

**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 three sections with 75 questions – 25, 25, and 25 respectively in the first, second and third sections. The TOTAL TIME available for the paper is **135 minutes**. The student may apportion this time among various sections as he/she wishes. However, the student is expected to show his/her competence in all the three sections.
3. All questions carry three marks each. Each wrong answer will attract a penalty of one mark.

**SECTION – I**  
**Number of Questions = 25**

**DIRECTIONS for questions 1 to 7:** Answer the questions independently of each other.

1. What is the sum of the first 21 terms of the series given below?  
 $1 - 5 + 4 - 9 + 7 - 13 + 10 - 17 + \dots$   
 (1) -85    (2) -54    (3) -118    (4) -136
2. Seven runners – A, B, C, D, E, F and G – started from the same point at the same time, with speeds that are in the ratio of 1 : 2 : 3 : 4 : 5 : 6 : 7 respectively and are running a race around a circular track. A, C, E, and G run in the same direction, while the remaining run in the opposite direction. At how many distinct points on the track does A meet any other runner?  
 (1) 13    (2) 12    (3) 11    (4) 18
3. What is the radius (in cm) of the largest possible circle that can be cut from a quadrant of a circle of radius 6 cm?  
 (1)  $\frac{6\sqrt{2}}{\sqrt{2}+1}$     (2)  $6(\sqrt{3}-1)$   
 (3)  $6(\sqrt{2}-1)$     (4)  $\frac{3\sqrt{6}}{\sqrt{2}+1}$
4. Let  $x$  denote the sum of the squares of the sides of a right-angled triangle, and  $y$  denote the square of the perimeter of the right-angled triangle.  $\frac{x}{y}$  has a minimum value of  
 (1)  $1 - \frac{\sqrt{2}}{2}$     (2)  $\frac{3-\sqrt{2}}{7}$   
 (3)  $\sqrt{2} - 1$     (4) None of these
5. A two digit number is equal to the sum of its tens digit and the square of its units digit. What is the value when the number is added to the sum of its digits?  
 (1) 76    (2) 98    (3) 103    (4) 106
6. There are eight absent minded comrades in a get-together. They have badges numbered 1, 2, .....8. Whenever any comrade meets any one of the

remaining comrades, then that pair of comrades shout out a signal to each other, such that the signal shouted out by the pair of comrades is unique to that pair. If signals were heard on 85 occasions in total at the meeting, then which of the following statements is definitely false?

- (1) No signal was heard on four or more occasions.
  - (2) At least one signal was heard on more than three occasions.
  - (3) At most one signal was heard on four or more occasions.
  - (4) None of the above
7. In the figure below, AL is perpendicular to BC and CM is perpendicular to AB. If CL = AL = 2BL, find MC/AM.
- 
- (1) 2
(2) 3
- (3) 4
(4) Cannot be determined

**DIRECTIONS for questions 8 and 9:** Answer the questions on the basis of the information given below.

Our organisation volunteered to donate to a 'Home for the Aged' and sent a circular regarding the same to all the employees. All the employees, except our attender and our director, contributed to the cause. If our attender contributes Rs.100, the average contribution per employee will decrease by Rs.11. If our director contributes Rs.10000, the average contribution per employee will increase by Rs.121.

8. What is the average contribution per employee?  
 (1) Rs.825    (2) Rs.925  
 (3) Rs.1025    (4) Rs.1046
9. The total number of employees in the organisation is  
 (1) 73    (2) 74    (3) 75    (4) 76

**DIRECTIONS** for questions 10 to 13: Answer the questions independently of each other.

10. In a delegation of educationalists (all doctorates), 30% of the delegates are doctorates in Economics, 40% do not have a doctorate degree in Geography, 20% have a doctorate degree in both Economics and History. All the delegates have at least one doctorate degree among History, Geography and Economics, and 10 delegates are doctorates in all the three subjects. What is the minimum possible number of delegates in the delegation?

(1) 50      (2) 100      (3) 45      (4) 75

11. Three cars started from the same point at the same time in three different directions. The first two cars move in a straight line in opposite directions. It is noticed that after 2 hours, all the cars are at the same distance from the starting point. If the distance between the two cars which travelled in the opposite directions is 170 km, how far from the second car is the third car, given that the distance between the first and the third cars is 136 km?

(1) 152 km      (2) 124 km  
 (3) 102 km      (4) Cannot be determined

12. A trader sells vegetables at a profit of 20%. Further, he uses a false weight and weighs only 800 gm instead of 1000 gm. What is his overall profit percentage?

(1) 25%      (2) 40%      (3) 50%      (4) 60%

13. On January 1<sup>st</sup>, 2003, the average age of 11 members of a cricket team was 30 years. After four years, a player X from the team was replaced by another player Y. After one more year, player Y was replaced by another player Z, as a result of which the average age of the team then became  $34\frac{4}{11}$  years. If the age of player Y is 4 years less than that of player X, then the age of player Z is how many years more/less than that of player Y?

(1) 3 years less      (2) 2 years more  
 (3) 4 years less      (4) Cannot be determined

**DIRECTIONS** for questions 14 and 15: Answer the questions on the basis of the information given below.

Set A is formed by selecting some of the numbers from the first 100 natural numbers such that the HCF of any two numbers in the set is the same.

14. If every pair of numbers of set A has to be relatively prime and set A has the maximum number of elements possible, then in how ways can the set A be selected?

(1) 64      (2) 96      (3) 72      (4) 108

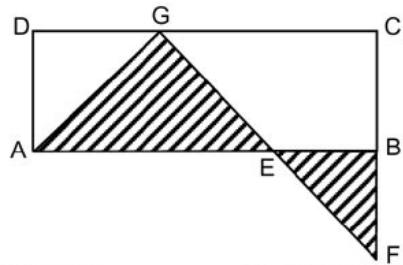
15. If the HCF of any two numbers in set A is 3, what is the maximum number elements that set A can have?

(1) 10      (2) 12      (3) 11      (4) 14

**DIRECTIONS** for questions 16 to 22: Answer the questions independently of each other.

16. What is the area of the shaded portion in the figure, given the following data?

Area of rectangle ABCD = 48 sq.cm, BE = 1/3 AB, GD = 1/3 CD and FB = 1/2 FC.



- (1) 24 sq.cm      (2) 36 sq.cm  
 (3) 30 sq.cm      (4) None of these

17. If the area of the triangle with its vertices at (a, 0) (2a, 0) and (a, a) where a is a positive, is 16 sq.units, what is the value of a?

(1)  $2\sqrt{2}$       (2) 4      (3)  $4\sqrt{2}$       (4) 8

18. A shopkeeper sells two items – A and B. The selling price of A is 80% of that of B, while the marked prices of A and B are in the ratio of 2 : 3 respectively. Further, there is a  $33\frac{1}{3}\%$  discount offered on B and the cost prices are in the same ratio as the respective marked prices. If the cost price and profit percentage of A are Rs.50 and 60% respectively, then find the marked price of B.

(1) Rs.150      (2) Rs.100      (3) Rs.90      (4) Rs.80

19. Taking data from above question, what is the profit percentage of B?

(1) 40%      (2)  $33\frac{1}{3}\%$       (3) 50%      (4)  $66\frac{2}{3}\%$

20. In the number  $160^{4320}$ , after how many digits from the right will you encounter the first odd digit?

(1) 4320      (2) 4321      (3) 4322      (4) 4323

21. The strength of Delhi Public School (D.P.S) is double that of Mumbai Public School (M.P.S). The ratio of the number of boys in class X to the total strength of class X of D.P.S. is 3 : 5 and the same for M.P.S. is 3 : 4. The girls of class X form 2% of the total school strength, both in D.P.S as well as M.P.S. If all the students of class X of both the schools are grouped together, what will be the ratio of girls to boys in the group formed?

(1) 1 : 3      (2) 1 : 2  
 (3) 3 : 1      (4) Data insufficient

22. If  $g(xy) = g(x) + g(y) - 2$ ,  $g(2) = a$  and  $g(3) = b$ , then the value of  $g(72)$  is

(1)  $a + b - 2$       (2)  $2a + 2b - 6$   
 (3)  $2a + 3b - 8$       (4)  $3a + 2b - 8$

**DIRECTIONS** for questions 23 to 25: Answer the questions on the basis of the information given below.

There are m seats in a certain row of an auditorium and there are n ( $m > 2n + 1$ ) boys who are to be seated in these chairs.

Find the number of ways of arranging the n boys in these m seats, such that out of any two seats located symmetrically about the middle of the row, at least one seat is empty, subject to the additional conditions mentioned in each of the following questions.

23. m is an even number.

- (1)  ${}^m P_n \cdot 2^{n-1}$       (2)  $\left(\frac{m}{2}\right) {}^m P_n \cdot 2^n$   
 (3)  $\left(\frac{m}{2}\right) {}^m P_{n-1} \cdot 3^{n-1}$       (4)  $\left(\frac{m}{2}\right) {}^m P_n \cdot 2^{n-1}$

24. m is odd and the middle seat is vacant.

- (1)  $\binom{m+1}{2} P_n \cdot 2^{n-1}$       (2)  $\binom{m-1}{2} P_n \cdot 2^n$   
 (3)  $\binom{m-1}{2} P_{n-1} \cdot 2^{n-1}$       (4) None of these

25. m is odd and the middle seat is occupied.

- (1)  $\binom{m-1}{2} P_{n-1} \cdot 2^{n-1}$       (2)  $\binom{m+1}{2} P_{n-1} \cdot 2^n$   
 (3)  $\binom{m-1}{2} P_{n-1} \cdot n \cdot 2^{n-1}$       (4)  $\binom{m-1}{2} P_n \cdot n \cdot 2^n$

## SECTION – II

### Number of Questions = 25

**Directions for questions 26 to 28:** In each question there are two statements A and B, either of which can be true or false on the basis of the information given below. Choose (1) if only A is true.  
 Choose (2) if only B is true.  
 Choose (3) if both A and B are true.  
 Choose (4) if neither A nor B is true.

The following are the details of the number of people who applied for the Civil Services Examination in the years 2004 and 2005. The selection constitutes three parts, two written tests – prelims and mains – and an interview. Assume that all people who clear the prelims exam write the main exam and all people who clear the main exam attend the interview.

Year	Gender	Number of people who registered for the exam	Number of people who wrote the prelims	Number of people who cleared the prelims	Number of people who cleared the mains	Number of people who cleared the interview
2004	Male	123407	119580	14848	1375	328
	Female	37464	35684	4265	291	84
2005	Male	127720	123455	14685	1293	211
	Female	87586	85680	7581	765	160

26. Statement A : In 2004, males had a higher success rate in going from the prelims to the interview stage, than females.

Statement B : The ratio of the number of females who cleared the interview to the number of females who registered for the exam is higher in 2004 than in 2005.

27. Statement A : In 2005, the ratio of the number of people who cleared the mains to those who wrote the prelims is higher for males than for females.

Statement B : In 2005, among those who cleared the mains exam, females had a higher success rate than males in clearing the interview.

28. Statement A : The percentage of absentees for the prelims exam was higher for females than for males in the year 2004.

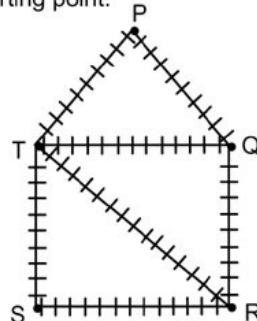
Statement B : The total number of absentees was higher in 2004 than in 2005.

**DIRECTIONS for questions 29 to 32:** Answer the questions on the basis of the information given below.

Eight trains – A through H – run between five stations – P through T – interconnected by tracks as shown in the diagram.

