

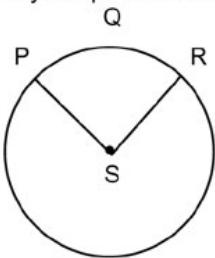
INSTRUCTIONS

1. Read the instructions given at the beginning/end of each section or at the beginning of a group of questions very carefully.
 2. This test has two sections with a total of 100 questions – 50 questions each in section I and section II. The total time available for the test is **170 minutes**. You can allot this time across the sections as you wish. However, you are expected to show your competence in both the sections.
 3. All questions carry three marks each. Each wrong answer will attract a penalty of one mark.

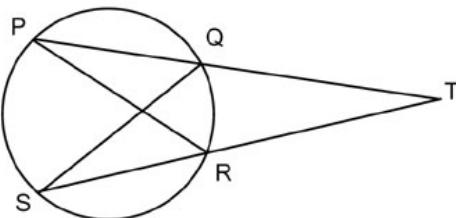
SECTION – I

DIRECTIONS for questions 1 to 4: Answer the questions independently of each other.

I. In the figure below, P, Q and R are points on the circle with centre S and the quadrilateral PQRS is a cyclic quadrilateral.



- II. In the figure below, PQ and RS are two chords of a circle which, when extended, intersect each other at T, and triangles RPT and QST are similar.



3. A bird, when travelling at its normal speed, takes nine hours more to travel 15 km against the wind.

than the time it takes to travel the same distance along the direction of the wind. If it doubles its speed and travels the same distance, it takes one and a half hour less when it flies along the direction of the wind than the time it takes to fly against the wind. Find the speed of the wind.

DIRECTIONS for questions 5 and 6: Answer the questions on the basis of the information given below.

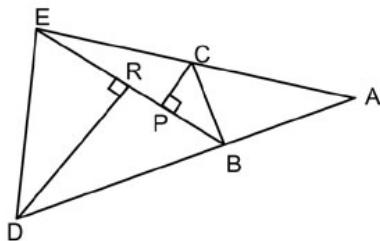
The people of an island named Tingo use the number system to the base 5. The students of that island had recently taken an exam called BAT, a management entrance test, to gain admissions into their top B-schools. Answer the following two questions that appeared in that exam.

5. If $N = 2323\ldots23$ upto a total of hundred digits, find the remainder when N^{231} is divided by 4.
(A) 0 (B) 1 (C) 2 (D) 4

6. Given that a number is called an *oven* number, if it is exactly divisible by 3, which of the following is not an *oven* number?
(A) $(4213)^{2143}$ (B) $(1423)^{2143}$
(C) $(1243)^{2143}$ (D) $(3421)^{2143}$

DIRECTIONS for question 7: Select the correct alternative from the given choices.

7.



In figure above, ADE is a triangle in which $AB : BD = 3 : 7$ and BC is parallel to DE . If CP and DR are the perpendiculars drawn to BE from C and D respectively, find the ratio of the area of triangle BPC and the area of triangle ERD .

- (A) 3 : 10 (B) 9 : 100 (C) 9 : 49 (D) 25 : 144

DIRECTIONS for questions 8 to 11: Answer the questions on the basis of the information given below.

The tables given below give the statistics of crop production in a state for the years 2008 to 2012.

Percentage distribution of the total crop production (season wise)

Season Year	Kharif	Rabi
2008	50	50
2009	60	40
2010	75	25
2011	52	48
2012	70	30

Percentage distribution of the total crop production in a season

Crop Year	Kharif		Rabi	
	Food Grains	Cash Crops	Food Grains	Cash Crops
2008	40	60	50	50
2009	44	56	75	25
2010	60	40	30	70
2011	50	50	80	20
2012	55	45	42	58

Percentage distribution of the total Food Grain production in a season

Crop Year	Kharif Food Grains		Rabi Food Grains	
	Rice	Wheat	Rice	Wheat
2008	50	50	50	50
2009	40	60	60	40
2010	45	55	55	45
2011	38	62	62	38
2012	44	56	64	36

8. In the year 2010, the total production of rice and wheat forms what percentage of the total crop production?
(A) 32.5% (B) 37.5% (C) 45% (D) 52.5%
9. If the Kharif production in 2008 was 1 million tonnes and it grew by 10% every succeeding year, then the wheat production in Kharif experienced the highest percentage increase in which of the following periods?
(A) 2008-2009 (B) 2009-2010
(C) 2010-2011 (D) 2011-2012
10. If the total crop production in 2010 was 100% more than the total crop production in 2008, then the food grains produced in Kharif in 2010 are what percentage more than the total Kharif crop in 2008?
(A) 10% (B) 17.5% (C) 80% (D) 55%
11. If the production of wheat in Rabi in 2011 is 0.76 lakh tonnes, then what is the approximate total Kharif crop production in 2011? (in lakh tonnes)
(A) 2.31 (B) 2.51 (C) 2.71 (D) 2.86

DIRECTIONS for questions 12 to 15: Answer the questions independently of each other.

13. Find the value of $\frac{1}{6 + \frac{1}{1 + \frac{1}{\dots}}}$.

$$6 + \cfrac{1}{2 + \cfrac{1}{6 + \cfrac{1}{2 + \dots}}}$$

- (A) $\frac{-1 + \sqrt{165}}{12}$ (B) $\frac{-9 + \sqrt{105}}{12}$
 (C) $\frac{-9 + \sqrt{93}}{6}$ (D) $\frac{-3 + 2\sqrt{3}}{3}$

DIRECTIONS for questions 16 to 20: Answer the questions on the basis of the information given below.

The production of a certain dye involves mixing four pigments – P₁, P₂, P₃ and P₄. One unit of the dye is obtained upon mixing one unit of each of the four pigments. The production of each unit of a pigment involves five steps – Grinding, Heating, Mixing, Thinning and Testing – which are done by five different machines G, H, M, N and T respectively. Every pigment must pass through all the five steps in quick succession in the same order as mentioned above.

Further, the container in which the four pigments are to be mixed can mix only one unit of dye at a time. Hence the dye is produced in the following manner. One unit of P_1 is first ground by G and then immediately transferred to H for heating. G then takes up one unit of P_2 for grinding and continues the process. H, in its turn, processes P_1 and immediately transfers it to M and so on, till the machine T process P_1 and P_1 is ready. In the similar manner, the pigments pass through all the steps in the order P_1, P_2, P_3 and P_4 , immediately after which one unit of the dye is produced by mixing the one unit each of P_1, P_2, P_3 and P_4 that are available.

The time taken for mixing the finished pigments is negligible. The table below gives the number of units of each particular pigment that can be processed by each of the machines in the corresponding time. There is only one machine of each type and each machine can process only one pigment at a time.

Pigment Machine	P ₁	P ₂	P ₃	P ₄
G	(12, 1)	(5, 2)	(3, 1)	(5, 2)
H	(8, 3)	(4, 1)	(5, 2)	(5, 1)
M	(6, 1)	(5, 2)	(8, 3)	(5, 2)
N	(4, 1)	(5, 2)	(6, 1)	(5, 2)
T	(5, 2)	(6, 1)	(5, 2)	(8, 3)

For example, the data given in the third column of the second row shows that machine H can heat five units of pigment P_3 in two hours.

