capitals is used in four different ways. Choose the option in which the usage of the word is INCORRECT or INAPPROPRIATE.

**13. LAY**

- (A) I'll lay you twenty to one that Team A will win the match.
- (B) He laid me in for breaking the tea-pot.
- (C) The murder case was so intricate and complex that understanding the lay of the land took time.
- (D) He managed to lay money by for his post-graduation education.

**DIRECTIONS** for questions 14 to 16: Read the following passage and answer the questions that follow it.

On its way to becoming the world's biggest economy, China is passing another landmark. Its e-commerce market is overtaking America's. And one giant firm dominates the market: Alibaba, by some measures already the world's largest e-commerce company. Last year two of Alibaba's portals together handled 1.1 trillion yuan (\$170 billion) in sales, more than eBay and Amazon combined. Alibaba is on track to become the world's first e-commerce firm to handle \$1 trillion a year in transactions.

Alibaba's story so far has been one of canny innovation. Mr. Jack Ma started the company in 1999 with Alibaba.com, a business-to-business portal connecting small Chinese manufacturers with buyers overseas. Its next invention, Taobao, a consumer-to-consumer portal not unlike eBay, features nearly a billion products and is one of the 20 most-visited websites globally. Tmall, a newish business-to-consumer portal that is a bit like Amazon, helps global brands such as Disney and Levi's reach China's middle classes.

Alibaba could grow fast. By 2020 China's e-commerce market is forecast to be bigger than the existing markets in America, Britain, Japan, Germany and France combined. And although it is not about to challenge Amazon in America, Alibaba is expanding globally by capturing the spending of Chinese overseas and by moving into emerging economies. In this the firm is helped by Alipay, its novel online-payments system that relies on escrow (releasing money to sellers only once their buyers are happy with the goods received). This builds trust in societies where the rule of law is weak.

Perhaps Alibaba's greatest untapped resource is its customer data. Its sites account for over 60% of the parcels delivered in China. It knows more than anyone about the spending habits and creditworthiness of the Chinese middle class, plus millions of Chinese merchants. Alifinance is already a big microlender to small firms; it now plans to expand lending to ordinary consumers. In effect, it is helping liberalise Chinese finance. China's big state banks, which channel cheap capital to state-owned enterprises, have long neglected everyone else. The firm is using its online platforms to deliver insurance products too, and more such innovations are on the way.

Alibaba thus sits at the heart of "bamboo capitalism" – the sprawling tangle of private-sector firms that are more efficient than China's state-owned enterprises. Some 6m vendors are listed with its sites. The firm's efforts are boosting productivity in China's woefully inefficient retail and logistics sectors. And, more than any other company, it is speeding up the country's much-needed shift away from an investment-heavy model of growth towards one that is driven by consumption.

All very promising but like the Yangzi alligator, which is now endangered, there is nothing inevitable about Alibaba's future fortunes. Three things could yet throw the firm off-course. The most obvious is that it could overreach – and stumble. Coping with the stepping aside of a formidable founder is rarely easy. By China's low standards, Alibaba generally gets good marks for governance, with one caveat: observers have doubts about the murky way in which Mr. Ma spun out Alipay from the parent company a few years ago. It will not be able to get away with that as a public company. The same transparency is needed with its products. By Chinese standards it has done a lot to fight fakes, so much so that the American government recently gave Taobao its official blessing. Yet it is still too easy to find knock-offs on that site.

Tidying up these things is not just good management. It ties into the second risk – that foreign governments will clamp down on Alibaba. China's companies are viewed with suspicion abroad: its resource-hungry state enterprises have suffered a backlash in Africa; its firms listed on North American stock exchanges have been punished in the wake of accounting scandals; and Huawei, a telecoms giant, has been branded an enemy of the state by American congressmen. It would be sad if Alibaba, which seems to have far fewer ties to the Chinese state, was tarred with the same brush.



But the greatest threat to the company's future will be at home. Like Amazon or eBay, Alibaba needs to be monitored by antitrust regulators. But the politics of China pose a particular risk. Big banks are already lobbying against its financial arm. The Communist Party is bound to be jealous of an outfit that has so much data on Chinese citizens. For the government to clip Alibaba's wings without a good cause would be wrong. Alibaba has the potential to become the world's most valuable company, and in the process help create a better China.

14. In the passage, the use of the parallel 'endangered Yangzi alligator' implies \_\_\_\_?
- (A) The dethroning of Mr. Jack Ma, the founder of Alibaba.  
(B) The surrender of other countries including the US before China in the world business space.  
(C) The floundering future of Alibaba that lurks ahead.  
(D) Big banks lobbying against Alibaba's financial arm.
15. What support is Alibaba relying on to gain the customers' confidence and trust?
- (A) Support from the huge Chinese diaspora.  
(B) Support from an escrow based online payment system.  
(C) Support from Alifinance that reaches out to the laymen.  
(D) Support from the insatiable shopping spree of the Chinese.
16. Which of the following can be inferred to be true from the passage?
- (a) The American Congress poses the greatest threat to Alibaba's inevitable leap towards becoming the world's premier e-commerce company.  
(b) Taobao has got official blessing from America because it is marked by good governance and it showcases only the choicest products.  
(c) The powers-that-be pose a considerable threat to Alibaba's future.

- (iii) If a customer purchases a Sharpener, then he also purchases a Pencil.  
(iv) Erasers were purchased by both B and C.

17. If A purchased Sharpeners, then which of the following can be the pair of customers who have purchased no type of item in common?
- (A) A and B  
(B) B and D  
(C) D and C  
(D) More than one of the above

18. Which of the following statements (taken one at a time) will help determine the types of items purchased by all the four customers?

- (I) D purchased Sharpeners and A purchased Pencils.  
(II) B purchased Pencils and A purchased Sharpeners.  
(III) C purchased Rulers and D purchased Sharpeners.

- (A) Both I and II  
(B) Only III  
(C) Only II  
(D) Both II and III

19. Which of the following statements is definitely true?
- (A) If D purchased Sharpeners, then A purchased Erasers.  
(B) If D purchased Pencils, then B purchased Pencils.  
(C) If D purchased Pencils, then C purchased Rulers.  
(D) If D purchased Sharpeners, then A purchased Pencils.

22. (a) Each conception of a super-industrial utopia or anti-utopia needs to be embodied in many forms – films, plays, novels and works of art – rather than a single work of fiction.  
(b) These concepts, however, can no longer be produced in the old way.  
(c) Today we need powerful new utopian and anti-utopian concepts that look forward to super-industrialism rather than backward to simpler societies.  
(d) We therefore need a revolution or collaborative utopianism in the production of utopias; we need to construct "utopia factories."  
(e) It may also be too difficult for any individual writer, no matter how gifted, to describe a convincingly complex future.  
(f) No book, by itself, is adequate to describe a super-industrial future in emotionally compelling terms.  
(A) cfbeda (B) cbefad (C) cbfaed (D) afbecd

23. (a) Everything else is subordinate to that.  
(b) They can then lean on the administration by threatening to cut off funds if the professors don't say what they want to hear and that happens too.  
(c) Normally the goal is in no conflict with the location goal of improving the citizenry, but on occasion some conflict arises, as in the case of Socrates himself.  
(d) Conflict arises when trustees and legislators who've contributed large amounts of time and money to the location take points of view in opposition to the professors' lectures or public statements.  
(e) The primary goal of the Church of reason is

20. Which of the following statements is false?

- (A) At least one customer purchased Pencils and Erasers.
- (B) At least one customer purchased Pencils and Rulers.
- (C) At least one customer purchased Erasers and Rulers.
- (D) At least one customer purchased Sharpeners and Pencils.

**DIRECTIONS** for question 21: The following question presents four statements, of which three, when placed in appropriate order, would form a contextually complete paragraph. Pick the statement that is not part of that context.

21. (A) What makes it seem fresh is the insight and thoroughness of his analytical directions.  
 (B) Bhaskar's writing is not always very accessible.  
 (C) Hence Andrew Collier's Critical Realism should play an important role in popularising the work of Bhaskar to the wider audience it deserves.  
 (D) His dense use of technical terms along with his own considerable vocabulary of neologisms and acronyms mean that his works need to be read at a rather gradual pace in order to be absorbed.

**DIRECTIONS** for questions 22 to 24: The sentences given in the following questions, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. From among the four choices given below each question, choose the most logical order of sentences that constructs a coherent paragraph.

always Socrates' old goal of truth, in its ever changing forms, as it's revealed by the process of rationality.