Further the following information is known:

- (i) Any train can travel only between two adjacent stations (i.e., stations that are directly connected to each other).
- (ii) No train can be stationary at the destination of a running train.
- (iii) At most two trains can be stationary at any station and there cannot be more than one such station at any point of time.
- (iv) No two trains can run on the same track in opposite directions.
- (v) Not more than two running trains can have the same destination and no two running trains can have the same starting point.



29. If four trains are running and the other four are stationary, then which of the following is possible?

- (1) Train A is running from S to T, while trains B and C are running from T to P and from P to Q respectively.
- (2) Trains C, B, A and D are running from T to P, R to T, Q to P and S to T respectively.
- (3) Trains D, E, G and H are stationary at stations T, P and R.
- (4) Train F is running towards T from S, and train H is running towards R from T, while trains B and G are running from R to S and Q to P respectively.

30. If there are two stationary trains at P, one stationary train at T and one stationary train at S, while the remaining four trains are running, then which of the following must be true about the trains that are running?

- (1) One train must run from T to R.
- (2) One train must run from R to Q.
- (3) One train must run from T to Q.
- (4) One train must run from P to Q.

31. The total number of trains that can travel simultaneously on the tracks TP, PQ and TQ, put together, at any point of time, is at most

- (1) one      (2) three      (3) two      (4) four

32. If it is required to run the maximum possible number of trains without violating any of the given conditions, then what is the maximum number of trains that can simultaneously be run on all the tracks put together at any point of time?

- (1) 5      (2) 6      (3) 7      (4) 8

**DIRECTIONS** for questions 33 to 35: Answer the questions on the basis of the information given below.

The following tables give the details of admissions secured by 15 students – S<sub>1</sub> to S<sub>15</sub> – in different colleges and the grading of the colleges.

College	Students securing admission
IMA	S <sub>3</sub> , S <sub>5</sub> , S <sub>7</sub> , S <sub>11</sub>
IMB	S <sub>2</sub> , S <sub>4</sub> , S <sub>6</sub> , S <sub>9</sub> , S <sub>15</sub>
IMC	S <sub>7</sub> , S <sub>8</sub> , S <sub>13</sub> , S <sub>14</sub>
IML	S <sub>1</sub> , S <sub>3</sub> , S <sub>4</sub> , S <sub>12</sub>
IMI	S <sub>3</sub> , S <sub>7</sub> , S <sub>9</sub> , S <sub>12</sub> , S <sub>13</sub> , S <sub>14</sub>
IMK	S <sub>4</sub> , S <sub>8</sub> , S <sub>10</sub> , S <sub>12</sub> , S <sub>14</sub> , S <sub>15</sub>
XLI	S <sub>7</sub> , S <sub>9</sub> , S <sub>10</sub> , S <sub>12</sub> , S <sub>13</sub> , S <sub>15</sub>
MID	S <sub>1</sub> , S <sub>2</sub> , S <sub>5</sub> , S <sub>7</sub> , S <sub>10</sub> , S <sub>14</sub>
JIB	S <sub>2</sub> , S <sub>3</sub> , S <sub>6</sub> , S <sub>8</sub> , S <sub>12</sub> , S <sub>15</sub>

Grading	Colleges
A <sup>+</sup>	IMA, IMB, IMC
A	IML, XLI
A <sup>-</sup>	IMI, IMK, MID, JIB

33. The number of students who secured admission in both A<sup>+</sup> and A<sup>-</sup> grade colleges but not A grade colleges is  
 (1) 4      (2) 5      (3) 6      (4) 7
34. How many students secured admission in at least three colleges?  
 (1) 8      (2) 9      (3) 10      (4) 11
35. The maximum number of colleges in which a student got admission is  
 (1) 4      (2) 5      (3) 6      (4) 7

**DIRECTIONS** for questions 36 to 39: Answer the questions on the basis of the information given below.

In the Oscars Academy, there were some films competing in the foreign films section. These were from five different regions – Europe, Asia, Africa, Australia and Antarctica. There were at least two films and at most ten films from each region and the total number of films from all the five regions put together is a perfect square. The films belong to five different categories – Social, Art, Children's, Horror and Fantasy.

Further, the following information is available.

- (1) The number of Art films was exactly half the number of films in each of the other categories.
- (2) Europe sent an equal number of films in the Social, Children's and the Horror categories.
- (3) The maximum number of films sent by Antarctica is in the Horror category and each region sent at least one film in the Horror and the Social categories.
- (4) The number of films from Asia is two more than that from Europe, which, in turn, is one more than that from Africa, which, in turn, is one more than that from Australia, which, in turn, is one more than that from Antarctica.
- (5) Except Antarctica, all the other regions sent at least one film in the Art category while Antarctica sent at least one film in each of the remaining categories.
- (6) The number of films sent from Asia in each of the categories is different and there were no movies from Asia in the Children's category.
- (7) The number of films in the Fantasy category sent by all regions other than Asia is equal.

36. In which category did Asia send the maximum number of films?

- (1) Social    (2) Art    (3) Fantasy    (4) Horror

37. How many regions did not send even a single film in a particular category?

- (1) One    (2) Two    (3) Three    (4) Four

38. Which region sent the maximum number of films in the Children's category?

- (1) Africa    (2) Europe  
 (3) Antarctica    (4) Australia

39. Which among the following is definitely false?

- (1) The number of films sent by Europe and Australia in the Children's category is the same.
- (2) Except in the Children's category, Australia sent an equal number of films in each of the remaining categories.
- (3) None of the regions sent more than four films in any category.
- (4) None of the above

**DIRECTIONS** for question 40 to 44: Answer the questions on the basis of the information given below.

The matches in the Cricket World Cup tournament in the year 2047 are played in four stages

In the first stage the participating 12 teams are divided into two groups (Group A and Group B) of six teams each and each team plays against every other team in its group exactly once. The top three teams from each group qualify for the next stage called the Super Six. In the Super Six, each of the three teams from one group play against each of the three teams from the other group. The top four teams out of the 6 teams qualify for the semi-finals. Winners of the two semi-finals, play the finals.

The following four tables give the results of all the matches played in Group A, Group B, the Super Six and the semi-finals, in that order. WB, LB, W, L in the tables indicate a win with a bonus point (5 points), a loss with a bonus point (1 point), a win (4 points) and a loss (0 points) respectively for the teams. In any match, the total points awarded to the winning and the losing teams together is 5.

In the table showing the results of the Super Six, each team is represented by XN, where 'X' is the group from which the team came and N is the position of the team in that group. For example A2 was the second placed team (after the group stage) from Group A. The team which won the maximum number of games in the Super Six won the finals.

#### Results of matches in Group A

Team	Australia	Canada	Malaysia	Japan	Brazil	Holland
Australia	–	W	W	W	WB	WB
Canada	LB	–	L	W	W	LB
Malaysia	LB	WB	–	LB	WB	WB
Japan	LB	LB	W	–	WB	WB
Brazil	L	LB	L	L	–	WB
Holland	L	W	L	L	L	–

**Results of matches in Group B**

Team	Russia	Singapore	India	Egypt	France	Germany
Russia	-	LB	L	W	W	L
Singapore	W	-	W	W	W	W
India	WB	LB	-	WB	WB	WB
Egypt	LB	LB	L	-	W	W
France	LB	LB	L	LB	-	LB
Germany	WB	LB	L	LB	W	-

**Results of Super Six**

Team	B1	B2	B3
A1	LB	WB	LB
A2	LB	WB	L
A3	LB	L	W

For example, in Group A, Holland lost against Australia and did not get a bonus point (i.e., it got 0 points) while it won against Canada without a bonus point (i.e., it got 4 points).

**Semifinals**

1 <sup>st</sup> Semi-final	India Vs Malaysia
2 <sup>nd</sup> Semi-final	Australia Vs Germany

**DIRECTIONS for questions 45 to 48:** Answer the questions on the basis of the information given below.

The first table gives details of the Gold, Silver and Bronze medals won by the five Universities participating in a cultural festival. Each university is represented by three of its best colleges. The second table gives details of the medals won by the individual colleges.

University	Prizes won		
	Gold	Silver	Bronze
University 1	2	1	2
University 2	1	2	0
University 3	1	1	1
University 4	0	0	2
University 5	2	2	1

College	Prizes won		
	Gold	Silver	Bronze
College A	2	0	1
College B	0	2	0
College C	2	1	0
College D	0	0	1
College E	0	0	2
College F	0	2	0
College G	1	0	0
College H	0	0	1
College I	1	1	1

45. College H can belong to which of the following universities?  
 (1) University 2      (2) University 3  
 (3) University 4      (4) University 5
46. To which university does College B belong to?  
 (1) University 1 or University 2 but not University 4  
 (2) University 3 or University 5 but not University 2  
 (3) University 2 or University 5 but not University 1  
 (4) None of the above
47. If one of the universities had all three of its colleges winning medals at the cultural festival, it is  
 (1) University 1      (2) University 2  
 (3) University 5      (4) None of these
48. How many colleges of University 5 won medals at the cultural festival?  
 (1) 0      (2) 1  
 (3) 2      (4) Cannot be determined

**DIRECTIONS for questions 49 and 50:** Each problem contains a question and two statements, A and B. You have to select the correct answer from (1) to (4) depending on the sufficiency of the data given in the statements to answer the question. Mark your answer as  
 (1) if the question can be answered by using statement A alone but not by using B alone.

- (2) if the question can be answered by using statement B alone but not by using A alone.  
 (3) if the question can be answered by using either statement alone.  
 (4) if the question can be answered by using both the statements together but not by either statement alone.
49. Six people – Anil, Bharat, Charan, Lalit, Manoj and Naveen – are sitting, three on each side, on two opposite sides of a rectangular table. Charan and Manoj are sitting exactly opposite each other. Is Charan sitting between two people?  
 A. If Anil and Manoj exchange their places, then Manoj is beside and to the immediate right of Charan.  
 B. If Anil and Naveen exchange their places, then Anil is beside and to the right of Manoj.
50. Every person in a club speaks Hindi or Telugu or both. If there are a total of 600 persons in the club, find the number of people in the club who speak both Hindi and Telugu.  
 A. The number of people who speak both Hindi and Telugu is 276 more than those who speak only Telugu.  
 B. The number of people who speak only Hindi is 92.

**SECTION – III**  
**Number of Questions = 25**

**DIRECTIONS** for questions 51 to 53: Read the following passage and answer the questions that follow it.

The explosion that claimed 11 lives and sent the Deepwater Horizon, a billion-dollar oilrig, to the bottom of the Gulf of Mexico, was bad enough. But for the inhabitants of America's Gulf coast, for BP, the huge British firm that owns the well, and for the oil industry as a whole, the bad news is flowing as relentlessly as the oil gushing from ruptured pipes a mile below the waves. Efforts to close an emergency shut-off valve have failed. BP is trying to drop huge domes over the leaks and siphon off the oil they collect. But if that fails, it could be months before a second well is completed, reducing the pressure in the first and thus stemming the flow.

Some two weeks after the initial accident, oil has begun to wash up on the frail marshes and rich oyster beds that line Louisiana's shores. Pictures of basted seabirds and gasping turtles have engulfed the media. Commercial fishing has been suspended in the vicinity of the spill. There is talk that the slick could wash up on Florida's west coast, smothering the lucrative local tourism industry, or even leach into the Atlantic and up America's eastern seaboard, abetted by the Gulf Stream.

Investors, foreseeing vast bills for cleaning and compensation, have wiped some \$30 billion off BP's value. Other firms involved, including Anadarko, one of BP's partners in the ill-fated well, Transocean, which was in charge of the drilling, Halliburton, which fitted the cement cap that was supposed to have sealed the well, and Cameron, which made the failed backup system, have also been walloped. Congress has summoned executives from these firms for pillorying. Moves are afoot to lift the cap on oil firms' liability for the economic damage done by oil spills from \$75 m to \$10 billion (they are already on the hook for unlimited clean-up costs).