16. What is the shortest time in which one unit of the dye can be produced?

(A) 73 minutes
(B) 133 minutes
(C) 166 minutes
(D) 380.5 minutes

17. If all the machines can be operated continuously for twenty-four hours every day, with no breaks, what is the maximum number of units of the dye that can be produced in a day?
(A) 15 (B) 16 (C) 17 (D) 18

18. Find the approximate capacity utilization of all the five machines combined, given that the machines are available throughout the day.

Capacity utilization

$$= \frac{\text{Total number of actual operating hours}}{\text{Maximum possible total number of hours}} \times 100$$

- (A) 80% (B) 95% (C) 90% (D) 85%

19. If the production of any unit of the dye is started only if it can be completed in the same day, which of the following machines is idle for the maximum time, in a single day?

(A) N (B) M (C) H (D) T

20. If the production process starts at 8:00 a.m., with G starting upon P_1 , and continues upto 6:00 p.m., then find the total time for which N is idle from 8:00 a.m. to the time by which one unit of the dye is ready

 - (A) 33.5 minutes
 - (B) 54 minutes
 - (C) 70.5 minutes
 - (D) 93 minutes

DIRECTIONS for questions 21 and 22: Answer the questions independently of each other.

21. In an examination there are x questions. If the number of students who answered y or more questions wrongly, where $1 \leq y \leq x$, is given by 2^{x-y} , and the total number of wrong answers is 8191, find x .
(A) 18 (B) 12 (C) 11 (D) 13

22. If a two-digit number is 18 less than the square of the sum of its digits, how many such numbers exist?
(A) 4 (B) 3 (C) 1 (D) 2

DIRECTIONS for questions 23 and 24: Each question is followed by two statements, I and II. Answer each question using the following instructions.

- Choose (A) if the question can be answered by using statement I alone but not by using II alone.
- Choose (B) if the question can be answered by using statement II alone but not by using I alone.
- Choose (C) if the question can be answered by using either statement alone.
- Choose (D) if the question can be answered by using both the statements together but not by either statement alone.

23. An oven was initially listed at a price that would have given the store a profit of 20% of the cost. What was the cost of the oven?

- I. After reducing the listed price by 10%, the oven was sold at a net profit of 100 dollars.
- II. The oven was sold for 500 dollars.

24. A family has only one son. The father says "After 'x' years, my age will be six times the age of my son". The mother says, "After x years, my age will be four times that of my son". What will be the combined age of the three-member family after 'x' years?

- I. The age difference between the parents is 16 years.
- II. After 'x' years the son will be twice as old as he is now.

DIRECTIONS for questions 25 and 26: Answer the questions independently of each other.

25. Amar, Bhavan and Chetan bought a circular pizza. They cut it into exactly five sectors, all of distinct sizes and distributed these five parts among themselves such that each of them got at least one part but none of them got the parts of the pizza which were adjacent. In how many ways could they have shared the pizza?

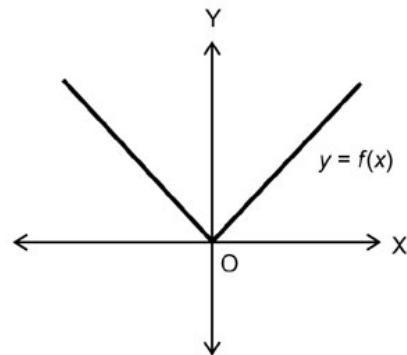
- (A) 20 (B) 25 (C) 30 (D) 42

26. The number of workers working on a job increases by 50% and the number of hours they work per day increases by 20%. By what percent should the wage per hour of each worker decrease so that there is no change in the total wage bill per day?

- (A) $37\frac{1}{2}\%$
 (B) $44\frac{4}{9}\%$
 (C) 35%
 (D) 40%

DIRECTIONS for questions 27 and 28: Answer the questions on the basis of the information given below.

The reflection of a graph in a line is done by treating the line as a 'mirror', exactly half way between each point on the graph and its corresponding reflection. Consider the graph of $f(x)$ given below and answer the following questions based on it.



27. The graph of $f(x)$ is reflected in the line $y - 1 = 0$, to obtain the graph of $g(x)$. In which of the following lines should the graph of $g(x)$ now be reflected to obtain the graph of $f(x)$?

- (A) $y + 1 = 0$
 (B) $y - 1 = 0$
 (C) $y + 2 = 0$
 (D) None of these

28. The graph of $f(x)$ is reflected in the line $y - 1 = 0$ and then this reflection is reflected in the line $y + 1 = 0$, to obtain the graph of $g(x)$, then which of the following is true of $f(x)$?

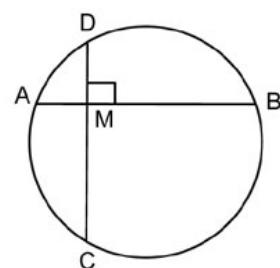
- (A) $f(x) = g(x) - 4$
 (B) $f(x) = g(x) + 3$
 (C) $f(x) = g(x) - 3$
 (D) $f(x) = g(x) + 4$

DIRECTIONS for questions 29 and 30: Answer the questions independently of each other.

29. X is a set of first 8 consecutive natural numbers. Find the number of ways in which a subset Y of X can be formed such that sum of elements of Y is divisible by 3?

- (A) 75 (B) 95 (C) 87 (D) 79

30. In the figure given below AB and CD are perpendicular chords of a circle which intersect at M.



If $MB = 18$ cm, $CM = 12$ cm and $DM = 6$ cm, then find the diameter (in cm) of the circle.

- (A) $2\sqrt{130}$
 (B) $3\sqrt{87}$
 (C) $4\sqrt{87}$
 (D) $\sqrt{130}$

DIRECTIONS for questions 31 to 33: Answer the questions on the basis of the information given below.

The table below gives details of all the models of cars at a car rental agency.

Model	Manufacturer	Classification	Engine Capacity (in cc.)	Plus Points of the Car	Minus Points of the Car
M800	Maruti	Entry Level	< 1000	Price, Fuel efficiency	Comforts, Space
Zen	Maruti	Small	1000 – 1300	Service, Fuel efficiency	Comforts, Space
Santro	Hyundai	Small	1000 – 1300	Price, Fuel efficiency	Design, Space
Ikon	Ford	Mid Size	1301 – 1500	Technology, Comforts	Service, Fuel efficiency
City	Honda	Mid Size	1301 – 1500	Technology, Comforts	Design, Price
Optra	General Motors	Executive	1501 – 1800	Comforts, Price	Engine, Fuel efficiency
Corolla	Toyota	Executive	1501 – 1800	Engine, Comforts	Design, Price
Accord	Honda	Luxury	1800+	Price, Space	Design, Fuel efficiency
C-Class	Mercedes	Luxury	1800+	Technology, Safety	Space, Price
Swift	Maruti	Mid Size	1301 – 1500	Design, Technology	Space, Price
Octavia	Skoda	Executive	1501 – 1800	Fuel efficiency, Price	Space, Service
Lancer	Mitsubishi	Executive	1501 – 1800	Price, Service	Technology, Comforts
Wagon R	Maruti	Small	1000 – 1300	Technology, Service	Design, Space
Camry	Toyota	Luxury	1800+	Space, Technology	Price, Fuel efficiency
Alto	Maruti	Entry Level	< 1000	Price, Fuel efficiency	Space, Comforts
Fiesta	Ford	Mid Size	1301 – 1500	Technology, Price	Space, Comforts
E-Class	Mercedes	Luxury	1800+	Technology, Comforts	Price, Fuel efficiency
Vectra	General Motors	Luxury	1800+	Technology, Comforts	Design, Space
Mondeo	Ford	Luxury	1800+	Engine, Comforts	Price, Service
Baleno	Maruti	Executive	1501 – 1800	Price, Service	Design, Comforts

The agency has three major clients – companies A, B and C – which regularly source cars from the agency. The specifications of cars required by each company are given below.