- (A) dbeac (B) eacdb (C) ceadb (D) ecdab

24. (a) In the case of some high-impact innovations, the technological appraisal agency might be empowered to seek restraining legislation, or to obtain an injunction forcing delay until full public discussion and study is completed.  
 (b) Where an innovation appears likely to entail seriously disruptive consequences, or to generate unrestrained accelerative pressures, these facts need to be weighed in a social cost-benefit accounting procedure.  
 (c) In this way, the society would not need to wait for disasters before dealing with its technology induced problems.  
 (d) In other cases, such innovations might still be released for diffusion – provided ample steps were taken in advance to offset their negative consequences.  
 (e) By considering not merely specific technologies, but their relationship to one another, the time lapse between them, the proposed speed of diffusion, and similar factors, we might eventually gain some control over the pace of change as well as its direction.  
 (f) At the level of social consequences, a new technology might be submitted for clearance to panels of behavioural scientists, who would determine to the best of their ability, the probable strength of its social impact at different points in time.  
 (A) fadbce (B) bfadec (C) adcfbe (D) fbadce





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- (A) fadbce (B) bfadec  
(C) adcfbe (D) fbadec

**DIRECTIONS** for questions 25 to 27: Read the following passage and answer the questions that follow it.

While it is true that rigorous history and ethnography often give up generality for accuracy and precision, their conclusions can nonetheless have considerable importance. Scientific significance is not limited to the discovery of general laws – that idea is a hangover from an age in which the scientific task was seen as one of fathoming the Creator's rulebook, of thinking "God's thoughts after Him." The sciences, recall, are collections of models, directed at answering questions. Not every question matters: there are countless issues about the variation of your physical environment while you read these sentences that should be of no concern to anybody. Generality is to be prized, partly because it is often the key to answering questions wholesale rather than retail, partly because generalizing explanations are often deeper; but there are many non-general issues, concrete and individual questions, that rightly occupy natural scientists. Where exactly do the fault lines run in Southern California? What is the relation among the various hominid species? By the same token, there are many specific questions that occupy historians and anthropologists.

Some of these questions are causal, about the factors that generated large events or that sustain particular social systems. Yet there are others that should be emphasized. When Emmanuel Le Roy Ladurie writes a study of a medieval population on the Franco-Spanish border, or when Jean L. Briggs reports on family life among the Inuit, these scholars are not primarily interested in tracing the causes of events. History and ethnography are used instead to show the readers what it is like to live in a particular way, to provide those of us who belong to very different societies with a vantage point from which to think about ourselves and our own arrangements. Their purpose, to borrow an old concept, is a kind of understanding that derives from imaginative identification.

Although studies such as these make no pretense at generality, their impact can be very large. They can unsettle the categories that are taken for granted in all kinds of decisions, from mundane reflections about how to respond to other people to large matters of social policy. "Collateral damage," for example, comes to seem an inappropriate way to talk about the victims of the Dresden fire-bombing. Humanistic studies can also challenge the categories used to frame lines of scientific inquiry. History and anthropology are sites at which new concepts are forged. Their deliverances can do what Thomas Kuhn memorably claimed for the study of the history of the sciences: they can change the images by which we are held. The Bush administration tacitly concurred with Kuhn's view when, at a time of shrinking budgets for the arts and humanities, it launched an initiative to support historical studies of iconic American figures and achievements. One effect of history (the verdicts of which Bush aimed to counter) may be a rethinking of social institutions. (I should add that neither in the natural sciences nor in human inquiry should one conclude that the applications tell the whole story of significance: comprehending something for its own sake also counts.)

Once the intertwining of human inquiry with social change has been recognized, it is easy to see why history and ethnography demand constant rewriting. Returning to the same materials is valuable when historians or anthropologists gain new evidence – like their colleagues in the natural sciences, they are sometimes lucky in acquiring new data, and thus led to revise. Yet there are other reasons for revisiting themes and episodes that have already been thoroughly treated. Gibbon's history of the Roman Empire needs to be rewritten because the changes in our own society make new aspects of the past pertinent. Older histories such as his may have played a useful role in generating styles of social thought that we take for granted, but in the light of our newer conceptions contemporary historians may view different questions as significant. This may leave the impression of an enterprise in which nothing ever accumulates, but the impression is incorrect. If Gibbon has been in many respects superseded, we should be nonetheless grateful for the impact that his monumental history made on his many readers. Historians return to Gibbon because his words are not ours – it would be odd to speak as he does of the "licentiousness," "prostitutions," and "chastity" of the empress Theodora. If our questions are different, it is because we live in a very different culture, one that his history helped to bring about.





25. All of the following can be understood from the passage EXCEPT?

- (a) Kuhn claimed that comprehending science for its own sake, regardless of applications also counts.
- (b) Kuhn believed that scientists resist new approaches to understanding established theories.
- (c) According to Briggs, culture is irreducible and autonomous and cultural transmission occurs only when we relate to different human domains.
- (d) The answers to society's most pertinent questions today could be found by looking at old works of history in a new light.
- (e) In the first paragraph, the author anticipates the fact that science readily succumbs to over-generalizations as a possible objection to her argument that scientific laws, applications and approaches should prize non-generality.
- (f) Studies such as those of Briggs indicate that experiences of a different existence help us revisit our own.

- (A) a, b, c and e
- (B) c, d, e and f
- (C) a and c
- (D) b, d and f

26. The author makes the observation that Gibbon's history of Rome "needs to be rewritten" because

- (A) of the death of the grand old narrative.
- (B) no large vision of history emerges from our understanding of Rome.
- (C) a modern reading reveals glaring shortcomings in Gibbon's account.
- (D) of a rethinking of social institutions.

27. It can be inferred from the passage that "the impression of an enterprise" is based on which of the following assumptions?

- (a) Social science holds no promise of additive progress.

- (b) History and anthropology should be characterized by perennial grand doctrines.
- (c) Judgments of value pervade the environment in which historical research is done.
- (d) The broadest frameworks of today's history reflect the selections of the past.
- (e) A framework for studies in history and anthropology, once validated and accepted, would remain the basis for further study in the field.

- (A) a and b
- (B) Only e
- (C) b and e
- (D) c and d

**DIRECTIONS** for questions 28 to 30: Answer the questions on the basis of the information given below.

In Parklane Apartments, the security guard observed that there are eight cars parked in a row. He observed that each car belongs to a company among Ronda, MBW and ODI, and the colour of each car is either Blue or Red. He observed that the cars are parked in such a way that no two consecutive cars are of the same company or the same colour. The number of cars of Ronda is the same as the number of cars of MBW. Neither the first nor the last car is a Ronda. The second car from the left is of the same company as the third car from the right. The only red Ronda is fourth from the left.

28. The third car from right is a

- (A) red ODI.
- (B) blue ODI.
- (C) red MBW.
- (D) Cannot be determined

29. If a car is considered to be unique if there is no other car (among the eight cars parked) of the same colour and the same company, then how many unique cars are there?

- (A) 2
- (B) 3
- (C) 4
- (D) 5

30. How many cars are present between the red ODI and the red Ronda?

- (A) 0
- (B) 1
- (C) 2
- (D) 3

# Answer Key for CAT 2016 Question Paper

## Key

### SECTION – I

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

### SECTION – II

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

## Solutions



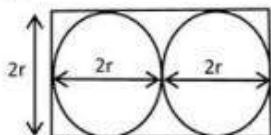


# Solutions for CAT 2016 Questions

## SECTION - I

Solutions for questions 1 to 7:

1. In this question, the actual lengths of the paths are not important, since we only need a ratio. Let the radius of each circle =  $r$ .



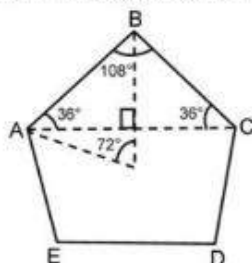
Then, one round of  $P = 2(2r + 4r) = 12r$ .

One round of  $Q = 2 \times (2\pi r) = 4\pi r$ .

Ratio of speeds required equals the ratio of distances travelled by  $Q$  and  $P$ . We know that  $P$  covers 5 rounds and  $Q$  covers 4 round in same time.

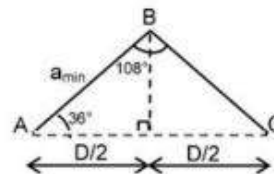
$$\frac{V_Q}{V_P} = \frac{4 \times 4\pi r}{5 \times 12r} = \frac{16\pi r}{60r} = 4\pi : 15 \quad \text{Choice (A)}$$

2. The area of a regular pentagon of side  $a = ka^2$  (where  $k$  is a constant). Consider a regular pentagon  $ABCDE$  shown below.



The two given vertices are  $(10, 20)$  and  $(17, 40)$ . Let the distance between these points be  $D$ .

There are only 2 possible sizes for such a pentagon. The bigger one would be the pentagon for which the two given points form a side, say  $AB$ . The smaller one would be the pentagon for which the two given points form a diagonal, say  $AC$ . the figure below shows a portion of the pentagon for which  $AC$  is a diagonal.