The oil industry's hope that more American waters would be opened to drilling is receding as fast as the slick advances. Barack Obama, who had briefly supported the idea, has put all drilling on hold while the causes of the disaster are investigated. The governors of Florida and California have retracted their support too. "Why", asks California's Arnold Schwarzenegger, "would we want to take on that kind of risk?"

Because that is where the oil is, oilmen retort. The Gulf of Mexico accounts for almost a third of America's oil production and the lion's share of new discoveries. Most dry land has been picked over, and better technology allows exploration in ever deeper waters. Elsewhere too, Western oil firms are being forced offshore as nationalist governments curtail their involvement in big, easily tapped fields on land. The Gulf of Mexico and the waters off Africa and Brazil are among the most enticing prospects to which they still have access. If Americans do not want to hand even more money and clout to the likes of Iran, Russia and Venezuela, the argument runs, they should not curb offshore drilling. Even if they do, rising oil powers such as Angola and Brazil are not going to follow suit.

Moreover, in America at least, oil firms have been reasonable stewards of the seas. Before Deepwater Horizon foundered there had not been a big leak from an offshore oil well for 40 years. Average annual spills from underwater pipelines declined from 2.5 m gallons in 1980-84 to just 12,000 gallons in 2000-04, according to the Congressional Research Service. America's National Research Council reckons that offshore drilling accounts for 1% of the oil floating in the country's waters, and tankers and pipelines only a further 4%, compared with 33% from other shipping and 62% from natural seepage (though the industry's spills are more concentrated, and so more harmful). As the fleet of 200 ships battling the slick shows, oil firms have elaborate plans to mop up leaks.

In this instance the oil spilled is quite volatile, so much of it should disperse or evaporate before reaching the coast, where it will do the most damage. The warmth of the air and water in the Gulf should also help. Since the well is 40 miles offshore and the weather has been relatively clement, there has been time to test dispersal techniques and prepare coastal defences.

For all these reasons, the long-term repercussions of the spill may not be so grave. BP, its subcontractors, federal and state governments, environmental activists, injured businesses and their insurers will all spend decades suing one another. The Supreme Court, after all, took almost 20 years to settle the punitive damages arising from the *Exxon Valdez* spill off Alaska in 1989. But Exxon's share price quickly recovered from that accident (followed, more slowly, by the local environment); it went on to become the world's biggest listed firm. BP, which made profits of \$5.6 billion in the first quarter of this year, will not be crippled by the spill, even if its costs run into billions.

Congress will stiffen oversight of offshore drilling and boost the penalties for lapses. Fewer states will open their waters to oilmen—although the governor of Virginia, for one, says he is still willing. But there will not, sadly, be any more comprehensive effort to account for the noxious side-effects of oil.

For spills are hardly the most baleful consequence of America's oil addiction: global warming and the funding of foreign despots surely come higher up the list. Perversely, this spill is likely to set back efforts to get a bill on climate change through Congress, and to increase the flow of dollars to despots. However you measure the full cost of a gallon of gas, pollution and all, Americans are nowhere close to paying it. Indeed, their whole energy industry—from subsidies for corn ethanol to limited liability for nuclear power—is a slick of preferences and restrictions, without peer. The tinkering that will follow this spill will merely further complicate it.

Offshore drilling seems like a sensible way to obtain a very handy product. Extra safeguards may be needed. But if the politicians are really as committed to "cleaning up" the energy industry as they now claim, far more could be achieved by reducing the subsidies and introducing a carbon tax. That may seem a long way from the calamity in the Gulf; but in the long run those other murky waters also need to be cleaned up.

51. The author in this passage
- discusses a current incident and its likely consequences for the industry.
  - examines a recent accident and goes on to reflect on what can be learnt from the experience.
  - uses a current incident to highlight the larger issues of the industry.
  - studies the role of off-shore drilling in the larger context of the energy industry.
52. The 'noxious side effect of oil' refers to
- oil slicks that occur at regular intervals and damage all lives in the water and coast.
  - financial support to authoritarian regimes.
  - the bill on climate change that awaits parliament's approval.
  - the consequences of the oil addiction that Americans are guilty of.
53. Which of the following are among the arguments used in favour of under-water oil-drilling by America?
- To prevent the oil money going into the hands of fundamentalists and communist powers.
  - Smaller third world countries would explore under-water drilling even if the U.S. refrained from doing so.
  - Better technology makes it safe and easy to drill under water.
  - A significant part of the fossil fuel lies buried in the seabeds.
  - Energy resources available on land are nearly exhausted.
- A, B and C
  - A, B, D and E
  - C, D, and E
  - All the above

**DIRECTIONS for questions 54 to 56:** In each 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 and usage. Then, choose the **most appropriate** option.

54. A. What it lacks in size, it more than makes up in wealth!
- The Vatican city's power is palpable.
  - As we walk towards the gates of the city,
  - touts on the sidewalk entice us through an English speaking guide and a way to avoid the queues.
  - We succumb, and plod towards the entrance of the Vatican Museums with a flag-toting English girl.
- A, B and C
  - D and E
  - C and E
  - B and C
55. A. Like the volcano that erupted recently, Iceland seems to have awoken
- from centuries of quietude with a determination to spread its fall out all over Europe.
  - In the fall of 2008, it suffered an economic implosion so spectacular
  - that the noise somehow rose above the worldwide din of financial calamity.
  - leaving Icelanders with \$5.4 billions in IOUs to British and Dutch depositors.
- C and D
  - A, B and C
  - B, C and D
  - B and C
56. A. There is a little corner of Sikkim that holds my affection.
- Yuksom is a one-street village with a few farms that you can see at a glance.
  - Unassuming it is though, Yuksom is a little piece of history.
  - The first King, or Chogyal of Sikkim had been crowned here in 1641.
- C and D
  - A and B
  - A, C and D
  - Only B

**DIRECTIONS for questions 57 to 59:** Read the following passage and answer the questions that follow it.

Could artificially raising levels of a key enzyme hold back the effects of ageing? It has long been a hope, but now two lab experiments – one with human cells and one in animals – are providing the first evidence that this may actually be possible.

The enzyme in question is telomerase, which is present naturally in some mammalian cells. Its function is to maintain the protective caps called telomeres at the end of our chromosomes, which unravel with each cell division as we get older. It has been suggested that this shortening triggers some of the negative effects of ageing at a cellular level. As a result, telomerase has been hailed by some as a potential elixir of life.

One of the latest studies confirms that at least one type of human cell can indeed be restored to a youthful state by boosting telomerase levels. The other suggests that boosting telomerase can result in longer life in animals. While an elixir of life in people remains a very long way off, the prospect of boosting telomerase to fight disease, including age-related diseases, may be much closer.

With the aim of fighting HIV, immunologist Rite Effros at the University of California, Los Angeles, previously inserted part of the telomerase gene into immune cells called killer T-cells. While this did indeed boost their ability to fight viral infections, such gene therapy is considered too dangerous to be used in practice.

So in her latest experiments, Effros has turned to a drug called TAT<sub>2</sub>, developed by Geron of Menlo Park, California, that boosts telomerase production without altering anyone's DNA. When killer T-cells from people with HIV were exposed to TAT<sub>2</sub>, it enhanced the cells' ability to fight the virus, suggesting that TAT<sub>2</sub> might be used to supplement existing anti-retroviral drugs by boosting the immune systems of people with HIV.

This idea is supported by a previous study which indicated that some people with HIV who go for years without developing AIDS have killer T-cells with high telomerase activity and longer telomeres. Since T-cells fight many viruses, TAT<sub>2</sub> might eventually be developed to boost resistance to a whole range of diseases.

TAT<sub>2</sub> also increased the cells' ability to divide and stopped their telomeres from shortening, which raises the possibility that it might be used to wind back the clock of other ageing cells and provide more general treatments for ageing.

Aubrey de Grey of the Virginia-based Methuselah Foundation, which promotes research into extending lifespan, certainly sees the study as a big step in that direction. "It is what we would have hoped," he says. He is particularly

interested in the fact that the cells seemed to be "fully functional" in their new role as youthful immune cells, raising hopes that telomerase might wind back the cellular clock more generally.

Some safety concerns remain, however, not least because cancer cells produce telomerase at higher than normal rates. "With anything that boosts telomerase, you may have unwanted cell growth like in cancers," says Arne Akbar, an immunologist at University College London.

However, when TAT<sub>2</sub> was added to tumour cells it did not affect the amount of telomerase they produced. Nor did it change the growth characteristics of immune cells that were cultured with a virus that can trigger cancer. "We are fairly confident at this point that TAT<sub>2</sub> won't enhance cancer development", says Effros, although further trials are needed to confirm this.

Telomerase is extracted from the Astragalus plant, which is used in Chinese medicine without any obvious adverse effects. While this may help pave the way to pilot studies in humans in the near future, Effros warns against taking large doses of Astragalus to try and mimic the TAT<sub>2</sub> effect. "Uncontrolled use of any herbal drug is not wise and I would not advocate it," she says.

Even if telomerase proves successful at holding back some of the effects of ageing at a cellular level, it is still a big jump from there to something that stops a person as a whole from ageing. Yet this prospect too has been brought a step closer with an announcement last week from Maria Blasco at the Spanish National Cancer Centre in Madrid and her colleagues.

Telomerase has previously been shown capable of turning "a normal, mortal cell into an immortal cell", as Blasco puts it. But whether this translates into delaying ageing in live mammals has previously been difficult to test, as high levels of telomerase tend to promote cancer, which shortens their lives.

So Blasco's team bred mice engineered to be resistant to cancer with mice engineered to produce 10 times the normal levels of telomerase in epithelial tissue, which lines the cavities and surfaces of the body. These animals lived up to 50 per cent longer than normal mice. "You can delay the ageing of mice and increase their lifespan," says Blasco.

Blasco's mice also had less subcutaneous fat, healthier epithelial tissue and improved neuromuscular coordination and glucose tolerance, which are all signs of youth. Boosting telomerase also seemed to have beneficial effects on the animals' brains and muscles, even though the enzyme was not expressed in these tissues.

Effros warns against concluding that this means we can prevent ageing in humans. "I think it is very hard to extrapolate data from mouse ageing to human ageing," she says. In particular, she points out that all mice have longer telomeres than humans, and the lab mice are bred in sterile conditions.

Blasco, however, is optimistic that a similar approach may eventually extend human lifespans. She suggests that the treatment could be combined with cancer drugs to offset any enhanced cancer risk.

"We're learning to control cell division in a manner that gets the best of both worlds," says de Grey, "allowing it to happen when we need, and not to happen when we don't."

**57.** All of the following are benefits of boosting telomerase production EXCEPT:

- (1) It can extend the lifespan of people as cells return to their youthful state.
- (2) It enhances the body's ability to fight the HIV virus.
- (3) It could become a treatment for ageing and age-related diseases.
- (4) It can check the proliferation of cancer cells and thus contain cancer.

**58.** The question raised at the beginning of the passage

- (1) has been answered in the affirmative by the end of the passage.
- (2) has been explored in the passage and some hopeful signs noted.
- (3) has been negated by the experiments alluded to in the passage.
- (4) is merely a prompter for a reflection on the current state of knowledge regarding ageing.

**59.** 'Telomerase has been hailed by some as a potential elixir of life'. Why?

- (1) Because in lab experiments on mice, they prolonged the life of the animal by 50%.
- (2) Because it is naturally present in mammalian cells and can be used to prevent ageing.
- (3) Because it can prevent the shortening of telomeres which cause ageing in cells.
- (4) Because negative consequences appear unlikely in the use of telomerase.