- | | | | |
|---|---|-------|-------|
| Company A: | <i>Any car with an engine capacity of more than 1300 cc. and with comforts or space as one of the plus points.</i> | | |
| Company B: | <i>All cars with a classification up to executive level (i.e., entry level, small, mid size and executive level) with good fuel efficiency (i.e., fuel efficiency must be one of the plus points of the car).</i> | | |
| Company C: | <i>Any car for which space or fuel efficiency is not one of its minus points.</i> | | |
| 31. If the agency has only one car of each model and Honda City and Toyota Corolla have already been sent to company A, then which of the following models of cars can be sent to company C? | | | |
| (A) Lancer | (B) Mondeo | | |
| (C) Baleno | (D) All of the above | | |
| 32. Which of the following models of cars cannot be sent to any of the three companies? | | | |
| (A) M800, Ikon, C-class, Wagon R | | | |
| (B) Swift, Wagon R, C-class, Fiesta | | | |
| (C) Swift, Alto, Fiesta, Baleno | | | |
| (D) Zen, Santro, Wagon R, Fiesta | | | |
| 33. How many different models of cars can be sent to more than one of the three companies? | | | |
| (A) 3 | (B) 4 | (C) 6 | (D) 2 |
| DIRECTIONS for questions 34 to 41: Answer the questions independently of each other. | | | |
| 34. Three beakers A, B and C contain milk solutions of different concentrations C_1 , C_2 , and C_3 respectively, where $C_2 < C_1 < C_3$. Each beaker contains two litres of milk solution. One litre of solution from A is now taken out and poured in B. Then, one litre of the new solution from B is taken and poured in C. Finally, if the concentration in exactly two of the three beakers is the same, which of the following statements must necessarily be true? | | | |
| (A) $4C_1 = 3C_2 + C_3$ | (B) $2C_2 = C_3 + C_1$ | | |
| (C) $4C_1 = C_2 + 3C_3$ | (D) $3C_3 = C_1 + 2C_2$ | | |
| 35. If $25 \leq p \leq 49$, and q is defined as $\frac{p^2 + 3\sqrt{p}(p+9)+81}{p+6\sqrt{p}+9}$, then which of the following is true of q ? | | | |
| (A) $18 \leq q < 36$ | (B) $19 < q \leq 37$ | | |
| (C) $20 \leq q < 45$ | (D) $19 \leq q < 38$ | | |
| 36. I am in a park which has a vertical tower at its centre. The angle of elevation of the top of the tower at a point A on the ground, due South of the tower, is 60° and the same at a point B on the ground, due West of the point A, is 30° . If the distance AB = 300 m, the height (in metres) of the tower is | | | |
| (A) $20\sqrt{3}$ | (B) $150\sqrt{3}$ | | |
| (C) $75\sqrt{6}$ | (D) $30\sqrt{30}$ | | |
| 37. Ganesh and Sarath were given a quadratic equation in x to solve. Ganesh made a mistake in copying the constant term of the equation and got a root as 12. Sarath made a mistake in copying the coefficient of x as well as the constant term and got a root as 2. Later, they realized that the mistakes they committed were only in copying the signs. The difference between the roots of the original equation is | | | |
| (A) 2 | | | |
| (B) 10 | | | |
| (C) 4 | | | |
| (D) Cannot be determined | | | |

38. 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?
 (A) $2\sqrt{2}$ (B) 4 (C) $4\sqrt{2}$ (D) 8
39. A hexagon is inscribed in a circle of radius 14 cm. Three of its sides are 22 cm each and the other three sides are all equal. Find the length of each of the other three sides.
 (A) 4 cm (B) 6 cm (C) 8 cm (D) 7 cm
40. There are 12 numbers, p_1, p_2, \dots, p_{12} , satisfying the condition $p_1 > p_2 > p_3 \dots p_{10} > p_{11} > p_{12}$. How many sets of the form (a, b, c), where $a > b > c$, can be formed from these 12 numbers?
 (A) 120 (B) 150 (C) 180 (D) 220
41. A trader sells cakes in economy packs of four cakes per pack, each pack being charged at the listed price of three cakes. For every set of five such packs bought by a customer, the trader gives him one extra cake as a free gift. If a customer buys 12 economy packs, what is the effective percentage of discount that he gets?
 (A) $35\frac{2}{7}\%$ (B) $28\frac{4}{7}\%$
 (C) $38\frac{8}{9}\%$ (D) 28%

DIRECTIONS for questions 42 to 44: Answer the questions on the basis of the information given below.

Coolshaw, an ice-cream company, conducted a survey in city X to assess the popularity of three of their brands – A, B and C. It was found that out of every 30 people who like A, 12 people like B as well. Out of every 50 people who like C, 30 like A as well and out of every 40 people who like B, 20 like A as well. It was also observed that the number of people who like only one of the brands is the same for each brand. Further, for every 10 people who like at least one of the brands, one person likes all the three and one person likes none of the three.

42. If a total of 280 people like only A, find the total number of people surveyed.
 (A) 2800 (B) 3080 (C) 2610 (D) 2600
43. If a total of 4081 people are surveyed, how many of them like exactly two brands?
 (A) 2208 (B) 2262 (C) 2244 (D) 2226
44. When the company included a question about their new brand D, x people said that they like D. Further, at most 7% of the people who like exactly two out of A, B, C also like D and at least 42% of the people who like only A also like D. If the number of people surveyed is 1001, find the minimum possible value of x.
 (A) 36 (B) 42 (C) 21 (D) 39

DIRECTIONS for question 45: Select the correct alternative from the given choices.

45. Find $6 + (6 + 12) + (6 + 12 + 18) + \dots + (6 + 12 + 18 + \dots + 6n)$.
 (A) $\frac{n(n+1)(n+2)}{6}$ (B) $n(n+1)(n+2)$
 (C) $3n(n+1)$ (D) $n(n+1)(n+3)$

DIRECTIONS for questions 46 and 47: Answer the questions on the basis of the information given below.

Three friends Lucky, Micky and Nicky started simultaneously, from three highway motels A, B and C respectively, towards a village F. The motels A and B lie on the same road connecting the motel C and the village F. Motel C is 20 km behind motel B, which, in turn, is 20 km behind motel A. Enroute, Nicky overtakes both Micky and Lucky at the same time at a motel D. They continue their journey and when Lucky was 45 km ahead of motel D, Micky was 15 km behind Nicky. At this moment, Micky doubled his speed while Lucky also increased his speed and finally all the three reached the village F at the same time.