Let the distance between the given points equal  $D$  units. Now the area of the pentagon in the first case =  $k(a_{\max})^2$ . Now, since  $a_{\max} = D$ , area =  $kD^2$ . In the second case, area =  $k(a_{\min})^2$ .

$$\text{But from figure } a_{\min} = \frac{\left(\frac{D}{2}\right)}{\cos 36^\circ} = D \times \frac{2}{\sqrt{5} + 1}$$

$$\text{Hence, area} = \frac{k \cdot 4}{(\sqrt{5} + 1)^2} \times D^2$$

$$\therefore \text{ Required ratio} = \frac{(kD^2)}{\left[ k \cdot \frac{4}{(\sqrt{5} + 1)^2} D^2 \right]}$$

$$= \frac{(\sqrt{5} + 1)^2}{4} = \frac{3}{2} + \frac{\sqrt{5}}{2} \quad \text{Choice (C)}$$

3. It can be observed that among the four terms in  $f(x)$ , the first two involve only  $p$  and  $q$ , while the last two involve only  $r$  and  $s$ . Further, the expression in both sets of terms is exactly the same. Hence, we can analyse only the first two terms and apply the same result to the last two terms. Consider  $|p + q| - |p - q|$ :

First, let's assume  $p > q$ , then the expression becomes  $(p + q) - (p - q) = 2q$ , i.e.,  $= 2\text{Min}(p, q)$

Alternatively, the other possibility is that  $q > p$ . In which case, the expression becomes  $(p + q) - (q - p) = 2p$ , i.e.,  $2\text{Min}(p, q)$ .

Hence, any expression of the form  $|a + b| - |a - b|$  is always equal to  $2\text{Min}(a, b)$ .

Following this result,  $|r + s| - |r - s| = 2\text{Min}(r, s)$

$$\therefore f(x) = |p + q| - |p - q| + |r + s| - |r - s| = 2\text{Min}(p, q) + 2\text{Min}(r, s)$$

Note: It may also be observed from the symmetry of  $(p, q)$  and  $(r, s)$  in the expression of  $f(x)$ , that the choice must also be symmetric and hence can be one among (C) or (D) only.

#### Alternative Solution:

If we assume  $p, q, r, s$  as (say) 1, 2, 3, 4 respectively, we calculate  $f(x)$ , we see that only choices (B) and (D) satisfy. Now, if we assume  $p, q, r, s$  as 2, 3, 4, 5, we see that only choices (A) and (D) satisfy. Hence, (D) is the answer.

Note: If we assume  $p, q, r, s$  as 3, 4, 5, 6, then we can see that only (D) satisfies. Choice (D)

4. Boys sit on the 5 blue chairs and the girls sit on the 4 pink chairs.

After lunch, there are some changes.

The question is about the arrangement of boys in the 5 chairs and 'derangements' of the 4 girls (i.e., none of the girls sits on the same chair as before)

Arranging boys in 5 chairs can be done in  $5!$  ways.

For girls, it is derangements of 4 objects in 4 places.

$$= 4! \left( \frac{1}{2} - \frac{1}{6} + \frac{1}{24} \right) = 4! \left( \frac{12 - 4 + 1}{24} \right) = 9$$

The no. of ways for boys and girls are independent.

$\therefore$  Total ways of sitting after lunch =  $9 \cdot (5!)$  Choice (D)

5. X has 2016 factors

the next best scorer in Ajay's team could have scored a maximum of  $59 - 32 = 27$  points. Hence, Ajay would have scored the highest in his team.

$\therefore$  Statement B alone is sufficient.

Choice (B)

#### Solutions for questions 8 to 10:

8. The billing rate is the highest for client A in 2007 and client E in 2006. However, the number of hours is higher for client A at that billing rate. (32,000 hours at ₹600 per hr).

Now we can look at the cases where the number of hours is more than 32,000. For client E in 2008 and 2009. The number of hours are more than 32,000.

Revenues:

$$A - 32,000 \times 600 = ₹1,92,00,000$$

$$E - 2008 - 42,000 \times 350 = ₹1,47,00,000$$

$$E - 2009 - 36,000 \times 450 = ₹1,62,00,000$$

Thus the maximum revenue is earned from A in 2007.

Choice (A)

9. By observation, we can see that the least total revenue was from client D.

The total revenues from each client can be quickly calculated as below (by ignoring the zeroes in the given values), in ₹ lakh:

$$D \rightarrow 48 + 45 + 57 + 104 + 110.25 + 110 = 474.25$$

$$= ₹474.25 \approx ₹4.74 \text{ cr}$$

Choice (B)

10. Percentage increase in revenues

$$A - (30,000 \times 550 - 25,000 \times 400) / (25,000 \times 400) = 65\%$$

$$B - (29,000 \times 500 - 15,000 \times 300) / (15,000 \times 300) = 222.22\%$$

$$D - (22,000 \times 500 - 16,000 \times 300) / (16,000 \times 300) = 129.17\%$$

$$E - (36,000 \times 450 - 18,000 \times 450) / (18,000 \times 450) = 100\%$$

Thus, the percentage increase is the highest for client B

Choice (B)



$$\Rightarrow (p+1)(q+1)(r+1)(s+1) = 2016 \quad \dots (1)$$

Y has 168 factors

$$\Rightarrow (p+1)(q+1)(s+1) = 168 \quad \dots (2)$$

$$\frac{(1)}{(2)} \Rightarrow r+1 = 12 \Rightarrow r = 11$$

Z has 288 factors

$$\Rightarrow (q+1)(r+1)(s+1) = 288 \quad \dots (3)$$

$$\frac{(1)}{(3)} \Rightarrow p+1 = 7 \Rightarrow p = 6$$

Substituting  $p+1 = 7$  in (2),

$$(q+1)(s+1) = 24$$

Possible cases for

$q+1$	$s+1$
1	24
2	12
3	8
4	6

$p+q+r+s$  will be minimum when  $q+s$  is minimum

$$\text{Min value of } q+s = (4-1) + (6-1) = 8$$

$$\therefore \text{min value of } p+q+r+s \text{ is } 6+3+11+5 = 25$$

Choice (C)

6. Let each instalment of be ₹x.

$$\text{Amount at the end of first year} = (21,000 \times 1.1)$$

$$\text{Amount at the second year} = [(21,000 \times 1.1) - x] \times 1.1$$

$$= 21,000 \times 1.21 - 1.1x$$

$$\text{We know that } 21,000 \times 1.21 - 1.1x = x$$

$$\Rightarrow 21,000 \times 1.21 = 2.1x \Rightarrow x = ₹12,100 \quad \text{Choice (A)}$$

7. From statement A, as the team scored only 74 points in total and all the seven players scored points, the next best score of any player of the team can only be  $74 - 5$  (one point for each player except Ajay and the next highest scores)  $- 35$  (i.e., Ajay's score)  $= 34$ . Hence, Ajay would have scored the highest number of points in his team.

$\therefore$  Statement A alone is sufficient.

As the team for which Ajay played scored less than 60 points (as they lost and their opponents scored 60 points),

#### Solutions for questions 11 to 17:

11. Let A do 'a' amount of work per day.

Let B do 'b' amount of work per day.

The work done in 17 days when A started is  $9a + 8b$ .

When B started, the work done in  $17\frac{3}{4}$  days is  $9b + 8\frac{3}{4}a$

$$\therefore 9a + 8b = 8\frac{3}{4}a + 9b \Rightarrow a = 4b \rightarrow (1)$$

A does 4 times the work that B does in the same time.

$$\therefore \text{A will take } 9 + \frac{8}{4} \text{ (days taken by B) or 11 days}$$

To complete the work individually.

B takes 4 times the time A takes = 44 days

$$\text{Hence, A and B together will take } \frac{1}{\left(\frac{1}{11} + \frac{1}{44}\right)} = 8\frac{4}{5} \text{ days}$$

Alternately from (1)

The total amount of work =  $9a + 8b = 9(4b) + 8b = 44b$ .

The amount of work done by A and B together in one day =  $a + b$

$$= 4b + b = 5b.$$

$\therefore$  The time taken by A and B together to complete the job

$$= \frac{44b}{5b} = 8\frac{4}{5} \text{ days.} \quad \text{Choice (C)}$$

$$12. (24)^t = 25$$

$$(23)^{st} = 25$$

$$(22)^{rst} = 25$$

.

.