**DIRECTIONS** for questions 60 to 62: The following question has a paragraph from which the last sentence has been deleted. From the given options, choose the one that completes the paragraph in the most appropriate way.

**60.** India has been in the news for its robust economic performance and for growth despite the recent global recession. The recent Indian Premier League suggests unbelievable investor confidence and provides great advertising opportunities, fantastic revenue, world-class sport, extraordinary entertainment and immense customer satisfaction. Yet, the incredible indices of development in India mask the inequity in the country and the human cost of the nation's progress. For millions of Indians hunger is routine, malnutrition rife, employment insecure, social security non-existent health care expensive, and livelihoods under threat.

- (1) It is high time the government realized that without level playing fields and affirmative action, inequity will persist and increase, resulting in injustice to the vast majority of people who are without capital.
- (2) This widespread inequity suggests that economic policies should be clearly preceded by a careful assessment of their impact on the population, their lives and livelihoods.

- (3) Civilised societies will necessarily have to employ different standards to achieve an egalitarian social order.
- (4) The vibrant economy, "The shining India", is restricted to the upper classes, while the majority in Bharat eke out a meagre existence on the margins.
- 61.** It is difficult to describe the global economic downturn as the sudden gift of fate. But that is exactly what it proved to be for the Indian education sector. As the world economy went into a tailspin, big-ticket salaries for B-school graduates became a thing of the past, fewer people were willing to pay huge 'donations' for a seat in a medical or engineering college, and people were apprehensive about the quality of education.
- (1) It provided an opportunity to ensure systemic changes that would help bring the Indian education sector at par with the best in the world.
  - (2) It provided the much-required opportunity to clean the Augean stables.
  - (3) This is the best time to implement changes in the education sector which has been poised for reform for a long time now.
- 62.** Managements see unions as troublemakers who would disrupt the functioning of the enterprise and reduce profitability. This attitude is against India's interests, both in terms of economic growth and political and social development. Unions work to enhance workers' entitlements through collective bargaining which can take an agitational form if negotiations fail. Workers' entitlements broadly fall into three categories: wages, agency at the workplace and leisure. All these help the economy, and help industry grow bigger and its profits fatter.
- (1) It is time industry shed its hostility to unions.
  - (2) Unions play a major role in enhancing productivity.
  - (3) A paradigm shift in employer-employee relations is imperative for globalising India.
  - (4) Unions play a big role in strengthening democracy and modernising society combating retrograde tendencies.

**DIRECTIONS** for questions 63 to 65: Read the following passage and answer the questions that follow it.

What would we be doing now if we took climate change seriously? Last week the government released a report on the likely temperature changes in the United Kingdom. It shows that life at the end of this century will bear no relationship to life at the beginning. It should have dominated the news for days. But it was too far away, too remote from current problems, too big to see.

Over the past few months, Lord Giddens, one of the architects of New Labour, has been touting the hypothesis that people are reluctant to act on climate change until it becomes visible to them, by which time it will be too late. This thought, which has been common currency within the environment movement for at least 20 years, has been christened by this shrinking violet "Giddens's Paradox". It ranks among his other major discoveries, like the Giddens' Postulate (people wear fewer clothes when temperatures rise) and the Giddens' Effect (the earth goes round the Sun). But despite his outrageous expropriation, the point remains a valid one. We will resist taking radical action until we have no choice, whereupon it will have no effect.

Our resistance to change is not peculiar to environmental issues. Even when confronted by crisis, we try to stick to the script. As the coaching theorist David Rock and the research psychiatrist Jeffrey Schwartz note, just one in nine people who have had coronary bypass surgery take their doctor's advice to lose weight and exercise more. Part of the problem, they show, is that confronting change means making use of parts of the brain which require more energy to engage. We perceive high levels of energy use much as we perceive pain. For good biological reasons we seek to avoid them. We engage with change only when we have to.

That's a horribly simplified account of some very complex processes, but you get the general idea. Change is pain, a change for the worse is double pain. We pretend it's not there, up to – often beyond – the point at which it starts hammering on the door.

So environmentalists seek to persuade us that we'll love the green transition. Downshifting, voluntary simplicity, alternative hedonism – whatever they call it, it's presented as a change for the better. A new green deal will save the planet, the workforce and the economy. Energy efficiency will protect the bottom line as well as the biosphere. A less frantic life will allow us to enjoy the small wonders that surround us.

There is both exaggeration and truth in all this, but effective action also involves a change for the worse: regulation, rationing, austerity, state spending. "Little by little," Livy wrote 2000 years ago, "we have been brought into the present condition in which we are able neither to tolerate the evils from which we suffer, nor the remedies we need to cure them."

Everything we need to do has been made harder by debt. Net state debt now exceeds £700 bn. This introduces two environmental problems. The first is that there is no money left with which to fund a green new deal. The second is that we'll be able to pay off these debts only by resuming economic growth. Greenhouse gases grow because the economy grows. The UK's liabilities make the transition to a steady state economy, let alone a managed contraction, much harder to achieve. They appear to commit us to either growth or default for at least a generation. The debt crisis is an environmental disaster.

So we are left with only painful choices. We should be spending tens of billions a year to prevent climate breakdown, but how? Borrow the money and exacerbate the crisis? Raise taxes? Cut the health and education budgets? Any of the above would enhance public resistance to change. The least painful approach is to cut services that are of no use to anyone.

At the end of 2003, the Ministry of Defence observed that “there are currently no major conventional military threats to the UK or NATO … it is now clear that we no longer need to retain a capability against the re-emergence of a direct conventional strategic threat”. So why is most of this ministry’s budget spent on retaining a capability against the emergence of a direct conventional strategic threat?

What does it give us? Our wars make us less safe. We would be better protected from terrorism and global instability if the UK’s armed forces stopped going abroad to make trouble. No one in office can produce a coherent account of why this money is needed: the ministry’s budget is sustained by the greed of contractors and nostalgia for imperium long passed. We could cut defence spending by 90% and suffer no loss to our national security. Instead, the MoD has just dropped its spending on climate change research. This accounted for a quarter of the Met Office’s climate programme.

The last time we faced a crisis on the scale of the global climate crash, the rational solution was to build tanks. Now the rational, least painful solution is to stop building tanks, and use the money to address a real threat.

**63. The author in this passage**

- (1) examines various problems faced by his country.
- (2) is vituperative on the lackadaisical attitude of the government to the problems faced by the people.
- (3) focuses on a problem that has been totally ignored by the government and the people.
- (4) analyses a problem and suggests a solution to it.

**64. The problem of environment has been compounded by the debt crisis because**

- A. the latter attracts all the attention and the former is relegated to the background.
- B. it is not possible to channelize funds from other areas.
- C. the growth needed to pay back the debts will increase emissions.
- D. the funds needed for a green new deal are scarce.
- E. it has led to a choice between the devil and the deep.

- (1) A and E                          (2) B and C
- (3) C and D                          (4) A and D

**65. Which of the following reflects what the author says of ‘Giddens’s paradox’?**

- (1) He is ridiculing the idea as is seen from his tone of sarcasm.
- (2) Though a repetition of a hackneyed concept, it is still relevant.
- (3) Giddens has done well to bring to light what can no longer be ignored.
- (4) By lending it his name, Giddens has appropriated to himself an idea long prevalent.

**DIRECTIONS for questions 66 to 68:** In each question, there are sentences. Each sentence has pairs of words/phrases that are italicised and highlighted. From the italicised and highlighted word(s)/phrase(s), select the **most appropriate** word(s)/phrase(s) to form correct sentences. Then, from the options given, choose the best one.

**66. (i)** Qualifying in the written exam is a ***perquisite*** (A) / ***prerequisite*** (B) for getting admission into this course.

**DIRECTIONS for questions 69 to 71:** Read the following passage and answer the questions that follow it.

Thirty years ago the bosses of America’s car industry were shocked to learn that Japan had overtaken America to become the world’s leading car producer. They were even more shocked when they visited Japan to find out what was going on. They found that the secret of Japan’s success did not lie in cheap labour or government subsidies (their preferred explanations) but in what was rapidly dubbed “lean manufacturing”. While Detroit slept, Japan had transformed itself from a low-wage economy into a hotbed of business innovation. Soon every factory around the world was lean—or a ruin.

Management gurus are always glibly proclaiming revolutions. What happened in Japan qualified, as did the advent of mass production in America a century ago. Now something comparable is taking place in the developing world.

It is hardly news that the world’s centre of economic gravity is shifting towards emerging markets. Buy a mobile phone and it will almost certainly have been made in China. Use it to phone a customer help line and your call may well be answered by an Indian. Over the past five years China’s annual growth rate has been more than 10%, and India’s more Triumphant Institute of Management Education Pvt. Ltd. (**T.I.M.E.**) HO: 95B, 2<sup>nd</sup> Floor, Siddamsetty Complex, Secunderabad – 500 003.

- (ii) Farmers generally ***shear*** (A) / ***sheer*** (B) their sheep in summer.

- (iii) He is the man who’s (A) / whose (B) word is law.

- (iv) The petty vendors, who ***peddle*** (A) / ***pedal*** (B) their wears by travelling from place to place, suffered losses due to the incessant rains which hampered their business.

- (v) She failed to get through the ***oral*** (A) / ***aural*** (B) exam and was therefore not selected for the post.

- (1) ABAA (2) BAABA (3) BBABA (4) BABAA

**67. (i)** I could ***imply*** (A) / ***infer*** (B) from her expression that she didn’t want to disclose the secret.

- (ii) He is a very ***perspicuous*** (A) / ***perspicacious*** (B) man, therefore people hold his opinion in high esteem.

- (iii) Although she was piqued by his ***derisive*** (A) / ***derisory*** (B) comment she was careful not to show her feelings.

- (iv) In medieval times many a ***dual*** (A) / ***duel*** (B) was fought over a lady.

- (v) ***Your*** (A) / ***You’re*** (B) too naive to see through the other side of his character.

- (1) BBABB (2) BAABB (3) ABBBB (4) BABBA

**68. (i)** The school management decided to ***waive*** (A) / ***wave*** (B) the fee for all those students who are economically backward but have secured a distinction.

- (ii) The children were highly amused by the monkey’s ***antics*** (A) / ***antiques*** (B).

- (iii) It was a ***historic*** (A) / ***historical*** (B) occasion for the entire human race when man first set his foot on the moon.

- (iv) The tomb of every soldier, who laid his life while defending the country, was decorated with a floral ***wreathe*** (A) / ***wreath*** (B).

- (v) The committee ***composes*** (A) / ***comprises*** (B) members from various professions.

- (1) AAABB (2) AABBB (3) AAAAB (4) AABAB

than 8%. Yet even these figures understate the change that is taking place. Emerging countries are no longer content to be sources of cheap hands and low-cost brains. Instead they too are becoming hotbeds of innovation, producing breakthroughs in everything from telecoms to car-making to health care. They are redesigning products to reduce costs not just by 10%, but by up to 90%. They are redesigning entire business processes to do things better and faster than their rivals in the West. Forget about flat—the world of business is turning upside down.

The rich world is losing its leadership in the sort of breakthrough ideas that transform industries. This is partly because rich-world companies are doing more research and development in emerging markets. *Fortune* 500 companies now have 98 R&D facilities in China and 63 in India. IBM employs more people in developing countries than in America. But it is also because emerging-market firms and consumers are both moving upmarket. Huawei, a Chinese telecom giant, applied for more international patents than any other firm did in 2008. Chinese 20-somethings spend even more time on the internet than do their American peers.