46. What is the ratio of the speeds of Micky and Nicky?
 (A) 3 : 4 (B) 4 : 5 (C) 5 : 6 (D) 3 : 5
47. What is the distance between motel C and village F?
 (A) 200 km (B) 180 km
 (C) 150 km (D) 210 km

DIRECTIONS for questions 48 to 50: Answer the questions independently of each other.

48. A 100-digit number is multiplied by a 200-digit number and the product is multiplied with a 300-digit number. Which of the following cannot be the number of digits in the final product?
 (A) 597 (B) 598 (C) 599 (D) 600
49. What is the maximum number of planes that can be flying in a squadron of fighter planes, such that each plane in the squadron is equidistant from every other plane in the squadron?
 (A) 3 (B) 4 (C) 5 (D) 6
50. Let s be the semi-perimeter of a triangle with sides a, b, c . Then the value of $(s-a)(s-b)(s-c)$ is always
 (A) less than $\frac{abc}{8}$.
 (B) less than or equal to $\frac{abc}{8}$.
 (C) greater than $\frac{abc}{8}$.
 (D) greater than or equal to $\frac{abc}{8}$.

SECTION – II

Number of Questions = 50

DIRECTIONS for questions 51 to 55: Read the following passage and answer the questions that follow it.

In times of economic woe, "non-essential" programs and people are eliminated, and programs to support workers are often ended or drastically scaled back. Employee flexibility is typically considered one of these "luxuries." In tough markets, employees are supposed to work harder, longer and more devotedly to renew corporate vitality. These cost-cutting measures are not surprising. We might be awed by a layoff's magnitude, but are not astounded to see it used. Our acclimation to the items on the chopping block sheds light on the rigidity of work culture and the stigmas that keep work narrowly defined.

In many ways, work has not fundamentally changed since the 1950s, despite massive shifts in the workforce and industries. Technological advances have made global teams and remote work possible. Women have flooded into paid labour. The workplace contains more dual-earner couples, millennials and older workers -- groups that bring different values and needs into the workplace. Still, we continue to believe that "serious" workers are the ones who put in the most "face time" at the office, despite research documenting long hours' detrimental effects on creativity, accuracy and productivity. Why has change been so slow? And how can we think in new directions to create the future of work? These questions are being addressed this week at the Redesigning, Redefining Work Summit organized by the Clayman Institute for Gender Research at Stanford University. Outmoded approaches are hard to abandon, but workplace redesigns hold the key to prosperity, well-being and innovation.

One innovative initiative, the "Results Only Work Environment (ROWE)," which originated at Best Buy in 2005, emphasizes concrete work goals instead of physical time in the office. Managers are trained to know what deliverables to expect, which allows them to quickly identify underperforming employees. Unlike the "back-to-work" mandates of HP's and Yahoo!'s CEOs, ROWE focuses on **substantive** results, not face time. An in-depth study of ROWE found that it improved workers' productivity, satisfaction, and health.

Despite the evidence of ROWE's success, however, conventional wisdom prevailed; Best Buy returned to a face time model, requiring employees to do their work at the office. This traditional approach caters to the myth of the devoted employee with a stay-at-home spouse to care for his needs outside the office. In effect, eliminating ROWE pits flexibility against corporate goals, instead of in concert with them.

Eliminating "non-essential" workers is another staple of corporate turnarounds -- but this wasn't always the case. Consider the approach taken by W. K. Kellogg in 1930, in response to the Great Depression and war. The company implemented a six-hour workday and a 30-hour workweek. With each employee working fewer hours, Kellogg could keep more workers employed. Productivity was high, as was morale. Tellingly, this arrangement was halted in 1947, not because of business needs, but because of social stigma; after the Depression, shortened workdays became associated with women, so men who worked short days came to be seen as insufficiently masculine. The Kellogg example underscores the influence of social stigma on business decisions.

Another financial "solution" is cutting programs designed to engage women and minorities. Ending these programs reinforces the idea that a diverse workforce is somehow a "luxury," inessential to business success. The needs of women, minorities and those with physical limitations are seen as requiring "special accommodations" that the traditional workforce does not require and that companies cannot afford.

Global software giant, SAP, disagrees. This year, SAP announced a new partnership with Specialisterne to employ people with autism. Their rationale? Competitive advantage. SAP "leverag[es] the unique talents of people with autism, while also helping them to secure meaningful employment." Initial tests showed that integrating people with autism increased team productivity and cohesiveness. In other words, harnessing diverse talent can be mission-critical, not a luxury.

Companies' choices about what to put on the chopping block reveal a resistance to change that is rooted not in economic necessity, but in outdated mores, habits and assumptions. The workplaces that will prove the most successful five, ten or twenty years from now aren't the ones that deal with economic crisis by pretending it's 1950.

We face real barriers to redesigning work, but we also face a convergence of opportunities for new thinking about work's very nature. Those born today enjoy thirty years more life expectancy than those born 100 years ago, creating an opportunity to reimagine how work might be integrated into a new life course. "Digital natives" have never known a world without technology that allows them to bridge global gaps with the touch of a button. Creativity, not face time, can fuel entirely new industries like social media and social marketing. Make no mistake--the employees of the future will work every bit as hard as the employees of the past. But if companies use good judgment about which programs to axe and which ones to foster, tomorrow's workforce will have more independence and more scheduling control, and will be rewarded for smart, efficient, high-impact work. Employers will reap the benefits of an engaged, productive workforce where everyone -- millennials, men and women, older and younger workers, dual-income families, and people with diverse talents and needs -- will contribute and thrive.

54. According to the passage, the reason that Kellogg abandoned the 30-hour workweek was that
(A) the rate of absenteeism was very high.
(B) cultural conditioning clouded clear-headed thinking.
(C) women worked shorter hours than men.
(D) men wanted to redress the gender balance.

55. According to the author's contention, all of the following qualify as "non-essential" programs in an economic crisis EXCEPT?
(A) Flexible work policies.
(B) Redesigning the workplace to make women more comfortable.
(C) Integrating talented physically handicapped people into work teams.
(D) Retaining superannuated heads in consultancy positions.

DIRECTIONS for question 56: This question is followed by two statements, I and II. Answer the question using the following instructions:

- Mark (A) if the question can be answered by using statement I alone but not by using statement II alone.

Mark (B) if the question can be answered by using statement II alone but not by using statement I alone.

Mark (C) if the question can be answered by using both the statements together but not by either of the statements alone.

Mark (D) if the question cannot be answered on the basis of the two statements.

56. On which day of the week did Venus play?

 - I. 26th January of year X is a Sunday.
 - II. She played on 25th February of year X, 15 days before Serena, who played on Tuesday.

DIRECTIONS for questions 57 and 58: Answer the questions independently of each other.

57. Consequent upon the ban imposed by the Government on smoking in public places there has been a decline in the sales of tobacco products, with every seller reporting a reduction of twenty percent or more in sales volume. Smoking appears to be losing its appeal. The Government claims that this is solely due to its ban.

Which of the following, if true, would weaken the Government's claim?