.

$$5^{abc\dots t} = 5^2$$

$$abc\dots t = 2$$

**Alternative Solution:**

$$a = \frac{\log 6}{\log 5}; b = \frac{\log 7}{\log 6} \dots \dots \dots t = \frac{\log 25}{\log 24}$$

Now, the product abcd ..... st

$$= \frac{\log 6}{\log 5} \times \frac{\log 7}{\log 6} \times \frac{\log 8}{\log 7} \dots \dots \dots \frac{\log 24}{\log 23} \times \frac{\log 25}{\log 24}$$

$$= \log_5 25 = 2$$

Choice (D)

13. Let Sheldon notice the empty shelf on the  $(k + 1)^{\text{th}}$  day.

Hence, total amount saved by Sheldon = ₹(41k)

Total amount taken by Cooper = ₹(41k + 1) ( $\because$  ₹1 was already there on day 1)

But Cooper took the amount only in multiples of ₹100

Let Cooper have taken ₹100 on 'L' occasions.

$$\Rightarrow 41k + 1 = 100L = A(\text{say}) \rightarrow (1)$$

Now the remainder when A (=100L) is divided by 41 is 1.

$$\Rightarrow \text{Rem of } \left[ \frac{100L}{41} \right] = 41M + 1 \text{ (where M is some natural number)}$$

$$\Rightarrow 18L = 41M + 1 \rightarrow (2)$$

$\Rightarrow 41M + 1$  is divisible by 18

$$\Rightarrow R \left[ \frac{41M + 1}{18} \right] = 0$$

$$\Rightarrow 5M + 1 = 18N \rightarrow (3) \text{ (where N is some natural number)}$$

By simple observation,  $M = 7$  (and  $N = 2$ ) is the least solution possible.

$$\Rightarrow 41M + 1 = 288 = 18L \text{ (from 2)} \Rightarrow L = 16$$

$$\Rightarrow \text{Total amount taken by Cooper} = ₹100L = ₹1600$$

**Alternate Solution 1:**

$\therefore$  The time he takes (in seconds) is

$$\left( \frac{100}{5} \right) \left( \frac{50}{5} \right) \left( \frac{25}{5} \right) \dots \dots \dots$$

$$\text{i.e., } 20 + 10 + 5 + \dots \text{ or } \frac{20}{\left( 1 - \frac{1}{2} \right)} = 40 \text{ seconds}$$

Also, the distance covered by Gautam on the train (in metres)

$$= (100 - 50 + 25 - 12.5 + \dots) = \frac{100}{\left( 1 - \left( -\frac{1}{2} \right) \right)} \text{ (in the}$$

direction of movement of the train)

$$= 66 \frac{2}{3} \text{ m (towards the engine)}$$

Now, the distance travelled by the train in 40 sec

= speed  $\times$  time

$$= 45 \text{ km/hr} \times 40 \text{ sec}$$

$$= 45 \left( \frac{5}{18} \right) (40) \text{ m} = 500 \text{ m}$$

The train itself has moved 500 m.

$\therefore$  The distance of Gautham from the pole (in metres)

$$= 500 + 66 \frac{2}{3} = 566 \frac{2}{3} \text{ Choice (D)}$$

16. Investments of Ram and Shyam are in ratio

$$36000 : 54000 = 2 : 3$$

Let the total profit be P and let the salary which Ram got be S.

After the salary, the remaining profit is distributed in the ratio 2 : 3



If the total amount taken by Cooper is (say) A, then A is a multiple of hundred and (A - 1) is a multiple of 41. Applying both criteria to the given choices, only choices (B) and (C) satisfy. However, since it is mentioned that Sheldon notices an empty shelf for the first time, (and stops saving after that), the lesser of the two amounts needs to be chosen as the answer. Hence, ₹1600, i.e., choice (C).

**Alternate Solution 2:**

We know that

$$1 + 41k = 100P$$

The right most two digits of 41k (ten's digit and unit's digit) have to be 99 for (1 + 41k) to be divisible by 100.

Let the no. of days (k) be a two digit number ab.

Total money saved will be 41(ab)

The unit's digit is (1)(b)  $\Rightarrow b = 9$

Further, (41) (a9) =

$$\begin{array}{r} 41 \\ \times a9 \\ \hline 369 \\ 4a \phantom{0} \\ \hline \end{array}$$

$$\Rightarrow a + 6 = 9 \Rightarrow a = 3$$

$\therefore$  Cooper will empty the shelf on 39<sup>th</sup> day and would have taken a total amount of ₹(41 × 39 + 1) = ₹1600

Choice (C)

14. A = {1, 2, 3, .....20}

Total Number of subsets =  $2^{20}$

The product of all the elements of any subset will be even if the subset has at least one even number.

So, only if the subset has all odd numbers, the product will not be even.

Now, total number of subsets with all elements odd

$$= 2^{10} (\because \text{There are 10 odd numbers}) \text{ (Including null set)}$$

$\therefore$  Total number of subsets whose product of elements is even =  $2^{20} - 2^{10}$ .

Choice (C)

15. Gautham, travels distances of 100 m, 50 m, 25 m and so on, but in different directions, at a speed of 5 m/sec.

$$\text{Ram receives } \frac{2}{5}(P - S)$$

$$\text{Shyam receives } \frac{3}{5}(P - S)$$

The total amounts received are in ratio 3 : 2

$$\frac{\left(S + \frac{2}{5}(P - S)\right)}{\left(\frac{3}{5}(P - S)\right)} = \frac{3}{2} \text{ (given)}$$

$$S + \frac{2}{5}(P - S) = \frac{3}{2} \times \frac{3}{5}(P - S)$$

$$\Rightarrow S + 0.4P - 0.4S = 0.9P - 0.9S$$

$$\Rightarrow 1.5S = 0.5P$$

$$\Rightarrow S = \frac{P}{3} \text{ or } 33.33\% \text{ of } P.$$

**Alternative Solution:**

Given Ram and Shyam received amounts in the ratio of 3 : 2 and their investments were in the ratio of 2 : 3.

Let the total profit = 5 units. Therefore, Shyam received 2

units based on investment alone, i.e., Ram received  $\frac{2}{3} \times 2$

$$= \frac{4}{3} \text{ units based on investment alone.}$$

Hence, Ram received  $3 - \frac{4}{3} = \frac{5}{3}$  units as salary. Therefore,

Ram's salary is  $\left(\frac{1}{3}\right)^{\text{rd}}$  of total profit, i.e.,  $33\frac{1}{3}\%$ .

Choice (B)

17. When 1000 is divided by 1001, it leaves a remainder of -1  
Now, 853853 ..... (100 digits) = 8,538, ....., 538

Can be written as

$$8(10^{99}) + 538(10^{96}) + 538(10^{93}) + 538(10^{90}) + 538(10^3) + 538$$

$$= 8(1000)^{33} + 538(1000)^{32} + \dots + 538(1000)^2 + 538(1000) + 538$$

When this is divided by 1001, we get a remainder of

$$8(-1)^{33} + 538(-1)^{32} + 538(-1)^{31} + 538(-1)^{30} + \dots + 538$$

$$= -8 + (538 - 538) + \dots + (538 - 538) + 538 = 530$$

∴ The remainder is 530

#### Alternative Solution:

Since any six-digit number of the form  $xyzxyz$  is divisible by 1001, any number (whose number of digits is a multiple of six) of the form  $xyzxyzxyz\dots$  upto, say,  $6k$  digits will be divisible by 1001. Hence, 853853 upto 96 digits will be divisible by 1001.

Now, the required remainder is simply that of 8538 divided by 1001, i.e., 530. Choice (D)

#### Solutions for questions 18 and 19:

Some of the missing values in the table can be filled up as under.

Department	Coffee	Tea	No. of employees
Accounts	0.3	0.7	$6k = 180$
Strategy	0.4	0.6	$3k = 90$
IT	0.5	0.5	$7k = 210$
Administration	$\alpha$	$\beta$	$4k = 120$
Total	0.415	0.585	$20k = 600$

Since the proportion of all employees who prefer tea is known,  $\beta$  can be obtained and then  $\alpha$  can be obtained.

$$6k \times 0.7 + 3k \times 0.6 + 7k \times 0.5 + 4k \times \beta = 20k \times 0.585$$

$$\Rightarrow 4.2 + 1.8 + 3.5 + 4\beta = 11.7$$

$$\Rightarrow \beta = \frac{2.2}{4} = 0.55 \Rightarrow \alpha = 1 - 0.55 = 0.45$$

The number of employees who prefer coffee and those who prefer tea can be obtained since the number of employees in each department is known.

Department	Coffee	Tea
Accounts	$0.3 \times 180 = 54$	$0.7 \times 180 = 126$
Strategy	$0.4 \times 90 = 36$	$0.6 \times 90 = 54$
IT	$0.5 \times 210 = 105$	$0.5 \times 210 = 105$
Administration	$0.45 \times 120 = 54$	$0.55 \times 120 = 66$
Total	249	351

18. The number of employees who prefer coffee is the least in strategy department. Choice (B)

The total number of people in the society =  $a + b + c + d + e + f + g$

(∵ each person knows at least one language)

Total number of people in the society

$$= (A + B + C) - (D + E + F) + G \text{ ---- (1)}$$

Where  $A = a + d + f + g$

$B = b + d + e + g$

$C = c + f + e + g$

$D = d + g$

$E = e + g$

$F = f + g$

$G = g$

Given no. of people who know Telugu (A) = 50

Number of people who know Hindi (B) = 40

Number of people who know English (C) = 30

Number of people who know both Telugu and Hindi =

(D) = 15

Number of people who know both Hindi and English

(E) = 8

Number of people who know only Telugu and English (f)

=  $(F - G) = 4$ .

When we substitute these values in equation (1) we get

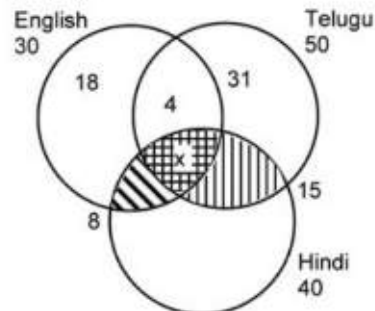
$$(A + B + C) - (D + E + F) + G$$

$$= (A + B + C) - (D + E + F - G)$$

$$= 50 + 40 + 30 - (15 + 8 + 4) = 93$$

#### Alternative Solution:

Let the number of people who know all 3 languages be  $x$ , as show below.