Even more striking is the emerging world's growing ability to make established products for dramatically lower costs: no-frills \$3,000 cars and \$300 laptops may not seem as exciting as a new iPad but they promise to change far more people's lives. This sort of advance—dubbed “frugal innovation” by some—is not just a matter of exploiting cheap labour (though cheap labour helps). It is a matter of redesigning products and processes to cut out unnecessary costs. In India Tata created the world's cheapest car, the Nano, by combining dozens of cost-saving tricks. Bharti Airtel has slashed the cost of providing mobile-phone services by radically rethinking its relationship with its competitors and suppliers. It shares radio towers with rivals and contracts out network construction, operations and support to specialists such as Ericsson and IBM.

Just as Henry Ford and Toyota both helped change other industries, entrepreneurs in the developing world are applying the classic principles of division of labour and economies of scale to surprising areas such as heart operations and cataract surgery, reducing costs without sacrificing quality. They are using new technologies such as mobile phones to bring sophisticated services, in everything from health care to banking, to rural communities. And they are combining technological and business-model innovation to produce entirely new categories of services: Kenya leads the world in money-transfer by mobile phone, for example.

All this is obviously good news for the billions of people who live in the BRICS and other developing countries. More consumers will have access to goods and services that were once confined to the elite. More than 90% of Indians and Chinese tell pollsters that they are optimistic about the future. Anand Mahindra, an Indian business leader, has described his dreams about the future as “not just colourful, but steroidal”.

What about the slow-growth rich world? Emerging firms are advancing on a greater number of fronts than the Japanese did 30 years ago and also advancing much faster, gobbling up Western rivals. Their charge will upset many established Western firms, which will face increasingly savage price competition, and also overturn many assumptions about the rich world's competitive advantage. Many of globalisation's most vocal supporters have justified the loss of manufacturing jobs in the West on the ground that the rich world will maintain an edge in innovation; the clever jobs will stay at home. Emerging economies are not merely challenging that lead in innovation, they are unleashing a wave of low-cost, disruptive innovations that will, as they spread to the rich world, shake many industries to their foundations. All sorts of chief executives will scream for protection.

Change will indeed be painful for incumbents, as disruptive innovation always is. But cheaper goods and services will be a blessing for Western consumers, who are likely to face years of slow income growth. It could also be good news for rich-world governments, which are plagued with deficits even before the baby-boomers begin to retire. Frugal innovation may well prevent America's health-care system (which already consumes 17% of its GDP) from swamping the rest of the economy. Clever ways of applying economies of scale and scope in new ways could boost public-sector productivity.

Moreover, it is in the nature of innovation to feed upon itself. Innovation in the emerging world will encourage, rather than undermine, innovation in the rich world. Western carmakers learned the techniques of lean production from their Japanese rivals, just as the Japanese had earlier learned the techniques of mass production from the Americans. This great insurrection, like its predecessors, will make us all richer.

- 69.** The developing countries are able to cut costs dramatically because of  
A. cheap labour.  
B. cost saving innovations.  
C. cooperating with competitors to do business.  
D. innovating to produce new category of services.  
E. following the example of the west.  
(1) Only A and B      (2) Only A, B and C  
(3) Only A, B, C and D      (4) All the above
- 70.** What, according to the author, would be the effect of ‘the low cost disruptive innovation’ being made by the developing countries?  
(1) It would directly benefit all the people and indirectly the governments and business in the west.  
(2) It would be detrimental to the interests of the people of the developing countries.
- 71.** When the author says, ‘Forget about flat – the world of business is turning upside down’, we understand that  
(1) all established norms in business have changed.  
(2) the developing world has not just equalled but surpassed the west in business.  
(3) the Western countries clichéd perception of the developing countries is beginning to change.  
(4) the third world countries are registering better growth than the West.

**DIRECTIONS** for questions 72 to 75: In each question, there are five sentences/paragraphs. The sentence/paragraph labelled A is in its correct place. The four that follow are labelled B, C, D and E, and need to be arranged in the logical order to form a coherent paragraph/passage. From the given options, choose the most appropriate option.

72. (A) It is common knowledge that in India torture is professionally sanctioned and practised as a potent means of criminal investigation. There are honourable exceptions of course but in an alarming number of cases, the police and also paramilitary and military forces resort to this barbaric practice as a tool for extracting information from those in custody, circumventing the criminal justice system and undermining the rule of law.
- (B) The specious rationalisation is that existing laws are sufficient to prevent this gross human rights violation.
- (C) India signed the United Nation's Convention Against Torture and other cruel, inhuman or Degrading Treatment or Punishment (CAT) in 1997 but is yet to ratify it.
- (D) Under the Prevention of Torture Bill, public servants who obtain a confession by causing grievous physical or mental hurt or danger to the life of any person are guilty of torture and liable for imprisonment upto 10 years.
- (E) In a belated but welcome move, the Government of India has now given the nod for an anti-torture Bill that is aimed at harmonising our laws with CAT, a condition that is necessary for its ratification.
- (1) DCBE (2) CBED (3) CBDE (4) ECBD
73. (A) Sardar Patel, the architect of states' unification, was worried that Indian democracy would prove transient: "Almost overnight we have introduced ... the super structure of a modern system of a government ... unless the transplanted growth takes a healthy root in the soil there will be a danger of collapse and chaos".
- (B) For years, the panchayats, prevalent mainly in the North Indian states of Haryana, Rajasthan, and Uttar Pradesh, have practised violence as if it was a credo, brutally and summarily punishing those overstepping the redlines. This form of 'retributive justice' has particularly targeted young men and women seeking to marry within the same gotra.
- (C) In the six decades since then, India's home-grown democracy has held together beautifully – or so India is fond of telling the world. Yet ever so often this 'retributive justice' has particularly targeted young men and women seeking to marry within the gotra. Smug self-belief is shattered by incidents so gruesome, so medieval that they serve to recall the Sardar's worst fears.
- (D) In village after village, khap panchayats have hounded out, forcibly separated, and all failing,

murdered newly married couples – justifying the horrendous edicts as necessary to uphold local culture and honour.

- (E) How can a nation cast in a modern, liberal democratic framework, with a constitution held up as a model to emulate and laws that match the best in the world, tolerate the ugly phenomenon of khap (caste) panchayats with their kangaroo court-style instant justice?
- (1) CEBD (2) CEDB (3) CDBE (4) CBDE
74. (A) Today, at the start of the second decade of the 21<sup>st</sup> century, we are approaching momentous changes in the global economic and hence political power structure.
- (B) The Asian Currency crisis severely hurt the 'miracle economies' of South East Asia as well as East Asia. Growth slowed in China, as well as in India, albeit for different reasons.
- (C) The 1980s saw the rise of the 'miracle economies' of South East Asia – Thailand, Malaysia and Indonesia – which combined export-led growth with liberalisation of domestic economies.
- (D) The large burden of non-performing bank loans and fiscal deficits in many Asian economies, including ours, seemingly suggested that a pause button of indeterminate length had been pressed in the resurgence of Asia.
- (E) The resurgence of post-colonial Asia may be dated to the mid-1960s with industrialisation and export-led growth in South Korea, Taiwan, Hong Kong, and Singapore.
- (1) BDEC (2) DBEC (3) ECDB (4) ECBD
75. (A) In a world where 'great' is an adjective as easily applied to a meal or a movie, the concept of greatness changes shape and substance from speaker to listener, from writer to reader.
- (B) Greatness is being uncovered in the work place. Stephen Covey's book, 8<sup>th</sup> Habit – From Effectiveness to Greatness, is about finding your own voice and helping others find theirs. According to Dr. Covey, 'Deep within each one of us there is an inner longing to live a life of greatness and contribution – to really matter, to really make a difference.'
- (C) The road to greatness is walked alone, and no, it's not easy.
- (D) The attribute of greatness once conferred upon emperors is now found everywhere – in boardrooms, on the playing field, the sports arena, the celluloid screen, the classroom – and some of us will say 'why not'?
- (E) Once a person discovers and expresses his own voice, the next step in achieving greatness is to inspire others to find a medium to express their voice. Mentors and coaches like Dr. Covey, today, are providing 'practical and inspiring' principles and strategies to a world striving towards guidance. It's a good guidance, but that's what it is – guidance.
- (1) BDEC (2) DBEC (3) BCED (4) DEBC

### (Key and Solutions for AIMCAT1113)

#### Key

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

#### Solutions

##### SECTION – I

###### Solutions for questions 1 to 7:

1. In given series all the positive terms form an AP, 1, 4, 7, 11, 15, ....and all the negative terms form another AP -5, -9, -13, -17, ....

Let us consider the first 21 terms of the original series.

It has first 11 terms of the first AP and the first 10 terms of the second AP.

So, the sum of the first 21 terms of the series.

$$= \frac{11}{2} [2(1) + 10(3)] + \frac{10}{2} [2(-5) + 9(-4)] \\ = (11 \times 16) + 5(-46) = 176 - 230 = -54 \quad \text{Choice (2)}$$

2. When we have seven runners as mentioned, with A, C, E, G in one direction, with speeds in ratio 1 : 3 : 5 : 7, and B, D, F in the opposite direction.

A, C meet at  $\rightarrow L, \frac{L}{2}$

A, E meet at  $\rightarrow L, \frac{L}{4}, \frac{L}{2}, \frac{3L}{4}$

A, G meet at  $\rightarrow L, \frac{L}{6}, \frac{L}{3}, \frac{L}{2}, \frac{2L}{3}, \frac{5L}{6}$

When, B, D, F one in opposite to 'A';

The meeting points of A, B are  $\rightarrow L, \frac{L}{3}, \frac{2L}{3}$

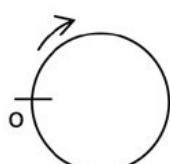
A, D, are  $\rightarrow L, \frac{L}{5}, \frac{2L}{5}, \frac{3L}{5}, \frac{4L}{5}$

A, F are  $\rightarrow L, \frac{L}{7}, \frac{2L}{7}, \frac{3L}{7}, \frac{4L}{7}, \frac{5L}{7}, \frac{6L}{7}$

Total distinct points 18.

Choice (4)

Note:



'O' is the starting point and L is the length of the track. The details of the meeting points are given below in terms of their distance from O in the clockwise direction in general for the conditions given and the ratio being n : 1, where n is an integer greater than 2.

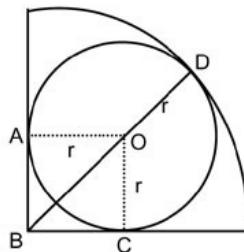
###### Case 1: Same direction

The distances of the meeting point from O are  $\frac{L}{n-1}, \frac{2L}{n-1}, \dots, \frac{(n-2)L}{n-1}$  and L i.e., (n - 1) meeting points.

###### Case 2: Opposite direction.

The distances of the meeting point from O are  $\frac{L}{n+1}, \frac{2L}{n+1}, \frac{3L}{n+1}, \dots, \frac{nL}{n+1}$  and L i.e., n + 1 meeting points.

3.



The largest circle that can be cut from the quadrant must touch the two radii and the arc of the quadrant. Let its radius be r.

AOCB is a square where O is the centre of the circle to be cut.

The radius of the quadrant BD = BO + OD =  $r\sqrt{2} + r = 6$

$$\Rightarrow r = \frac{6}{\sqrt{2} + 1} = 6(\sqrt{2} - 1) \quad \text{Choice (3)}$$

Alternately, the radius of the smaller circle must be less than half the radius of the larger circle. Hence  $r < 3$ . By simple calculation, only choice (3) satisfies.

4. In an isosceles right-angled triangle, the required ratio will be either the highest or the lowest.

By taking a few non-isosceles and one isosceles triangle we can arrive at the answer.