- (A) Though the number of cigarettes smoked may have come down, there is an increase in the number of smokers.
 - (B) People continue to smoke in areas other than those notified as 'No smoking' areas.
 - (C) There has been ambiguity regarding the classification of areas as 'public places' and 'other places'.
 - (D) Prices of cigarettes have gone up by over fifty percent after the ban was imposed.

58. Journalists generally decry 'third degree methods' adopted by the police to extract confessions from the accused. They argue that other methods like interrogation and moral suasion are available to the

police to make the criminals confess to the crimes and hence the police should not resort to torturing them.

Which of the following, if true, would show that the arguments of the journalists are not founded on sound reasoning?

- (A) Relying on self-incriminating evidence alone is not viewed favourably by courts of law.
 - (B) Adoption of third degree methods to extract confession is not held illegal in the statute books.
 - (C) The methods recommended by journalists are effective when adopted by those who have studied psychology extensively.
 - (D) The normal tendency of any criminal is to lie – it's a survival technique.

DIRECTIONS for questions 59 and 60: The sentences/paragraphs given in the following question, when properly sequenced, form a contextually complete paragraph. One sentence/set of sentences is not part of the context. Each sentence/ set of sentences is labelled with a letter. From among the four choices given below the question select the one that, while it omits the contextually unconnected sentence, presents the most logically ordered and coherent paragraph.

DIRECTIONS for question 61: Answer the question independently of each other.

61. Each of four people – Amar, Anwar, Akbar, and Antony – appeared for interviews of three

DIRECTIONS for questions 62 to 66: Read the following passage and answer the questions given below it.

For the ancient Greeks, the liberal arts were the subjects thought necessary for a free man to study. If he is to remain free, in this view, he must acquire knowledge of the best thought of the past, which will cultivate in him the intellectual depth and critical spirit required to live in an informed and reasonable way in the present.

The division between vocational and liberal arts education, which began during the 19th century with the advent of the land-grant state universities in the United States, is today tilting further and further in favor of the vocational. Even within the liberal arts, more and more students are, in the words of Andrew Delbanco, Director of American Studies at Columbia University, "fleeing from 'useless' subjects to 'marketable' subjects such as economics," in the hope that this will lend them the practical credentials and cachets that might impress prospective employers.

Delbanco reminds us of Max Weber's distinction between "soul-saving" and "skill-acquiring" education. The liberal arts, in their task to develop a certain roundedness in those who study them and their function, in Delbanco's phrase, "as a hedge against utilitarian values," are (or at least were meant to be) soul-saving. Whether, in the majority of students who undertook to study the liberal arts, they truly were or not may be open to question, but what isn't open to question is that today, the liberal arts have lost interest in their primary mission. That mission, as Delbanco has it, is that of 'attaining and sustaining curiosity and humility,' while 'engaging in some serious self-examination.' John Henry Cardinal Newman had said that a liberal education 'implies an action upon our mental nature, and the formation of our character.'

Delbanco warns that it won't do to posit some ideal but antiquated golden age when higher education approached perfection. Surely he is correct. A good deal of the old liberal arts education was dreary. The profession of teaching, like that of clergyman and psychiatrist, calls for a higher sense of vocation and talent than poor humanity often seems capable of attaining. A liberal arts education does not hold a higher position in the world's regard today." One of the chief reasons for its slippage, which Delbanco fails directly to confront, is that so many of its teachers themselves no longer believe in it.

Also student evaluations, set in place to give the impression to students that they have an important say in their own education, are one of the useless intrusions into university teaching by the political tumult of the 1960s. Teaching remains a mysterious, magical art. Anyone who claims he knows how it works is a liar. No one tells you how to do it. You walk into a classroom and try to remember what worked for the teachers who impressed you, or, later in the game, what seemed to work best for you in the past. Otherwise, it is pure improv, no matter how extensive one's notes.

As a testimony to the difficulty of evaluating the quality of teaching, Professor Delbanco includes a devastating footnote about student evaluations. One study found that students tend to give good evaluations "to instructors who are easy graders or who are good looking," and to be hardest on women and foreign teachers; another, made at Ohio State University, found "no correlation between professor evaluations and the learning that is actually taking place." As Delbanco notes, the main result of student evaluations is to make it easier for students to avoid tough teachers or, through harsh reviews, punish these teachers for holding to a high standard.

companies One person got a job offer from all the three companies, another from two companies, the third from one company, while the fourth got from none. Below are some more facts about the number of job offers they got and the place from which each one of them came from:

- (i) The one who came from Madras didn't get as many job offers as Amar did.
 - (ii) The one who got job offers from two companies isn't Amar nor is he from Bangalore.
 - (iii) Antony came from Hyderabad.
 - (iv) Anwar didn't come from Madras and received more job offers than Amar.
 - (v) The person from Delhi got the most number of job offers.

Which of the following statements is necessarily true?

- (A) Amar came from Bangalore and got job offers from three companies.
 - (B) Amar is from Delhi and got a job offer from only one company.
 - (C) Antony came from Hyderabad and got job offers from two companies.
 - (D) Akbar, who is not from Madras, did not get any job offers.

I was not myself regarded as a tough teacher, but I prefer to think that I never fell below the line of the serious in what I taught or in what I asked of my students. What I tried to convey about the writers on whom I gave courses was, alongside the aesthetic pleasures they provided, their use as guides, however incomplete, to understanding life. Reading Joseph Conrad, Henry James, Leo Tolstoy, Fyodor Dostoyevsky, Willa Cather, and other writers I taught was important business—possibly, in the end, though I never said it straight out, more important than getting into Harvard Law School or Stanford Business School. When I taught courses on prose style, I stressed that correctness has its own elegance, and that, in the use of language, unlike in horseshoes, close isn't good enough; precision was the minimal requirement, and it was everything.

How many students found helpful what I was trying to convey I haven't the least notion. If anything I said during the many hours we were together mattered to them, I cannot know. Not a scholar myself, I never tried to make scholars of my students. A small number of them went on to do intellectual work, to become editors, critics, poets, novelists; a few became college teachers. Did my example help push them in their decision not to go for the money? Some of the brightest among them did go for the money, and have lived honorable lives in pursuit of it, and that's fine, too. A world filled with people like me would be intolerable.

DIRECTIONS for question 70 and 71: In the given questions, there are sentences. Each sentence has pairs of words/phrases that are italicized and highlighted. From the italicized and highlighted words/ phrases, select the words/ phrases to form correct sentences. Then from the options given, choose the best most appropriate one.

70. (i) The **sensual** (a) / **sensuous** (b) appeal **through** (a)/ **of** (b) the musical score ensured that it became a chart buster.
 (ii) I went to my friend's house to **condone** (a) / **condole** (b) with him on the loss of his father.
 (iii) When things began to go wrong, and as costs began to escalate **dizzily** (a) / **hazily** (b), there were bitter **recriminations** (a) / **reprobations** (b).
 (iv) **Mendicity** (a) / **Mendacity** (b) has disappeared in Sri Lanka, there are no beggars on the street.
 (A) bababa (B) bbbaaa
 (C) bbbaba (D) abaabb
71. (i) The latter part of the sentence which is **adverse** (a) / **adversative** (b) clearly negates the author's claim.
 (ii) In "The Wreck of the Deutschland", the author Gerard Manley Hopkins eschewed the **solecism** (a) / **solipsism** (b) he had presented in "Immortal Diamond", where his characters are utterly disregardful of the persons around them.
 (iii) When we decided not to permit outsourcing, that announcement was received with **derisory** (a) / **derisive** (b) laughter from those who advocated it as a panacea for our financial ills.
 (iv) A few crystalline substances are absolutely **insoluble** (a) / **indissoluble** (b) in water.
 (A) babb (B) bbaa
 (C) baba (D) abab

DIRECTIONS for question 72: The following question has a paragraph with one highlighted and italicized word that does not make sense. Choose the most appropriate replacement for that word from the choices given below the paragraph.