Now we can easily find out that those who only English =  $30 - (4 + 8) = 18$

And those who know only Telugu =  $50 - (4 + 15) = 31$

Clearly, the required total as can be seen from the figure is simply  $18 + 4 + 31 + 40 = 93$  Choice (A)

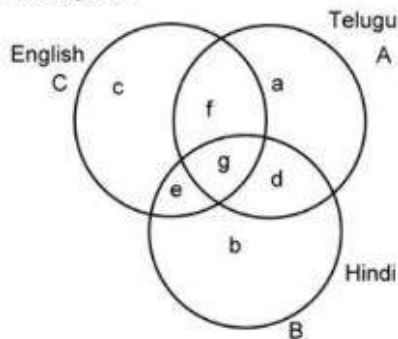
$$\begin{aligned} 21. \quad T &= 2 \cos^4 \theta + \sin^2 \theta + 3 \\ T &= 2 \cos^4 \theta + 1 - \cos^2 \theta + 3 \\ T &= 2 \cos^4 \theta - \cos^2 \theta + 4 \\ T &= 2 \left[ \cos^4 \theta - \frac{1}{2} \cos^2 \theta + 2 \right] \end{aligned}$$



18. The number of employees who prefer coffee is the least in strategy department.  
Choice (B)
19. The highest difference in the number of employees who prefer tea, across any two departments, is  $126 - 54 = 72$   
Choice (D)

**Solutions for questions 20 to 23:**

20. The following venn diagram can be drawn to represent the information given:



are both positive, the expression cannot be less than 3. By observing the choices, only choice (C) can be the answer.  
Choice (C)

22. The given data is tabulated below:

	Mangoes	Bananas	Oranges
Price	10	12	16
Number	$6x$	$\geq 3x$	$\geq x$

Let the number of mangoes be  $6x$ . ( $x$  may or may not be an integer)

$\therefore$  The number of bananas is  $3x$  or more and the number of oranges is  $x$  or more. To minimize the average price, the number of oranges has to be  $x$  and that of bananas has to be  $3x$ . If they are not integers, we would have to buy  $> x$  oranges and  $> 3x$  bananas. But in such a case, the average cost would be greater than what it would be if we take exactly  $x$  oranges and  $3x$  bananas.

$\therefore$  To minimize the average price, we should make sure that  $x$  (and hence even  $3x$ ) is an integer, i.e., the number of mangoes is a multiple of 6. The total number of mangoes, bananas and oranges would be  $10x$ , i.e., a multiple of 10. Among the given options, only 70 is a multiple of 10.

Choice (B)

23. After a markup of  $x\%$ , the marked price becomes  $\text{₹}(1000 + 10x)$

After a discount of  $\frac{2x}{5}\%$ , the selling price becomes

$$(1000 + 10x) \left(1 - \frac{2x}{500}\right) = 1000 + 6x - \frac{x^2}{25} \rightarrow (1)$$

Given, final profit =  $\frac{2x}{5}\%$

$$\Rightarrow \text{Selling Price} = 1000 + 1000 \times \frac{2x}{500}$$

$$= 1000 + 4x \rightarrow (2)$$

Solving (1) = (2) gives  $x = 50$

$$\Rightarrow \text{discount} = \text{MP} - \text{SP} = (1000 + 10x) - (1000 + 4x) = 6x = \text{₹}300$$

$$T = 2\left[\cos^4\theta - \frac{1}{2}\cos^2\theta + 2\right]$$

$$T = 2\left[\left(\cos^2\theta - \frac{1}{4}\right)^2 + 2 - \frac{1}{16}\right]$$

$$0 \leq \cos^2\theta \leq 1$$

$$-\frac{1}{4} \leq \cos^2\theta - \frac{1}{4} \leq \frac{3}{4}$$

$$0 \leq \left(\cos^2\theta - \frac{1}{4}\right)^2 \leq \frac{9}{16}$$

$$2\left[2 - \frac{1}{16}\right] \leq T \leq 2\left[\frac{1}{16} + 2 - \frac{1}{16}\right]$$

$$\frac{31}{8} \leq T \leq 5$$

$$T \in \left[\frac{31}{8}, 5\right]$$

**Alternative Solution:**

By inspection, it can be observed that for  $\cos\theta = 1$ , the expression can be equal to 5. Also, since  $\cos^4\theta$  and  $\sin^2\theta$

26. Here, we have to find the maximum number of passengers who got down at the immediately next stop. Of the 16 who boarded at WBS, 8 got down at the next stop. Of the 11 who boarded at Bandra, all of them would have got down at the next stop, 9 of who boarded at Andheri would have got down at Borivili. Same is the case with 16 of those who boarded at Borivili, 13 who boarded at Juhu and 8 of them who boarded at Goregaon, i.e., a total of  $8 + 11 + 9 + 16 + 13 + 8 = 65$  passengers would have got off the bus at the immediately next stop.  
Choice (C)

27. Here, we have to find the maximum number of passengers who got down at the third stop after the stop where they boarded, the pair of stops would be WBS – Borivili, Bandra – Juhu, Andheri – Goregaon and Borivili – TBS.  
The maximum number of passengers from  
WBS – Borivili – 5  
Bandra – Juhu – 0  
Andheri – Goregaon – 10  
Borivili – TBS – 0  
i.e., a total of 15 passengers  
Choice (A)

**Solutions for questions 28 to 30:**

28. The given equation can be rewritten as

$$\log_2\left(\frac{a-b}{2}\right)\log_2 2 = \log_2(\sqrt{a} - \sqrt{b})^2 + \log_2 2$$

$$\Rightarrow \frac{a-b}{2} = 2(\sqrt{a} - \sqrt{b})^2$$

$$\Rightarrow \sqrt{a} + \sqrt{b} = 4(\sqrt{a} - \sqrt{b}) \quad (\because \sqrt{a} - \sqrt{b} \neq 0)$$

$$\Rightarrow 3\sqrt{a} = 5\sqrt{b}$$

$$\Rightarrow \frac{b}{a} = \frac{9}{25} = \frac{36}{100} \text{ i.e., } b \text{ is } 36\% \text{ of } a. \quad \text{Choice (B)}$$

29.  $S = \frac{1}{\sqrt{1} + \sqrt{3}} + \frac{1}{\sqrt{2} + 2} + \dots + \frac{1}{\sqrt{119} + \sqrt{121}}$  Rationalizing

each term with the respective rationalizing factor  $\sqrt{3} - 1$ ,  
 $2 - \sqrt{2}, \dots, \sqrt{121} - \sqrt{119}$

**Alternative Solution:**

Since CP = 1000, and MP = 1000 + 10x and SP = 1000 + 4x, discount was MP - SP = 6x.

If, 6x (discount) = D, then  $x = \frac{D}{6}$  and  $10x = \frac{5}{3} \times D$ , and

$$\text{discount } \frac{2x}{5} \% \text{ of M.P.} = \left( \frac{2}{500} \right) \left( \frac{D}{6} \right) \times \left( 1000 + \frac{5D}{3} \right) = D$$

From the choices, only D = 300 satisfies the above equation.  
Choice (B)

**Solutions for questions 24 to 27:**

24. For maximum number of passengers to travel from WBS to TBS, wherever possible we have to make sure that passengers who got out at intermediate stops had boarded the bus from other stations. Among those who boarded at WBS, eight got out at Bandra and of the 14 who got out at Andheri, at least three of them boarded at WBS. Passengers who got down at other stops could have boarded from other stops and so at most  $16 - (8 + 3) = 5$  passengers and Raman, i.e., a total of six passengers travelled from WBS to TBS in that trip. Choice (A)

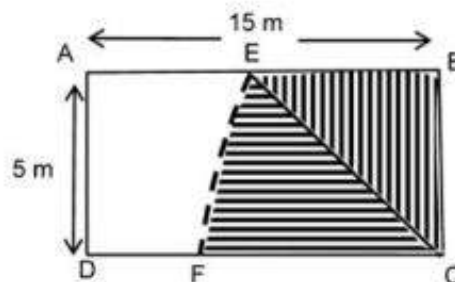
25. When the bus reached Andheri there were five passengers already in the bus and 15 got in at Andheri. Of the 9 passengers who got down at Borivili at least four of them would have boarded at Andheri and at most 11 of them would have travelled from Andheri to Juhu.

Choice (B)

$$\begin{aligned} \text{We get, } S &= \frac{\sqrt{3}-\sqrt{1}}{3-1} + \frac{\sqrt{4}-\sqrt{2}}{4-2} + \frac{\sqrt{5}-\sqrt{3}}{5-3} + \dots + \frac{\sqrt{121}-\sqrt{119}}{121-119} \\ S &= \frac{\sqrt{3}-\sqrt{1}}{2} + \frac{\sqrt{4}-\sqrt{2}}{2} + \frac{\sqrt{5}-\sqrt{3}}{2} + \dots + \frac{\sqrt{121}-\sqrt{119}}{2} \\ &= -\frac{\sqrt{1}}{2} - \frac{\sqrt{2}}{2} + \frac{\sqrt{120}}{2} + \frac{\sqrt{121}}{2} \\ &= \frac{10+2\sqrt{30}-\sqrt{2}}{2} = 5 + \frac{2\sqrt{15}-1}{\sqrt{2}} \end{aligned}$$

Choice (C)

30.