Let 1, 1,  $\sqrt{2}$  be the sides,  $x = 1^2 + 1^2 + (\sqrt{2})^2 = 4$ ,

$$y = (1 + 1 + \sqrt{2})^2 = (2 + \sqrt{2})^2$$

$$\frac{x}{y} = \frac{4}{(2+\sqrt{2})^2} = \frac{4}{(\sqrt{2})^2(\sqrt{2}+1)^2} = 2(\sqrt{2}-1)^2$$

$$= 6 - 4\sqrt{2} \approx 0.343$$

$$\text{Let } 3, 4, 5 \text{ be the sides, } \frac{x}{y} = \frac{50}{144} \approx 0.347$$

$$\text{Let } 7, 24, 25 \text{ be the sides, } \frac{x}{y} = \frac{1250}{(56)^2} \approx 0.398$$

Hence, for 1, 1,  $\sqrt{2}$  it is minimum, of  $6 - 4\sqrt{2}$

None of the choices numerically evaluates to this value.

Alternative solution:

Let  $a$  and  $b$  be the lengths of perpendicular sides of the right-angled triangle (in cm). Let  $c$  be the length of its hypotenuse. (in cm)

$$\frac{x}{y} = \frac{a^2 + b^2 + c^2}{(a+b+c)^2}$$

By Pythagoras theorem,  $a^2 + b^2 = c^2$

$$\therefore a^2 + b^2 + c^2 = 2c^2$$

Let the angle between side of length  $a$  cm and the hypotenuse be  $\theta$ .

$$a = c \cos \theta$$

$$b = c \sin \theta$$

$$a + b = c (\sin \theta + \cos \theta)$$

In a right-angled triangle, if one of the angles is  $\theta$

$\sin \theta + \cos \theta$  is maximum if  $\theta = 45^\circ$

If  $\theta = 45^\circ$ , its value is  $\sqrt{2}$

$$\therefore a + b \leq c\sqrt{2}$$

$$\therefore \frac{x}{y} \geq \frac{2c^2}{c^2(\sqrt{2}+1)^2} \text{ i.e., } 6 - 4\sqrt{2}.$$

Choice (4)

5. Let the two digit number be  $10x + y$

$$\therefore 10x + y = x + y^2$$

$$\Rightarrow 9x = y^2 - y$$

$$\Rightarrow 9x = y(y-1)$$

As  $x$  and  $y$  are single digit and  $x \neq 0$ , and both  $y$  and  $(y-1)$  cannot be simultaneously multiples of 3, either  $y$  or  $y-1$  must be equal to 9.

But  $y$  is a single digit, therefore  $y-1 \neq 9$

$$\therefore y = 9, \text{ and } x = y-1 = 9-1 = 8$$

$\therefore$  The number is 89

$$\therefore \text{The required sum} = 89 + 8 + 9 = 106$$

Choice (4)

6. There are eight comrades in the get-together. Every pair of comrades has a unique signal and they send out this signal whenever they meet. Since, the signal sent out by each pair is distinct, the number of distinct signals used  $= {}^8C_2 = 28$ .

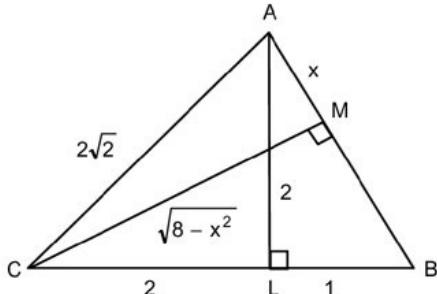
Consider the statement in choice (1)

If there are 85<sup>th</sup> signals, then at a minimum we need one person meeting a particular person more than thrice. (since  $28 \times 3 = 84$ )

And 85<sup>th</sup> meeting must be a 4<sup>th</sup> meeting for the two of them. So, choice (1) is false.

Choice (1)

- 7.



In the figure  $BL = 1$ ,  $LA = LC = 2$

$$\therefore AB = \sqrt{5} \text{ and } AC = 2\sqrt{2}$$

Let  $MA = x$ .

$$CM = \sqrt{8-x^2}$$

$$\text{We have } (AB)(CM) = (CB)(AL) = \sqrt{5} \cdot \sqrt{8-x^2} = 2 \cdot 3 = 6 =$$

Twice the area of  $\triangle ABC$

$$\therefore \sqrt{8-x^2} = \sqrt{\frac{36}{5}}$$

$$\Rightarrow 8-x^2 = 7.2 \Rightarrow x = \sqrt{0.8}$$

$$MC = \sqrt{8-x^2} = \sqrt{7.2}$$

$$\therefore \frac{MC}{AM} = \frac{\sqrt{7.2}}{\sqrt{0.8}}$$

Choice (2)

**Solutions for questions 8 and 9:**

8. Let there be a total of  $n + 2$  employees (including the attender and the director).

Let the average contribution per employee, before the attender or the director contribute, be  $A$ .

$$\text{Hence } \frac{(nA+100)}{(n+1)} = A - 11 \quad \text{--- (1)}$$

$$\text{and } \frac{(nA+10,000)}{(n+1)} = A + 121 \quad \text{--- (2)}$$

Subtracting equation (1) from equation (2).

$$132 = \frac{9900}{n+1} \Rightarrow n+1 = 75 \text{ i.e. } n = 74$$

Substituting  $n = 74$  in equation (1)

$$74A + 100 = 75(A - 11)$$

$$\Rightarrow A = 825 + 100 = 925$$

The average contribution per employee =  $A = \text{Rs.925}$   
Choice (2)

9. The total number of employees =  $n + 2 = 76$

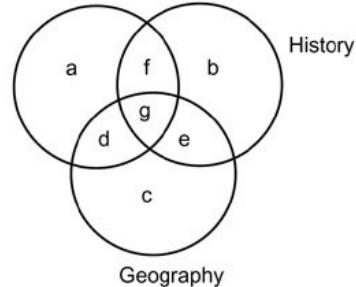
Choice (4)

**Solutions for questions 10 to 13:**

10. In the delegation

The following venn diagram gives the distribution of the delegates

Economics



Given delegates with a doctorate in Economics =  $a + d + g + f = 30\%$  of total delegates. Number of delegates with a doctorate in Geography =  $d + g + e + c = 60\%$  of the total delegates.

It is known that the number of delegates with a doctorate in both History & Economics is  $g + f = 20\%$  of total delegates. Also the number of delegates with doctorates in all the 3 subjects,  $g = 10$

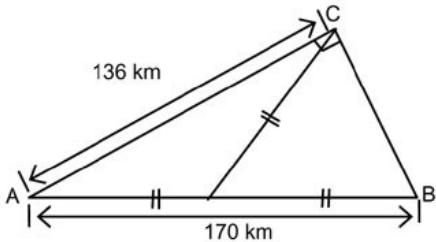
For the total number of delegates to be minimum,  $f = 0$  i.e., doctorates in Economics & History should also have a doctorate in geography i.e., 20% of total delegation = 10  
 $\therefore$  Total number of delegates = 10 (5) = 50.

Alternative solution:

If total delegates = 45 or 75

30% and 10% of the total delegates are not feasible. Hence, choice (3) and choice (4) are eliminated. Among 50 and 100, it can be checked out using 50, that all the conditions are satisfied.  
Choice (1)

11. From the given information, it is implied that the three cars make a right-angled triangle (with their distances from the starting point being the radii of a circle and the distance between the first two cars the diameter.  $\angle ACB = 90^\circ$ , being the angle in the semi-circle.)



Now,  $CB = \sqrt{170^2 - 136^2} = 102 \text{ km.}$  Choice (3)

12. Let the cost per kg be Rs.1000.  
 $\therefore$  Selling price = Rs.1200  
 But the cost is only for 800g = Rs.800  
 $\text{Profit} = \frac{1200 - 800}{800} \times 100 = 50\%$  Choice (3)

13. Since the age of Y is 4 years less than that of X, the average age of the 11 players after player X is replaced by player Y will become  $\frac{34 \cdot 11 - 4}{11} = 34 - \frac{4}{11}.$   
 After 1 more year, the average age of the new team of 11 players will become  $35 - \frac{4}{11} = 34 \frac{7}{11}$  years.  
 Now, it is given that, when another player, Y, is replaced by a new player, Z, the average becomes  $34 \frac{4}{11}$  years.

Hence, the age of the player Z is  $\left(34 \frac{7}{11} \times 11 - 34 \frac{4}{11} \times 11\right),$   
 i.e., 3 years less than that of player Y. Choice (1)

#### Solutions for questions 14 and 15:

In set A as the HCF of any two numbers is the same, all the numbers in set A are of the form  $ha, hb, hc, \dots$  where  $a, b, c, \dots$  are co-primes. Also as we require maximum number of elements in set A, we can take  $a, b, c, d, \dots$  as 1 and primes.

14. As every pair of numbers in set A are co-prime, each number is a product of distinct combination of the 25 prime numbers less than 100. As we want the largest set A, we should take each prime number on its own, rather than in combination with other primes. For the lower primes 2, 3, 5, 7, we have choices. For 11, 13, ..., 97 (the other 21 primes) we have no choices.  
 The largest set A has 26 elements, which are a power of 1, 2, 3, 5, 7 and the numbers 11, 13, 17, ..., 97. The powers of 2, 3, 5, 7 less than 100 can be selected in 6, 4, 2, 2 ways respectively. Thus there are  $(6)(4)(2)(2) = 96$  ways of selecting the largest set A. Choice (2)

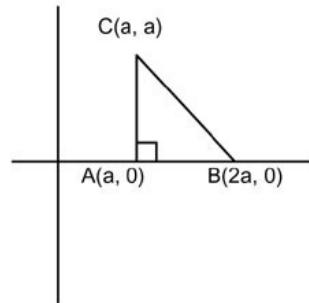
15. Given HCF of the numbers in set A as 3.  
 Hence the numbers are 3, 6, 9, 15, 21, ..., 93.  
 These are the numbers of the form  $3p$  where  $p$  is a prime number less than  $\frac{100}{3}$  (i.e. primes less than 33).

Further  $p$  can also be 1. There are 12 numbers in set A. Choice (2)

#### Solutions for questions 16 to 22:

16. Given that  $CB = BF$ . Imagine a perpendicular to AB drawn from E to meet DC in I. The area of  $\triangle AGE = \frac{1}{2}$  Area of DIEA and area of  $\triangle EBF = \frac{1}{2}$  Area of ICBE. Hence the area of shaded portion =  $48(1/2) = 24 \text{ sq.cm.}$  Choice (1)

17.