72. While excavating the tomb of an ancient queen at Ur in Iraq, a gold knob was found. When it was carefully removed, a hole was seen beneath it. This **casoeunted** that there was something made of wood which had been decayed and had turned to dust leaving only the hole there.
 (A) insinuated (B) approbated
 (C) ratcheted (D) expropriated

DIRECTIONS for question 73: In the question, the word given in capitals has been used in sentences in six different ways. Choose the option corresponding to the sentence(s) in which the usage of the word is **INCORRECT** or **INAPPROPRIATE**.

73. **GROUND**
 (a) Watson and Crick broke new ground when they determined the structure of DNA.

DIRECTIONS for questions 77 to 82: Read the following passage and answer the questions given below it.

Ultimately there are but three systems of ethics, three conceptions of the ideal character and the moral life. One is that of Buddha and Jesus, which stresses the feminine virtues, considers all men to be equally precious, resists evil only by returning good, identifies virtues with love and inclines in politics to unlimited democracy. Another is the ethic of

- (b) To meet someone on his own ground means to meet someone according to the terms that he has laid down himself.
 (c) The novice needed to learn the business up from the ground.
 (d) The researcher cut the ground from their feet and ensured that funding for his pioneering work was obtained.
 (e) After a stint in the corporate world, the professor was back on his own ground and covered new ground in every seminar.
 (f) The minister stood his ground in the midst of tough opposition to his plans.
 (A) c and d (B) a and d
 (C) b and f (D) c, d and e

DIRECTIONS for questions 74 to 76: Answer the questions on the basis of the information given below.

India played a total of five matches with Pakistan, of which two matches were played in India and three in Pakistan. India scored a different number of goals in each match among 1, 4, 5, 6 and 8 and conceded a different number of goals among 0, 1, 2, 4 and 6 in the five matches, not necessarily in that order. It is also known that

- (i) Pakistan scored 4 goals in one of the matches in Pakistan.
 (ii) Compared to one of the other matches, the number of goals scored by India in the 4th match is half of that scored in the other match and the number of goals conceded by India in the 4th match is also half of that conceded in the other match.
 (iii) The number of goals India conceded in one of the matches is thrice that it conceded in the match in which it scored 4 goals.
 (iv) India won the match in which it scored only one goal and it was played in Pakistan but it was not the 4th match.
 (v) The 3rd match is played in India, and the 4th match is played in Pakistan.
 (vi) Compared to the 1st match, in the 2nd match the number of goals scored by India is 2 less but the number of goals conceded is 2 more.
74. Which of the following combinations is true of the goals scored by Pakistan?
 (A) 2nd match – 4
 (B) 3rd match – 1
 (C) 4th match – 4
 (D) 1st match – 0
75. How many goals did India score in the first match?
 (A) 4 (B) 5 (C) 6 (D) 8
76. The matches that are played in India are the
 (A) 1st & 2nd (B) 2nd & 3rd
 (C) 3rd & 4th (D) None of these

Machiavelli and Nietzsche, which stresses the masculine virtues, accepts the inequality of men, relishes the risks of combat and conquest and rule, identifies virtue with power, and exalts a hereditary aristocracy. A third, the ethic of Socrates, Plato and Aristotle, denies the universal applicability of either the feminine or the masculine virtues; considers that only the informed and mature mind can judge, according to diverse circumstances, when love should rule and when power; identifies virtue, therefore, with intelligence; and advocates a varying mixture of aristocracy and democracy in government. It is the distinction of Spinoza that his ethic unconsciously reconciles these apparently hostile philosophies, weaves them into a harmonious unity and gives us, in consequence, a system of morals which is the supreme achievement of modern thought.

He begins by making happiness the goal of conduct, and he defines happiness very simply as the presence of pleasure and the absence of pain. But pleasure and pain are relative, not absolute, and they are not states, but transitions. "Pleasure is man's transition from a lesser state of perfection" (i.e., completeness or fulfillment) "to a greater." "Joy consists in this, that one's power is increased." "Pain is man's transition from a greater state of perfection to a lesser. I say transition; for pleasure is not perfection itself: if a man were born with the perfection to which he passes he would be without the emotion of pleasure. And the contrary of this makes it still more apparent."

"By emotion I mean the modifications of the body, whereby the active power of the said body is increased or diminished, aided or constrained, and also the ideas of such modifications." A passion or emotion is bad or good not in itself, but only as it decreases or enhances our power. "By virtue and power, I mean the same thing." A virtue is a power of acting, a form of ability, "the more a man can preserve his being and seek what is useful to him, the greater is his virtue." Spinoza does not ask a man to sacrifice himself to another's good, he is more lenient than nature. He thinks that egoism is a necessary corollary of the supreme instinct of self-preservation; "no one ever neglects anything which he judges to be good, except with the hope of gaining a greater good." This seems to Spinoza perfectly reasonable. "Since reason demands nothing against nature, it concedes that each man must love himself and seek what is useful to him, and desire whatever leads him truly to a greater state of perfection; and that each man should endeavour to preserve his being so far as in him lies." So he builds his ethic not on altruism and the natural goodness of man, like utopian reformers; nor on selfishness and the natural wickedness of man, like cynical conservatives, but on what he considers to be an inevitable and justifiable egoism. A system of morals that teaches a man to be weak is worthless; "the foundation of virtue is no other than the effort to maintain one's being, and man's happiness consists in the power of so doing."

Like Nietzsche, Spinoza has not much use for humility; it is neither the hypocrisy of a schemer or the timidity of a slave; it implies the absence of power – whereas, to Spinoza, all virtues are forms of ability and power. So is remorse a defect rather than a virtue. "He who repents is twice unhappy and doubly weak." But he does not spend so much time as Nietzsche in inveighing against humility; for "humility is very rare" and as Cicero said, even the philosophers who write books in its praise take care to put their names on the title page. **"One who despises himself is the nearest to a proud man," says Spinoza.** And whereas Spinoza dislikes humility, he admires modesty, and objects to a pride that is not "tenoned and mortised" in deeds. Conceit makes men a nuisance to one another: "the conceited man relates only his own great deeds, and only the evil ones of others"; he delights in the presence of his inferiors, who will gape at his perfections and exploits; and becomes at last the victim of those who praise him most; for "none are more taken in by flattery than the proud."

Spinoza's 'Ethics' is not to be merely read, Spinoza is to be studied; you must approach him as you would approach Euclid, recognizing that, in this work, a man has written down his lifetime's thought, with stoic sculptury, of everything superfluous. Do not think to find its core by running through his work rapidly. Read the book not all at once but in small portions at many sittings. And having finished it, consider that you have but begun to understand it. Read then some commentary, like Pollock's Spinoza, or Martineau's Study of Spinoza, or, better, both. Finally, read 'Ethics' again.