ABCD be the rectangular field and let the goat be tied at vertex C with rope CE of length 10 m.



The area accessible to the goat is

Total Area = Area of sector ECF + Area of right  $\triangle ECB$

So, first we need to calculate BE

Since BEC is a right angled  $\triangle$ ,

$$BE^2 + BC^2 = EC^2$$

$$\Rightarrow BE^2 + 5^2 = 10^2$$

$$\Rightarrow BE^2 = 100 - 25 = 75$$

$$\Rightarrow BE = 5\sqrt{3} \text{ m}$$

$$\text{Now, } \tan(\angle ECB) = \frac{BE}{BC} = \frac{5\sqrt{3}}{5} = \sqrt{3}$$

$$\Rightarrow \angle ECB = 60^\circ$$

$$\therefore \angle ECF = 30^\circ \text{ (i.e., angle of sector ECF)}$$

$$\text{Total area} = \left( \frac{30^\circ}{360^\circ} \right) (\pi r^2) + \frac{1}{2} (BE)(BC)$$

$$= \frac{\pi(100)}{12} + \frac{1}{2} (5\sqrt{3})(5)$$

$$= \frac{100\pi + 150\sqrt{3}}{12}$$

Choice (C)

Difficulty level wise summary - Section I	
Level of Difficulty	Questions
Very Easy	–
Easy	12, 18, 19
Medium	1, 3, 6, 8, 9, 10, 11, 16, 20, 23
Difficult	2, 4, 5, 7, 13, 14, 15, 17, 21, 22, 24, 25, 26, 27, 28, 29, 30
Very Difficult	–

## SECTION – II

Solution for question 1:

addressed a predominantly Egyptian public for much of his life...." He could have helped focus public attention on any aspect other than Egypt's social, economic and political ills. We can only understand that Mahfouz's writing excluded the multicultural and borderless aspect that the author associates with the "global novel." In any case Choices (A) and (C) may be true but do not answer the question. From the last sentence of the second paragraph, "a superficial multicultural aspect of this year's Man Booker shortlist conceals a specifically North American taste" and the first sentence of the third paragraph "blame such fears.....on a condescending Little-Englandism", choice (D) may be inferred to be true but is again not the focus of the author in mentioning Mahfouz. So only choice (B) is the reason for discussing Mahfouz. Choice (B)

3. The "global novel" is associated with homogenising and depoliticising effects which can be exaggerated. A non-western writer seems to be vending a consumable-cultural otherness and not a challenging-cultural otherness. So (A) and (B) put the spotlight only on "Benettonish cosmopolitanism" and "self-identifications like Afropolitan". These are not summation statements and are mentioned by the author to exemplify the main point. Choice C is extreme and seems to go against the main thesis of the passage – that the global novel embodies the bland consensus of transnational elitism and western-style pedagogy. There is no data in the passage to say that the opposite extreme (diversity and non-boasting of the west's flattering self-images) is happening in the Asian and African intelligentsia today. Choice D is the best summary of the penultimate paragraph. One can only say that the exaggeration of the homogenising and depoliticising effects of the "global novel" ..... risks obscuring the traumas of the postcolonial world (military coups, civil wars, despotic regimes.....) which still mould the themes of some African and Asian writers. Choice (D)

1. On reading the sentence, we realize that the 1st blank is to be filled by a synonym of 'insincere'. 'Blatant', meaning, 'brazenly obvious', is contextually inappropriate. Also 'faked' would need the preposition 'up' after it. So option D can be eliminated. 'eponymous' is also out of context here. Eponymous (of a person) means the person after whom a literary work or film is named. Eponymous (of a literary work, film etc.) means named after its central character or creator. Option B can be eliminated. We see that the other options for the first blank are contextually appropriate, so we attempt to fill the second blank. We realize that it is to be filled by a word that means, 'encouraged (the celebration of)'. 'Bolstered', meaning, 'supported' and 'advocated', meaning, 'supported or urged by argument', are contextually inappropriate. Therefore, the 2<sup>nd</sup> blank is filled by 'promoted' and the 1<sup>st</sup> blank is filled by 'meretricious' (plausible but false or insincere; specious). 'vicissitudinous' refers to variation or mutability in nature or life, especially successive alternation from one condition or thing to another (variation in circumstance, fortune, character, etc). The answer option is, thus, A (meretricious ..... promoted). Choice (A)

**Solutions for questions 2 to 5:**

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

Number of words : 701

2. Refer to the third paragraph of the passage where Naguib Mahfouz is mentioned. The third sentence of the passage, "Today it is the prospect of international success that tempts.....shapes the work of many aspiring (postcolonial) writers from Asia and Africa (unlike Mahfouz)." The fourth sentence states that these writers "appear to embody the bland consensus of transnational elites." The remaining sentences also help us infer choice (B) as true. Choice (C) may be true (....little read in the Anglophone world before his 1988 Nobel Prize in Literature....) but is not the main reason that the author mentions Mahfouz. Choice (A) cannot be inferred though it is mentioned that "he
4. "Multiculturalism" and "translatable literariness" have been mentioned in the second paragraph of the passage as attributes of the "global novel." "Political correctness" can be inferred given "cuddly-bear politics." But "native idioms" cannot be a feature of the "global novel" which erases national and historical specificity. So choice (A) is not true. There is no data in the passage to suggest that the author's profession is that of a political leader in exile. Most likely, the author is a postcolonial writer and this can be inferred from information in the first paragraph and the rest of the passage, where he talks about "postcolonial dysfunction", the changes in the literary world today and mentions the role of Asian and African writers. Also terms like "condescending Little-Englandism" and "a specifically North-American taste" helps us infer that the author is referring to postcolonial times. The author is also being critical of writing throughout the passage. Hence (B) is not correct. The author's main premise in the first paragraph is that literature rarely restricts itself to political boundaries today and even literary prizes show signs of a steady erasure of national and historical specificity. Choice (D) is irrelevant. Choice (C) is true from para 4. Choice (C)
5. (A) has already been answered affirmatively in the passage, in the third paragraph. Books and writing are hostage to marketing ploys and dubiously judged literary awards. The prospect of international success and an inclination to embody the bland consensus of transnational elites often shape the work of many aspiring writers. From the third paragraph (..... denuded of the differences and antagonisms that define a genuinely pluralist culture) and the fifth paragraph (Bennettonish cosmopolitanism ascribed to the global novel .....), choice (D) is also answered by the author sardonically. (C) has been answered in the third paragraph. (The literary festivals have flourished ..... cerebral cornucopia ..... authors are quizzed ..... meaning of their stories). Throwing writers into the global mixer and shoving cocktails in their hands is generating a homogenized literary product. So a writer today needs to



fulfill certain set standards or expectations, as in a catwalk. In the last paragraph, the author seems to give us a lesson that writing should focus on artistic vitality and diversity and articulate the ironies of class, race, religion, gender and nation i.e. explore social and intimate relationships (....last sentence of fifth para) within finite borders. This will result in a bolder cartography of the imagination..... from these revelatory conjunctures of countries "poised" at historical crossroads. The author would prefer a "challenging-cultural otherness" and not a "naive multiculturalism". The writer

should not seem to be vending a consumable – but a challenging cultural otherness. However, in the absence of cultural diversity or themes that confront the ironies of class, race, gender, nation or geographical locale (placid circumstances), a writer may face "the closure of horizons and may give in to naive multiculturalism and stereotype without any artistic vitality in exploring social relationships. So one can put choice B to the author as a follow-up question. Choice (B)

#### Solutions for Questions 6 to 8:

The following table can be drawn based on the given conditions

Item	Vegetables	Motor Cycle	Computer	Magazine	Textiles
Booked to		Bangalore	Hyderabad		
Reached		Delhi			
Train Loaded into	Shatabdi				Himsagar

From condition (ii) as the Motor Cycle reached Delhi, it should have been loaded into Duronto or A.P Express and as A.P. Express goes to Hyderabad, it should have been loaded into Duronto Express. As no parcel was loaded into the correct train, Computer should have been loaded into Rajadhani Express and Magazines into A.P. Express.  $\Rightarrow$  Computer reached Bangalore and Magazines reached Hyderabad.

From the above table and from conditions (i) and (iv), Vegetables should have been booked to Delhi and the original train into which the package should have been loaded is Duronto Express.

Thus the final table looks like the following.