We can see that  $AB = AC = a$  and  $\angle CAB = 90^\circ$

$\therefore$  ABC is a right angled isosceles triangle

$$\therefore \text{Its area} = \frac{a^2}{2} = 16$$

$$\Rightarrow a = \sqrt{32} = 4\sqrt{2} \quad (\text{as } a > 0) \quad \text{Choice (3)}$$

18. Let the marked prices of A and B be  $2x$  and  $3x$ .  
 Also if cost price of A = Rs.50, then cost price of B = Rs.75.  
 (Since the ratio is 2 : 3)  
 Now a  $33\frac{1}{3}\%$  discount on M.P of B = S.P of B =  $2x$   
 Given S.P of A = 80% of S.P of B = 80% of  $2x = 1.6x$ .  
 Given profit of A = 60%  
 $\Rightarrow 1.6x - 50 = 0.6 \times 50$   
 $\Rightarrow x = 50$   
 $\Rightarrow \text{M.P of B} = 3x = \text{Rs.150.}$  Choice (1)

19. Profit % of B =  $\frac{\text{S.P} - \text{C.P}}{\text{C.P}} \times 100$   
 $= \frac{2x - 75}{75} \times 100 = \frac{25}{75} \times 100 = 33\frac{1}{3}\%$  Choice (2)

20. Any power of any number ending with 6 (with index greater than 1) always ends with a 6 and the tens digit of that power is always odd.  
 Hence  $160^{4320}$  has 4320 zeros, a six before that and before that an odd number before that. Hence we encounter the first odd number after 4321 digits, if we start from the right.  
 Choice (2)

21. Let the strength of girls in Class X of MPS be 'G'  
 $\therefore$  Strength of MPS =  $50G$

(Since class X girls form 2% of the strength of MPS)

Strength of DPS =  $2 \times 50 G = 100 G$

Strength of girls in Class X of DPS =  $2 G$ .

$$\text{Ratio of Boys to girls in Class X of DPS} = \frac{3}{(5-3)} = 3 : 2$$

$\therefore$  Number of boys in Class X of DPS =  $3G$

$$\text{Ratio boys to girls in MPS in class X} = \frac{3}{4-1} = 3 : 1$$

$\therefore$  Number of boys in MPS =  $3G$

$\therefore$  When class X of both the schools in clubbed into a group, the number of boys in the group =  $6G$  and the number of girls in the group =  $3G$

$\therefore$  Ratio of girls to boys =  $3G : 6G = 1 : 2$  Choice (2)

22. Given  $g(xy) = g(x) + g(y) - 2$

Observe that  $72 = 2^3 \times 3^2$

Consider  $x = 3; y = 2$

$$g((3)(2)) = g(3) + g(2) - 2$$

$$g(6) = a + b - 2$$

Consider  $x = 6; y = 6$

$$g(36) = g(6) + g(6) - 2 = 2 g(6) - 2$$

$$\begin{aligned}
 &= 2a + 2b - 4 - 2 = 2a + 2b - 6 \\
 g(72) &= g((36)(2)) = g(36) + g(2) - 2 \\
 &= 2a + 2b - b + a - 2 = 3a + 2b - 8
 \end{aligned}$$

**Alternative solution:**

Given the form of  $g(xy)$ , we can infer that the powers of the factors will appear on the RHS. Hence, as  $72 = 2^3 \cdot 3^2$ ,  $3(g(2))$  and  $2(g(3))$  will definitely appear on the RHS. Hence  $3a + 2b$  must be present in the correct answer choice. Only choice (4) satisfies.

Choice (4)

**Solutions for questions 23 to 25:**

23. If  $m$  is even, then consider the right half of the seats in the row, i.e.,  $\left(\frac{m}{2}\right)$  seats. First arrange the  $n$  boys only in these

$$\left(\frac{m}{2}\right) \text{ seats. This can be done in } \left(\frac{m}{2}\right) P_n \text{ ways.}$$

Now any of the  $n$  boys may or may not be shifted to the corresponding chair on to the left half of the seats. This shifting can be done in  $2^n$  ways. That is, each boy may or may not be shifted (i.e., 2 ways).

$$\text{Hence a total of } \left(\frac{m}{2}\right) P_n \cdot 2^n \text{ ways.} \quad \text{Choice (2)}$$

24. If  $m$  is odd, then there will be a middle seat. If this seat is left vacant. Then the solution is the same as above except

$$\text{that } \left(\frac{m}{2}\right) \text{ becomes } \left(\frac{m-1}{2}\right) = \left(\frac{\frac{m-1}{2}}{2}\right) P_n \cdot 2^n \quad \text{Choice (2)}$$

25. The solution to this question is again the same as in the previous question except that one boy is sitting in the middle chair. The boy to be assigned the middle chair can be selected out of  $n$  boys in  ${}^n C_1 = n$  ways. Now, the remaining  $n - 1$  boys have to be arranged in  $m - 1$  chairs satisfying the given condition. This can be done in

$$\left(\frac{m-1}{2}\right) P_{n-1} \times 2^{n-1} \text{ ways. Since the selection of the boy and arrangement of rest } n - 1 \text{ boys are independent events,}$$

$$\text{total number of ways} = n \times \left(\frac{m-1}{2}\right) P_{n-1} \times 2^{n-1}. \quad \text{Choice (3)}$$

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

## SECTION – II

**Solutions for questions 26 to 28:**

26. Success rate of males =  $\frac{1375}{119580} > 1\%$

$$\text{Success rate of females} = \frac{291}{35684} < 1\%$$

So, statement A is true.

$$\text{Required ratio in 2004} = \frac{84}{37464} > 0.2\% \quad \text{Choice (2)}$$

$$\text{Ratio in 2005} = \frac{160}{87586} < 0.2\%$$

So statement (B) is also true.

Choice (3)

27. Required ratio for males =  $\frac{1293}{123455} > 1\%$

$$\text{Required ratio for females} = \frac{765}{85680} < 1\%$$

So, statement (A) is true.

$$\text{Required ratio for males} = \frac{1293}{14685} < 10\%$$

$$\text{That for females} = \frac{765}{7581} > 10\%$$

So, statement (B) is also true.

Choice (3)

28. Percentage of absentees among males  $\approx \frac{3300}{123407} \approx 3\%$

$$\text{That among females} \approx \frac{1800}{37464} = 4.5\%$$

Statement (A) is true.

$$\text{Number of absentees in 2004} \approx 3800 + 1800 = 5600$$

$$\text{Number of absentees in 2005} \approx 4300 + 1900 = 6200$$

So statement (B) is false.

Choice (1)

**Solutions for questions 29 to 32:**

29. Four trains are running and four trains are stationary. As four trains are stationary, they can be in at least three of the available five stations and only the remaining two stations can be destination of all the other four trains. Hence, choice (1) and choice (4) can be eliminated as the number of destinations is more than two.

Choice (2): As trains C, B, A and D are running from T to P, R to T, Q to P and S to T, respectively there cannot be any stationary train at P and T i.e. there could be stationary trains at stations Q, S and R. As we need four trains to be stationary, two can be at any one station among Q, S and R while the other two trains can be stationary at the other two stations. .. Choice (2) is possible.

In choice (3) there are three stations which have at least one stationary train. Hence there are two stations which have no stationary trains and hence can be destination stations. These are Q, R, S. Now four trains must have Q, R, S as their destinations which is possible only when the trains run from P to Q, R to Q, R to S and T to S. But R has two trains starting from it which is not allowed. Hence choice (3) is not possible.

Choice (2)

30. Since there are only two possible destination stations Q and R, and four trains running, each of Q and R must be the destination for exactly two trains. This is possible only in the following two ways.

(i) P to Q, S to R, T to R and R to Q.

(ii) P to Q, S to R, T to Q and Q to R.

Among the choices we can see that, one train must run from P to Q.

Choice (4)

31. If three trains travel at a time i.e., from T to P, P to Q and Q to T, then, we can have two trains stationary at R and one train stationary at S. Also, one train each will be travelling from S to T and R to Q. This does not violate any of the conditions. Hence a maximum of three trains can run simultaneously on tracks TP, PQ and QT. Choice (2)

32. There are only five stations. Hence, only five trains can travel at any point of time as two trains cannot have the same starting point.  
Choice (1)

**Solutions for questions 33 to 35:**

33. The students who secured admission in both A<sup>+</sup> and A<sup>-</sup> graded colleges but not A grade colleges are S<sub>2</sub>, S<sub>5</sub>, S<sub>6</sub>, S<sub>8</sub> and S<sub>14</sub>.  
Choice (2)
34. A total of eleven students secured admission in at least 3 colleges. They are S<sub>2</sub>, S<sub>3</sub>, S<sub>4</sub>, S<sub>7</sub>, S<sub>8</sub>, S<sub>9</sub>, S<sub>10</sub>, S<sub>12</sub>, S<sub>13</sub>, S<sub>14</sub> and S<sub>15</sub>.  
Choice (4)
35. The maximum number of colleges in which a student got admission is 5 (S<sub>7</sub> or S<sub>12</sub>).  
Choice (2)

**Solutions for questions 36 to 39:**

The five different regions are Europe, Asia, Africa, Australia and Antarctica.

The five different categories are Social, Art, Children, Horror and Fantasy.

The number of films is a perfect square, and the films sent by each region is at least two and at most ten.

From (1) we have

Let the number of art films is 'x' then

Social films is 2x

Children's films is 2x

Horror films is 2x and

Fantasy films is 2x

Hence 9x is a perfect square

The only possibility is x = 4

The total movies are 36

From (4) we have

Number of films sent by each region is as follows

Asia – 10

Europe – 8

Africa – 7

Australia – 6

Antarctica – 5

From (5) and (1) we get

Every region other than Antarctica send one Art film each.

From (6), we get Asia send 0, 1, 2, 3, and 4 films in the different categories.

The given data can be represented as follows

Category	Europe	Asia	Africa	Australia	Antarctica	Total
Social	2	3	1	1	1	8
Art	1	1	1	1	0	4
Children	2	0	3	2	1	8
Horror	2	2	1	1	2	8
Fantasy	1	4	1	1	1	8
	8	10	7	6	5	36

36. Asia sent maximum number of films in the Fantasy category.  
Choice (3)
37. Asia in the Children's category and Antarctica in the Arts category are the regions which didn't send even a single film in a particular category.  
Choice (2)

38. Africa sent the maximum numbers of films in the Children's category.  
Choice (1)

39. The number of films sent by Europe and Australia in the Children's category is two. Hence (1) is true.  
Except in the children's category Australia send equal number of films in the remaining categories (i.e., 1) Hence (2) is definitely true.  
The maximum films sent by any region in a particular category is four. Hence (3) is also true.  
Choice (4)

**Solutions for questions 40 to 44:**

By finding the total points of each of the teams in each group, we can find the teams that reach Super Six. The teams are  
Team A<sub>1</sub> → Australia, A<sub>2</sub> → Malaysia, A<sub>3</sub> → Japan  
Team B<sub>1</sub> → India, B<sub>2</sub> → Singapore, B<sub>3</sub> → Germany

40. The team which won the maximum number of matches in the super-six won the world cup.  
. Team B<sub>1</sub>, which won all the 3 matches, won the world cup. Team B<sub>1</sub> is the top team in group B which is India with 21 points.  
Choice (1)

41. The top 3 teams from group A are Australia, Malaysia, and Japan with 22, 17 and 16 points respectively.  
The top 3 teams from group B are India, Singapore and Germany with 21, 20 & 11 points respectively.  
In super six Australia, Malaysia, Japan, India, Singapore and Germany scored 7, 6, 5, 12, 5, 10 points respectively.  
The two teams with the least points are Japan and Singapore. So those two teams are eliminated.  
Choice (3)

42. Australia with 21 points is the top team in group A i.e., team A<sub>1</sub>. It scored 1 + 5 + 1 = 7 points in the super six.  
Choice (2)

43. Singapore won 5 matches in the group stage. It scored 20 points and is in the 2<sup>nd</sup> position behind India (with 21 points).  
. It is team B<sub>2</sub>. It won 1 match in the super-six  
. The total number of matches Singapore won is 5 + 1 = 6  
Choice (3)

44. Brazil scored 1 + 5 = 6 points.  
France scored 1 + 1 + 1 + 1 = 4 points.  
. The difference is 2 points.  
Choice (2)

**Solutions for questions 45 to 48:**

Looking at the number of silver medals won by College B and College F (two each) they have to come from one each of University 2 or University 5.

Now if one of College B or College F comes from University 5, the remaining medals won by University 5 are two Gold and one Bronze.

. College C cannot be from University 5 and must be from the other University that had two Gold i.e. University 1 and College A must be from University 5.

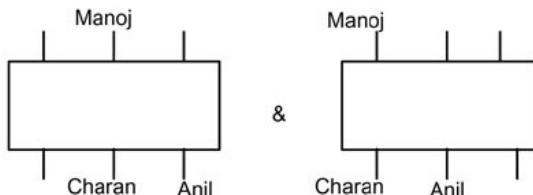
Now one of College F or College B comes from University 2 and so University 2 has one more Gold which is due to College G.