77. As presented in the passage, Spinoza's philosophy is unique because
- (A) he equates three major approaches to ethics into one holistic philosophy.
 - (B) he presents us with a path to happiness based on altruism and natural goodness.
 - (C) he has generated ideas which enable us to harmonize different approaches to ethics.
 - (D) he has provided us with system of analyses of morality.
78. Ethics of Socrates, Plato and Aristotle
- (A) advocates aristocracy as the most virtuous form of governance.
 - (B) identifies morality with analytical abilities.
 - (C) advocates divinity in governance systems.
 - (D) considers both masculine and feminine virtues always irrelevant.
79. According to Spinoza, egoism
- (A) leads to self-preservation.
 - (B) leads a person to a greater level of perfection.
- (C) is inevitable and should not be resisted.
(D) is justifiable and should be accepted.
80. Which of the following can be understood from the passage?
- (a) The opposite halves of crucial pairs – inside/outside, man/woman, reason/madness, signifier/signified, sybarite/abstemious – are relative transitions and not absolute states.
 - (b) Utopian reformers and cynical conservatives necessarily believe in a system of morals that teaches man to be weak.
 - (c) The blank in the second paragraph can be completed by: An emotion can neither be hindered nor removed except by a contrary and stronger emotion.
 - (d) The blank in the second paragraph can be completed by: But desires that arise from pleasure or pain which has reference to one or certain parts of the body has no advantage to man as a whole; to be ourselves, we must complete ourselves.

DIRECTIONS for questions 83 and 84: Answer the questions independently of each other.

83. What is the time observed in the mirror reflection of a clock when the clock shows 5 hours 45 minutes?
(A) 7 hours 15 minutes (B) 6 hours 15 minutes
(C) 7 hours 55 minutes (D) 6 hours 55 minutes

84. Each of the five men – A, B, C, D and E – is the husband of exactly one among five women – P, Q, R, S and T – not necessarily in the given order. Also,
(i) E is the spouse of Q or R.
(ii) D is the spouse of R or P.
(iii) A is the husband of Q.
(iv) if E is not the spouse of Q, then C is not the husband of T.

Which among the following is the correct combination of couples?

- (A) (A, Q), (B, S), (C, T), (D, P) and (E, R)
 (B) (A, Q), (B, T), (C, S), (D, R) and (E, P)
 (C) (A, Q), (B, T), (C, P), (D, P) and (E, S)
 (D) (A, Q), (B, T), (C, S), (D, P) and (E, R)

DIRECTIONS for question 85: In the question, a sentence with a missing part is given. From the choices, select the one which can go into the blank to make the sentence logically and grammatically coherent.

85. Art is _____; science can get along with talent but art requires genius.

(A) greater than that of science because the latter proceeds with laborious accumulation and cautious reasoning, when the former reaches its goal at once by intuition and presentation

- (B) greater than science because the latter proceeds with laborious accumulation and cautious reasoning, while the former reaches its goal at once by intuition and presentation
 - (C) greater than science because the latter proceeds by laborious accumulation and cautious reasoning, while the former reaches its goal at once by intuition and presentation
 - (D) greater than that of science because the latter proceeds with laborious accumulation and cautious reasoning, and that the former reaches its goal at once by intuition and presentation

DIRECTIONS for question 86: Identify the incorrect sentence or sentences.

DIRECTIONS for questions 87 to 89: Each question has a set of four sequentially ordered statements. Each statement can be classified as one of the following:-

- Facts, which deal with pieces of information that one has heard, seen or read, and which are open to discovery or verification (the answer option indicates such a statement with an 'F').
 - Inferences, which are conclusions drawn about the unknown, on the basis of the known (the answer option indicates such a statement with an 'I').
 - Judgements, which are opinions that imply approval or disapproval of persons, objects, situations and occurrences in the past, the present or the future (the answer option indicates such a statement with a 'J').

Select the answer option that best describes the set of four statements.

87. (a) The sixth century is known as the most turbulent and unsettling period in human history – the Roman Empire began to fall, civilizations in Persia, Indonesia and South America collapsed and major religions experienced considerable change as natural events were viewed as omens.

(b) Many of the social transformations resulted from widespread crop failures and the explosion of plague around the globe, which in turn were caused by major climatic changes.

(c) Beginning in about the year 535, according to historical and archaeological records, the weather was colder and drier, sunlight diminished, snow fell in summer and regions of persistent drought suffered floods.

(d) The beginning of the Dark Ages may have been a result of a massive volcanic eruption in the 6th century, according to a volcanologist at the Department of Energy's Los Alamos National Laboratory.

(A) FFFF (B) IJFF (C) FJFF (D) FIFF

- 88.** (a) Make no mistake, the principal enemies of the media in this country are the politicians.
 (b) Politicians try and manipulate us media people, plant stories on us, bribe us with access or cash, lead us up the garden path, entice us into camps and ensure we stay there, encourage us to make the transition from privileged spectators of the political theatre to active actors.
 (c) The politicians do everything in their power to subvert the media and obstruct it from performing its foremost task of attempting to keep the Indian democracy safe and clean.
 (d) Our fight is against the ladies and gentlemen in khadi and not against the men in black robes, who might look ridiculous and talk funny, but finally are our allies.
 (A) FFFF (B) FIJJ (C) JJJJ (D) FJJI
- 89.** (a) It is perhaps one of the biggest ironies of history that China, a country that once prided itself as the leader of the communist world should be pleading for the market economy status today.
 (b) Ever since its admission to the WTO in 2001 as a non-market economy, China has been wooing countries like India, the US and the EU to accord it market economy status with little effect, although some 60-odd countries have done so.
 (c) On the face of it, the reasons may seem largely economic, given the large-scale anti-dumping cases against it.
 (d) Authorities administering anti-dumping legislation on the basis of complaints from local firms can reject information provided by the Chinese companies on costs and prices because of their non-market economy status and turn to surrogate third countries with similar levels of development, to determine the 'fair' price of the product.
 (A) JJJJ (B) IFIJ (C) JFIF (D) FFJJ

DIRECTIONS for questions 90 to 92: Answer the questions on the basis of the information given below.

Four boys – B₁, B₂, B₃ and B₄ – and four girls – G₁, G₂, G₃ and G₄ – are sitting along two opposite sides of a rectangular table such that all the boys sit on the same side of the table and all the girls sit on the opposite side of the table and each boy faces one girl. B₁ and B₂ cannot be seated together. G₃ is to be seated facing B₂ and G₂ must sit facing B₄.

- 90.** If G₄ is seated facing B₃ and G₁ is not at an end of the row, then which of the following statements must be true?
 (A) G₁ is the only one seated between G₂ and G₄.
 (B) G₁ and G₃ are seated together.
 (C) G₃ is not at an end of the row.
 (D) B₃ is the only one seated between B₁ and B₂
- 91.** In how many distinct ways can the eight children be seated?
 (A) 36 (B) 24 (C) 48 (D) 16
- 92.** If B₄ is diagonally opposite to G₄, then which of the following statements is false?
 (A) B₃ is exactly opposite to G₁.
 (B) B₁ is diagonally opposite to G₂.
 (C) G₃ and G₄ are adjacent to each other.
 (D) B₂ and B₃ are adjacent to each other.