Item	Vegetables	Motor Cycle	Computer	Magazine	Textiles
Booked to	Delhi	Bangalore	Hyderabad	Mumbai/Chennai	Chennai/Mumbai
Reached	Chennai/Mumbai	Delhi	Bangalore	Hyderabad	Mumbai/Chennai
Train Loaded into	Shatabdi	Duronto	Rajadhani	A.P Express	Himsagar

6. If Shatabdi express goes to Chennai, then from the table, the bundle of textiles was unloaded at Mumbai.  
Choice (C)
7. If the parcel booked for Mumbai reached Hyderabad  
⇒ Textiles are booked for Chennai and reached Mumbai  
⇒ Vegetables reached Chennai.  
Choice (C)
8. Textiles can be booked for Chennai or Mumbai.  
Textiles booked for Chennai ⇒ Textiles reached Mumbai and Vegetables reached Chennai.  
Textiles booked for Mumbai ⇒ Textiles reached Chennai and Vegetables reached Mumbai.  
Thus, in either case, Vegetables reached the station for which Textiles are booked.  
Choice (A)

#### Solution for question 9:

9. In part (a), the word 'sweltering' is incorrectly spelt. Here the reference is 'heat', so 'sweltering' is correct. The intransitive verb 'swelter' means to suffer under oppressive heat while the transitive form means to affect with oppressive heat. 'Svelter' means slender or graceful in figure or outline (slim) and is incorrect here. In part (b), the adverb of frequency 'usually' has to be placed after the verb 'keep'. Also the preposition 'to' has to be used in place of 'at'. So part (b) should read 'usually keep visitors to a minimum'. Part 'c' is correct. In part (d), the preposition 'in' has to be replaced with 'on' (descended on the city). Also the word 'State' should not be capitalized. It should read 'last week on the city to investigate what state media.' In part (e) there is an error of 'subject-verb agreement'. 'Media' takes a plural verb 'have' and not the singular verb 'has'. So only part (c) is correct.  
Choice (A)

#### Solutions for questions 10 to 12:

10. The paragraph compares and contrasts the fuzzy brain of a human with the locked-on brain of an animal, which then

yield the corresponding action or reaction. Precise recognition and the release of appropriate action are associated with the incisive and locked-on brain of an animal. In contrast, in the human's fuzzy and blurry brain, there is a considerable lag time between recognition of the situation and the eliciting of the response. Only choice D elaborates on the contrast and brings the thought flow to a conclusion. Here 'fawn' refers to the young deer in its first year. Choice C talks about the evolution of human thinking and highlights that further progress of some features of human thinking are impeded in today's complex world. This choice is out of scope. Choice A while in sync with the fact that the human brain might be complicated brings in some new points which need elaboration. Also the discussion in the paragraph is on a faulty gene (an, inherent, physiological cause) and not about external (social or environmental) circumstance. The first part of choice B echoes the view mentioned in the paragraph but the second part goes off-tangent with 'man's relative stupidity'.  
Choice (D)

11. The paragraph suggests that a typical business will be knowledge or information based. Also information technology demands the shift. Currently computer users use technology to crunch numbers only. But advanced data-processing technology can lead to a transformation of its decision processes, management structure etc. The last two sentences of the paragraph, just before the blank, seem to focus on a transformation of the capital-investment decision in a business. Opinions and data will not do, one must weigh alternative assumptions of a decision. So number crunching for a financial decision is now superseded by number analysis for a business decision keeping in mind alternative strategic assumptions. This also emphasizes the importance of knowledge over a simplistic command-and-control model, as discussed in the second sentence of the para. Choice C concludes the paragraph appropriately as it links with the penultimate sentence. An alternative strategy and its assumption need to be analyzed and challenged. "The decision" in choice C corresponds to



- (d) The greatest asset that Alibaba has is the online platform to deliver insurance products.
  - (e) Alibaba's greatest strength is its shift to the consumption driven business model which China follows.
- (A) a, b and d                      (B) c and e  
(C) Only c                          (D) a and b

**DIRECTIONS** for questions 17 to 20: Answer the questions on the basis of the information given below.

Raju sells only four types of items – Pencils, Erasers, Sharpener and Rulers. Exactly four customers – A, B, C, D – visited the shop today. Raju sold at least one item of each of the four types of items today and the number of types of items purchased by each customer was the same. The following are some observations made by Raju at the end of the day:

- (i) Exactly one pair of customers purchased the same types of items.
- (ii) Exactly one pair of customers purchased no type of item in common.
- (iii) If a customer purchases a Sharpener, then he also purchases a Pencil.
- (iv) Erasers were purchased by both B and C.

**DIRECTIONS** for question 21: The following question presents four statements, of which three, when placed in appropriate order, would form a contextually complete paragraph. Pick the statement that is not part of that context.

21. (A) What makes it seem fresh is the insight and thoroughness of his analytical directions.  
(B) Bhaskar's writing is not always very accessible.  
(C) Hence Andrew Collier's Critical Realism should play an important role in popularising the work of Bhaskar to the wider audience it deserves.  
(D) His dense use of technical terms along with his own considerable vocabulary of neologisms and acronyms mean that his works need to be read at a rather gradual pace in order to be absorbed.

**DIRECTIONS** for questions 22 to 24: The sentences given in the following questions, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. From among the four choices given below each question, choose the most logical order of sentences that constructs a coherent paragraph.



17. If A purchased Sharpeners, then which of the following can be the pair of customers who have purchased no type of item in common?
- A and B
  - B and D
  - D and C
  - More than one of the above
18. Which of the following statements (taken one at a time) will help determine the types of items purchased by all the four customers?
- D purchased Sharpeners and A purchased Pencils.
  - B purchased Pencils and A purchased Sharpeners.
  - C purchased Rulers and D purchased Sharpeners.
- Both I and II
  - Only III
  - Only II
  - Both II and III
19. Which of the following statements is definitely true?
- If D purchased Sharpeners, then A purchased Erasers.
  - If D purchased Pencils, then B purchased Pencils.
  - If D purchased Pencils, then C purchased Rulers.
  - If D purchased Sharpeners, then A purchased Pencils.
20. Which of the following statements is false?
- At least one customer purchased Pencils and Erasers.
  - At least one customer purchased Pencils and Rulers.
  - At least one customer purchased Erasers and Rulers.
  - At least one customer purchased Sharpeners and Pencils.
22. (a) Each conception of a super-industrial utopia or anti-utopia needs to be embodied in many forms – films, plays, novels and works of art – rather than a single work of fiction.
- (b) These concepts, however, can no longer be produced in the old way.
- (c) Today we need powerful new utopian and anti-utopian concepts that look forward to super-industrialism rather than backward to simpler societies.
- (d) We therefore need a revolution or collaborative utopianism in the production of utopias; we need to construct "utopia factories."
- (e) It may also be too difficult for any individual writer, no matter how gifted, to describe a convincingly complex future.
- (f) No book, by itself, is adequate to describe a super-industrial future in emotionally compelling terms.
- cfbeda
  - cbefad
  - cbfaed
  - afbecd
23. (a) Everything else is subordinate to that.
- (b) They can then lean on the administration by threatening to cut off funds if the professors don't say what they want to hear and that happens too.
- (c) Normally the goal is in no conflict with the location goal of improving the citizenry, but on occasion some conflict arises, as in the case of Socrates himself.
- (d) Conflict arises when trustees and legislators who've contributed large amounts of time and money to the location take points of view in opposition to the professors' lectures or public statements.
- (e) The primary goal of the Church of reason is always Socrates' old goal of truth, in its ever changing forms, as it's revealed by the process of rationality.
- dbeac
  - eacdb
  - ceadb
  - ecdba



17. Since A purchased Sharpeners, he is the only one to buy the pair (P, S). The following possibilities arise:

Pair of items		(P, S)	(P, E)	(E, R)
No. of customers		1	2	1
Names of customers	Case (i)	A	B & C	D
	Case (ii)	A	B & D	C
	Case (iii)	A	C & D	B

Now, the possible pairs who purchased no items in common can be (A and D), (A and C) and (A and B). From the given choices, only (A and B) is possible.

(Alternatively, once it is known that A purchased Sharpeners, and we conclude that A bought (P, S) then the pair of customers that purchased no item in common must include A. Using this conclusion, we can easily observe that only the first choice satisfies) Choice (A)

18. Using statement I:

We get the two cases listed below:

Case (i): (P, E) bought by A and B; (P, S) by D; (E, R) by C.

Case (ii): (P, E) bought by A and C; (P, S) by D; (E, R) by B.

Using statement II:

We get the two case listed below:

Case (i): (P, E) bought by C and B; (P, S) by A; (E, R) by D.

Case (ii): (P, E) bought by D and B; (P, S) by A; (E, R) by C.

Using statement III:

We get only one possible case:

(P, E) bought by A and B; (P, S) by D; (E, R) by C.

Hence only statement III gives a unique distribution.

Choice (B)

In choice A, statement 'f' is wrongly inserted between the mandatory pair of sentences i.e., 'cb' and sentence (a) is wrongly placed at the end. Choice B disrupts the 'faed' continuity. In choice D, statement (a) is incorrectly placed as the topic sentence, before statements (f) and (b). Also the order of sentences 'fb' is wrongly reversed.