College I is from University 3 and College E is from University 1 or 4. The remaining two colleges, College H and College D, which have two Bronze between them should be from University 4 or 1, depending on where College E is from.

45. H can be from University 4. Choice (3)
46. B is from University 2 or 5 but not 1. Choice (3)
47. Since one university had all its three colleges winning prizes, College H and College D along with College C are from University 1. Choice (1)
48. A and one of B and F won medals. Choice (3)

#### Solutions for questions 49 and 50:

49. With statement A alone we can get two possibilities which are



∴ Statement A alone is not sufficient.

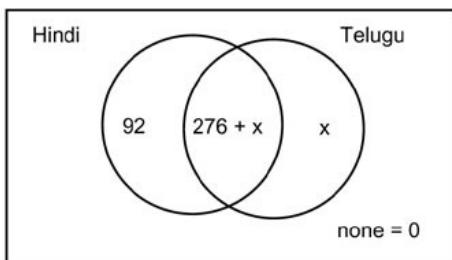
Statement B alone is also not sufficient as it does not give the exact positions of Charan and Manoj.

Combining both the statements we get that Naveen has to be on the right of Manoj which is possible only in the 1<sup>st</sup> possibility above.

∴ Charan is sitting between two people. Choice (4)

50. Statement A alone will not give the answer, but using both the statements we get the number of people who speak both Hindi and Telugu, because the total number of people is given as 600.

Total = 600



$$\therefore 92 + (276 + x) + x = 600$$

From which x, and hence x + 276, can be found.

Choice (4)

Difficulty level wise summary - Section II	
Level of Difficulty	Questions
Very Easy	-
Easy	34, 35, 44
Medium	26, 27, 28, 30, 32, 33, 40, 41, 42, 43, 45, 46, 48, 49, 50
Difficult	29, 31, 36, 37, 38, 39, 47
Very Difficult	-

#### SECTION – III

##### Solutions for questions 51 to 53:

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

Number of words : 1,062

51. The passage begins with the explosion in the oilrig. By the end of the passage the author is looking at the energy industry as a whole. Hence, choice 3 is appropriate. Choice 1, though true, accounts for only part of the passage. The second part of choice 2 is incorrect. Choice 4 is ruled out because he is not looking at the role of offshore drilling in the energy industry. Choice (3)

52. The words occur at the end of the third para from the end and refer to what follows in the next para (penultimate para). The noxious side effects are the consequences of the addiction to oil—climate change, pollution etc. Choice (4)

53. Refer to para 5 where all the options are covered. Statement in C is incorrect in saying technology makes it 'safe and easy'; it enables, yes, but not necessarily makes it safe or easy. Choice (2)

##### Solutions for questions 54 to 56:

54. Statement D is incorrect because 'entice' should be followed by 'with' and not 'through'. Statement E is incorrect because of the word 'plod'. The word plod which means to walk heavily and slowly or laboriously and monotonously is a misfit in this context. Since the sentence states that you proceed towards the entrance with a flag-toting English girl, the word 'march' would suit the context better. Statements A, B and C are free of errors. Choice (1)

55. Statement A is erroneous because the word awaken which is a verb is incorrect here. The sentence takes a perfect tense hence the past participle form of awake i.e., awoken is more appropriate here. Statement B is incorrect because the phrasal verb 'fall out' is inappropriate here. The noun 'fallout' meaning the unpleasant results or effects of an action or event, is more appropriate in the context. In option E the word billions which is in the plural is inapt in the context. The correction is '.... with \$5.4 billion ...'. Options C and D are error free. Choice (1)

56. Statement A is incorrect because here, the word 'affection' should be used in the plural. 'Affections' refers to a feeling of liking for a person or place. Hence '..... holds my affections' is the correct expression. Statement C is erroneous because of the incorrect construction of the sentence. The correction is 'unassuming though it is ....' Statement D is erroneous because here, the verb should be in the past tense ('..... was crowned') not past perfect ('.... had been crowned'). Only statement B is the correct sentence. Choice (4)

##### Solutions for questions 57 to 59:

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

Number of words : 968

57. Choice 4 is not true – refer to para 9 – 10. Although telomerase does not boost cancer development, it does not prevent it either. Choice (4)

58. The question raised is – Could artificially raising levels of a key enzyme hold back the effects of ageing? The question has been explored in the passage and it appears hopeful.  
Choice (2)
59. Refer to para 2 which ends with the words in quote. The para shows choice 3 to be right.  
Choice (3)

#### Solutions for questions 60 to 62:

60. The sentences speak about India's robust economic performance and the progress made in recent years. Despite this a majority of Indians are languishing in poverty. Statement 4 aptly sums up the para saying the vibrant economy is restricted only to the upper classes while the majority lives in poverty. Choices 1, 2 and 3 which talk about what should be done to amend the situation can follow 4 but cannot precede it.  
Choice (4)
61. The paragraph states that the global economic downturn has proved to be a boon for the Indian educational sector. As the world economy went in to a tailspin, fewer people were willing to pay donations to buy a seat in medicine or engineering and people were apprehensive about the quality of education. Choice 2 ideally sums up the paragraph by saying this situation provided an opportunity to clean the Augean stables i.e., to reform the education sector. Hence choice 2 is the best concluding sentence. Choices 1 and 3 which list out the specific changes which are to be brought in the education sector cannot conclude the para per se but can follow choice 2. Choice 4 is a repetition of what is stated in the passage.  
Choice (2)

62. The first sentence of the paragraph speaks about the managements' perception of trade unions. The rest of the paragraph dispels the managements' misconception about trade unions and enlists the advantages of trade unions and how trade unions are instrumental in boosting the Indian economy. Choices 2 and 4 which speak about one of the advantages of unions are a mere repetition of the original and therefore cannot conclude the paragraph. Choice 1 can be eliminated as it is more general while the passage is specific to India and the Indian economy. Choice 3 which states that a paradigm shift in the relations between the employees and the management is required for globalising India, is the best conclusion for the given para.  
Choice (3)

#### Solutions for questions 63 to 65:

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

Number of words : 861

63. The author begins by examining the problem of climate change. At the end of the passage, he recommends using funds allocated to the ministry of defence for climate change research. Thus choice 4 describes the passage appropriately. Choice 1 is incorrect because it is not about various problems. Choice 2 is ruled out by the word 'vituperative', and choice 3 by 'totally'.  
Choice (4)

64. Refer to para 7 which mentions two problems which are captured by statements C and D.  
Choice (3)
65. Refer to para 2, the last 2 sentences. Although this is something well known, still it is relevant. Choice (3) is ruled out because the author's tone is not positive.  
Choice (2)

#### Solutions for questions 66 to 68:

66. 'Prerequisite' is something which must exist or happen before something else can exist or happen. The sentence implies that before getting admission into the course one must qualify in the written exam. Hence passing in the written exam is a prerequisite for getting admission. The word 'perquisite' (a special right or privilege enjoyed as a result of one's position) is not appropriate in the given context. Hence A.  
The word 'shear' means to cut the wool of (a sheep). Hence A is apt. The word 'sheer' (nothing but, absolute) is inappropriate.  
Who's is the short form of 'who is' or 'who has' whereas 'whose' is a pronoun (determiner) which is used for adding information about a person or thing just mentioned. Only the latter suits the given context. Hence B  
'Pedal' is a small part of a machine or object which is pushed down with the foot to operate or move the machine or object. 'Peddle' is to sell things, especially by taking them to different places. B is apt.  
The word 'aural' (relating to hearing) is not appropriate in the given sentence. 'Oral' (spoken, not written) is apt. Choice A  
Therefore the correct combination is BABAA.

Choice (4)

67. 'Imply' is to communicate an idea or feeling without saying it directly. 'Infer' is to form an opinion or guess that something is true because of the information that you have. Only B suits the context.  
'Perspicacious' means quick in noting, understanding or judging things accurately. 'Perspicuous' which means clearly understood or expressed is not appropriate in the given context. Choice B  
'Derisive' means expressing contempt or ridicule. 'Derisory' means ridiculously small or inadequate. A comment can be 'derisive' but not 'derisory'. Hence only B is apt.  
'Duel' is a pre-arranged contest with deadly weapons between two people to settle a point of honour. 'Dual' means consisting of two parts or aspects. Only the latter is apt in the context. Choice B  
'You're' is the short form of 'you are' while 'your' is a determiner belonging or relating to the person or group of people being spoken or written to. Only the latter suits the context. Hence B  
Therefore BBABB is the correct combination as seen in choice 1.  
Choice (1)

68. The word 'waive' which means not to demand something you have a right to or not cause a rule to be obeyed is apt in the context – A.  
'Antics' (behaviour which is amusing or silly) is more apt in the context when compared to the word 'antiques' (things made in an earlier period and collected and valued because they are beautiful rare or valuable) – A.

The word historic means likely to be thought of as important at some time in the future. Historical means connected with the past. Only the former suits the context and collocates well with occasion – A.

Wreath (noun) is an arrangement of flowers and leaves in a circular shape. Wreathe (verb) means to cover or surround something. Only the former suits the context – B.

Comprises is to have as parts or members. Compose means to combine together to form a whole. Only B suits the context well. Therefore the correct sequence is AAABB.

Choice (1)

#### Solutions for questions 69 to 71:

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

Number of words : 980

69. Refer to para 5 – statements A, B, C and D can be inferred from the examples given. E has not been stated or implied.

Choice (3)

70. Refer to the last 2 paras – the benefit will be not only for the people in the developing world but also for the cash strapped people in the west. It would occur to governments (by way of cheaper services) and to business (which will be challenged to innovate).

Choice (1)

71. A flat world is one where everyone has equal opportunities. At the end of para 3 the author says it is not a flat world but everything upside down that is the developing world is up and the developed down.

Choice (2)

#### Solutions for questions 72 to 75:

72. Statement A states that torture is professionally sanctioned in India although there are exceptions to it. C follows A saying that India was a signatory to the CAT but has not ratified it. B follows C stating the reason for not ratifying the CAT. E follows B by talking about the latest move which says that the government of India has given the nod for an anti-torture Bill. D which elaborates on the anti-torture bill is a continuation of E. Hence CBED is the correct sequence.

Choice (2)

73. Statement A speaks about Sardar Patel's apprehension about the modern system of government (i.e., The reorganisation of states). C follows A saying India's democracy has been functioning well but very often certain gruesome incidents keep occurring confounding Sardar Patel's worst fears. E follows C with a question as to how a nation cast in a modern liberal democratic frame work tolerate the ugly phenomenon of khap (cast) panchayats, B elaborates on the phenomenon of khap panchayats thus following E. D concludes the para. Hence CEBD.

Choice (1)

74. The statements which succeed A follow a chronological order. E, which speaks about the progress made in post colonial Asia during the 1960s, follows A. C which speaks about the rise of the miracle economies in the 1980s follows E. B follows C by mentioning the circumstances which led to the showing of growth in the miracle economies. D is conclusive in nature. Hence ECBD.

Choice (4)

75. Statement A begins the paragraph by saying that the concept of greatness is relative. D complements A by saying that greatness is now being attributed to the most mundane of things. B follows D by mentioning Stephen Covey's book which is about greatness at the work place. E is a continuation of what is stated in B. C concludes the paragraph by saying that the road to greatness is walked alone, without any assistance. Hence DBEC.

Choice (2)

Difficulty level wise summary - Section III	
Level of Difficulty	Questions
Very Easy	–
Easy	66, 67, 68
Medium	52, 54, 55, 56, 57, 58, 59, 60, 61, 65, 69, 70, 71, 74
Difficult	51, 53, 62, 63, 64, 72, 73, 75
Very Difficult	–