Choice (C)

23. On a careful reading of the paragraph, one can infer that only statement (e) serves as an opening sentence with its general points like "primary goal", "always Socrates' old goal of truth", "Church of reason" and "process of rationality". Statement 'd' cannot begin the paragraph. Statement (d) which has the reference to "....the location...." can only be placed after statement (c) (....conflict with the location goal....). Statement (c) also cannot begin the paragraph because the reference to "the goal" needs a precedent. So statement (e) which has the reference to "...primary goal of the Church of reason...." has to precede statement (c). So choices A and C are incorrect. Statements 'ea' form a mandatory pair. 'that' in statement (a) links with 'primary goal' which is "Socrates' old goal of truth". So (a) follows (e). Statement (c) follows statement (a). "The goal" in statement (c) refers to the "primary goal" in statement (e) and this is contrasted with the "location goal". Statements 'cd' also form a mandatory pair. "location goal" and "some conflict arises" as given in statement (c) link with "Conflict arises" and "....to the location take points of view in opposition" as given in statement (d). Statement (b) concludes the paragraph. The "they" in statement (b) refers to "trustees and legislators" who oppose the professors' statements. So 'eacdb'. Choice D disrupts the thought flow with statement (a) wrongly placed at the end of the para. Choice (B)

19. Going from the answer choices.  
If D purchased Sharpeners, then D purchased the pair (P, S).  
Since we know that only one customer purchased the pair (P, S), A must have purchased one of the other pairs, i.e., (P, E) or (E, R). In either case, A purchases Erasers.  
Hence, choice (A) is definitely true.  
It can be observed that all other choices need not be true.  
Choice (A)
20. From the conclusion arrived at in the first table, no one purchased Pencils and Rulers.  
Hence, choice (B) is false.  
Choice (B)

#### Solution for question 21:

21. It can be observed that there are two sentences B and C having the name Bhaskar. The other sentences have the pronouns 'it' and 'his'. On a close reading of the paragraph, it can be observed that sentence B begins the paragraph. His writing is not accessible. The reason for this is given in sentence D. Sentence D is then followed by sentence C. 'Play a role in popularising the work' will take care of the problem of the writing being non-accessible to readers. So, BDC. Sentence A stands as the odd man out.  
Choice (A)

#### Solutions for questions 22 to 24:

22. On a close reading of the paragraph, one may infer that statement (c) is the introductory sentence of the paragraph and statement (d) (We **therefore** need.... collaborative utopianism) is the conclusion sentence. Statements 'cb' form a mandatory pair. 'These concepts' in statement (b) link with 'new utopian and anti-utopian concepts' given in statement (c). Statements 'fa' also form a mandatory pair. 'No book is adequate .....' in sentence (f) links with 'single work of fiction' and the requirement of other forms as mentioned in sentence (a). Statement (e) continues the idea. It can be observed that 'It may also be too difficult for any individual writer' (Sentence 'e') can be placed only after sentences (f) and (a). Sentences 'ed' form another mandatory pair. 'any individual writer.... is not adequate' as given in sentence (e) and so we need a "revolution or collaborative utopianism" (sentence 'd'). Sentence 'd' concludes the thought flow. So, cbfaed.

24. It can be observed on a close reading of the paragraph that statement (c) (In this way.....) and statement (e) (.....might **eventually**....) are conclusive in nature and can be best placed at the end of the para. Statement (b) cannot begin the paragraph as it can be placed only after statement (f). Also statement (d) (In other cases.....) cannot begin the paragraph as it can be placed only after statement (a) (In the case of.....). Between statements (f) and (a), statement (f) is a better opener as "the technological appraisal agency" given in statement (a) needs a precedent and is mentioned in statement (f). So statement (f) begins the paragraph and is followed by statement (b). "probable strength of its social impact (as studied by behavioural scientists)" given in statement (f) links with "social cost-benefit accounting procedure (which will weigh the seriously disruptive consequences unrestrained accelerative pressures of innovations)" as given in statement (b). Statements (a) and (d) follow next with the focus on "some high-impact innovations" which might be restrained (as mentioned in (a)) or released provided the negative consequences are well taken care of (as given in (d)). Statements 'dc' form a mandatory pair. (d) provides the reason (such innovations might still be released .....) for the point mentioned in (c) (....society would not need to wait). Statement (e) concludes the para. So, fbadce. The other choices disrupt the thought flow. Choice (B) is close as the 'adec' link is given correctly here. But as mentioned earlier, statement (b) cannot be placed before statement (f). 'At the level of social consequences' given in (f) is more general than, 'social cost-benefit accounting procedure' given in statement (b). Also 'the panel of behavioural scientists', given in (f) would be weighing the facts of the new innovation as mentioned in (b). Also 'social impact' has to be mentioned first and then the (specific) disruptive consequences. So (f) has to precede (b). Choice (D)

#### Solutions for questions 25 to 27:

##### Number of words and Explanatory notes for RC:

Number of words : 741

25. Refer to the last two sentences of para 2 and the third para.  
History and ethnography studies can unsettle the



categories....., challenge the categories used to frame lines of scientific inquiry....., are sites at which new concepts are forged. Kuhn believed that these studies can change the way by which we are held. So scientific fields can undergo paradigm shifts and affect our understandings of scientific theories and fundamentals. Both statements (a) and (b) are not inferable, they are not Kuhn's claims. With reference to Briggs' study, the context refers to "imaginative identification" with "very different societies" as "a vantage point.....to think about (our own societies)". So statement (c) cannot be inferred. Statement (e) is not true. 'over-generalizations' have not been targeted. Science often foregoes generality to achieve a precise and accurate answer to a specific question. Refer to the last four sentences of the first paragraph. Statement (d) can be inferred from the last paragraph. Returning to the same materials (not new sources of history) is valuable when historians ..... impact that his monumental history made on his many readers. Statement f can be understood from the lines in the second para (..... to show the readers what it is like to live ..... Imaginative identification). Choice (A)

26. Refer to the last paragraph of the passage. The answer is inferred from "intertwining of human inquiry with social change"... "why history ... constant rewriting ...", "changes in our ... society make new aspects of the past pertinent (and old aspects irrelevant)", as given in (D). Also refer to "..... in the light of newer conceptions contemporary historians may view different questions as significant". (newer styles of social thought). (C) is unsubstantiated. (A) and (B) are not true. Thus, (D) is the answer.

Choice (D)

27. Refer to the sixth sentence of the last para. The reference to the enterprise is one which is not progressive, which does not yield a finality. But this impression is incorrect. The previous lines of the last paragraph have already reiterated the need for the constant **rewriting** of history and ethnography. When the author talks about Gibbon, he's telling us that, while our beliefs and opinions may, because of our changed circumstances, be different from those of Gibbon, the accuracy and understanding of historical fact that he presented to us remains our basis. Also refer to the last sentence of the passage "If our questions are **different** ..... one that Gibbon's history **helped to bring about**." So statement 'e' is the assumption. Even if Gibbon has been superseded (through **further studies** in the field .....), we should be grateful for the impact that his monumental history made on many readers.

With reference to statement 'b', the above explanation would not support the term 'grand doctrine' because that term would be to mind complete sets of beliefs, and if the word 'perennial' is used to mean 'constant', unchanging' then that is inappropriate too. Contemporary historians may view different questions as significant. So statement 'b' is not correct.

Statement 'a' is stated – nothing ever accumulates. So it is not an assumption. Statement 'c' is out of scope. Statement 'd' is the author's contention. Hence, statement 'e' is the assumption.

Choice (B)

#### Solutions for questions 28 to 30:

No two consecutive cars are of the same colour means that there are four blue cars and four red cars.

Since, no two consecutive cars are of the same company, the maximum number of cars of a company can be four.

Given the fourth car from the left is a red Ronda.

Company	Ronda							
Colour	B	R	B	R	B	R	B	R

The number of cars of the company Ronda is same as the number of cars of the company MBW. This implies the number of cars of each of these companies is either 2 or 3. → (1)

Since there is only one Red Ronda car, the second car from the left and the third car from the right has to be either an ODI or an MBW.

Since, the fourth car is Ronda, the third car and the fifth car have to be either an MBW or an ODI depending upon the adjacent car.

Company	M/O O/M R O/M M/O							
Colour	B	R	B	R	B	R	B	R

Since neither the first car nor the last car is a Ronda, and from statement (1) the minimum number of Ronda cars is two ⇒ the second car from the right is a blue Ronda and the number of MBW cars is two.

The first car from left is an ODI.

Filling the arrangement we get

Company	O	M	O	R	O	M	R	O
Colour	B	R	B	R	B	R	B	R

28. The third car from the right is a red MBW.

Choice (C)

29. Red Ronda, Blue Ronda and Red ODI are the only cars which are unique.

Choice (B)

30. There are three cars between Red Ronda car and Red ODI car.

Choice (D)

Difficulty level wise summary - Section II	
Level of Difficulty	Questions
Very Easy	–
Easy	
Medium	1, 2, 3, 6, 7, 8, 12, 14, 15, 26, 28, 29, 30
Difficult	4, 5, 9, 13, 16, 17, 18, 19, 20, 21, 23
Very Difficult	10, 11, 22, 24, 25, 27