DIRECTIONS for question 93: This question is followed by two statements, I and II. Answer the question using the following instructions:

- | | |
|----------|--|
| Mark (A) | if the question can be answered using statement I alone but not by using statement II alone. |
| Mark (B) | if the question can be answered using statement II alone but not by using statement I alone. |
| Mark (C) | if the question can be answered using either of the statements alone. |
| Mark (D) | if the question can be answered by using both the statements together but not by either of the statements alone. |

- 93.** In an island, there live three types of tribes – Truth-Tellers, who always tell the truth, Liars, who always lie and Alternators, who always tell a truth and a lie, alternately, in any order. A, B and C are three persons who belong to that island. If A says "B and C belong to different tribes. I am an Alternator", to which tribe does C belong?

- I. B says "Both A and C are Truth-Tellers. I am not a Truth-Teller".
 II. C says "A is not a Truth-Teller. I am not a Liar".

DIRECTIONS for questions 94 and 95: There are two blanks in each of the following questions. From the pairs of words given below the sentences, choose the pair that fills the blanks most appropriately.

- 94.** The high-profile cases of harassment and bullying being brought against the BBC constitute a serious _____ of the management's _____ attitude to harassment.

- (A) pervicacity . . . peremptory
 (B) opprobium . . . contumelious
 (C) indictment . . . cavalier
 (D) vituperation . . . disdainful

- 95.** The _____ law of reciprocity _____ that if you operate your business with generosity and integrity, you will earn tremendous dividends.

- (A) steadfast . . . vindicates
 (B) abiding . . . pledges
 (C) immutable . . . guarantees
 (D) anomie . . . preponderates

DIRECTIONS for question 96: Read the following question and choose the best option that answers it correctly.

- 96.** The current spate of sting operations against politicians by the media only serves to boost the viewership of channels. Little or no money is ever recovered. The common man, crushed under the burden of taxes, gains nothing from such exposes. If TV channels are genuinely interested in addressing corruption, they need to target the various departments of the municipal corporations.

Which of the following is an assumption in the above paragraph?

- (A) Sting operations are the best means to keep a check on corruption.
- (B) The common man interacts more often with municipal authorities than with the higher echelons of the government.
- (C) TV channels create awareness about corruption.
- (D) Sting operations are important as they make the politicians cough up the money they had embezzled.

DIRECTIONS for questions 97 to 100: Answer the questions on the basis of the information given below.

Four cities – W, X, Y and Z – together have exactly 11 hotels, five of which, viz., P, Q, R, S and T, are five-star hotels and the rest, viz., A, B, C, D, E and F, are three-star hotels. Further, it is known that,

- (i) P and Q are situated in different cities and they are the only five-star hotels in the cities in which they are situated.
- (ii) E and F are the only hotels in city Y.
- (iii) P is not situated in the city which has the largest number of hotels.
- (iv) five-star hotels are situated in more number of cities than three-star hotels.
- (v) city Z has more number of five-star hotels than W, which does not have any three-star hotels.
- (vi) each city has a different number of hotels.

97. How many hotels are there in city Z?

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

98. Which of the above given conditions are sufficient (among themselves) to determine the number of hotels in city W?

- (A) Only (i) and (v)
- (B) Only (ii), (v) and (vi)
- (C) Only (i), (ii) and (v)
- (D) Only (i), (v) and (vi)

99. Which of the following statements is false?

- (A) There are three cities which have either only three-star hotels or only five-star hotels.
- (B) There are exactly three cities which have five-star hotels.
- (C) There are only two cities which have three-star hotels.
- (D) The difference between the number of hotels in city X and city Z is same as the difference between the number of hotels in city W and city Y.

100. If a tourist wants to visit all the four cities and stay in a hotel in each of the cities, which of the following cannot be the order in which he visits these four cities, given that he should not make more than one change in the kind (three-star or five-star) of hotel in which he stays?

- (A) Y, X, W, Z
- (B) Z, Y, W, X
- (C) Y, W, X, Z
- (D) W, X, Z, Y

(Key and Solutions for AIMCAT1511N)

Key

SECTION – I

1. C	6. B	11. C	16. C	21. D	26. B	31. D	36. C	41. D	46. B
2. A	7. B	12. D	17. B	22. D	27. B	32. B	37. A	42. B	47. A
3. B	8. D	13. D	18. D	23. A	28. D	33. A	38. C	43. D	48. A
4. A	9. A	14. A	19. A	24. A	29. C	34. C	39. A	44. D	49. B
5. A	10. C	15. C	20. C	25. C	30. A	35. D	40. D	45. B	50. B

SECTION – II

51. C	56. B	61. C	66. C	71. C	76. B	81. C	86. C	91. B	96. B
52. C	57. A	62. B	67. D	72. A	77. C	82. B	87. D	92. C	97. D
53. A	58. D	63. D	68. B	73. A	78. B	83. B	88. C	93. C	98. C
54. B	59. C	64. A	69. A	74. B	79. D	84. D	89. A	94. C	99. D
55. D	60. A	65. D	70. B	75. D	80. A	85. C	90. A	95. C	100. B

Solutions

SECTION – I

Solutions for questions 1 to 4:

1. $\frac{x^2 - \frac{2x}{3} + 1}{ax^2 + bx + 1} > 0 \Rightarrow \frac{\left(x - \frac{1}{3}\right)^2 + \frac{8}{9}}{ax^2 + bx + 1} > 0$

As $\left(x - \frac{1}{3}\right)^2 + \frac{8}{9}$ is positive, $ax^2 + bx + 1 > 0$

The inequality with the solution set $x < -2$ or $x > -\frac{1}{2}$ is $(x +$

$$2) \left(x + \frac{1}{2}\right) > 0$$

$$\Rightarrow x^2 + \frac{5}{2}x + 1 > 0$$

$\Rightarrow ax^2 + bx + 1 > 0$ and $x^2 + \frac{5}{2}x + 1 > 0$ have the same

solution.

Now, since the constant term is the same in both quadratic expressions (i.e., L.H.S.), the two expressions must be identical.

$$\Rightarrow a = 1 \text{ and } b = \frac{5}{2}$$

$$\therefore a + b = 3.5$$

Choice (C)

2. I) $\angle PQR = \frac{360^\circ - \angle PSR}{2}$

$$2\angle PQR + \angle PSR = 360^\circ \quad \text{(1)}$$

If PQRS is a cyclic quadrilateral,

$$\angle PQR + \angle PSR = 180^\circ \quad \text{(2)}$$

Subtracting (2) from (1), $\angle PQR = 180^\circ$, which cannot be true since P, Q and R lie on a circle.

\therefore I is definitely false.

Alternative Solution:

For PQRS to be cyclic the circle drawn through P, Q and R must pass through S. However, S does not lie on the circle drawn through P, Q and R.

Note: Only one circle can be drawn through any set of three (non-collinear) points on a plane.

II) Angles in the same segment are equal

$$\therefore \angle RPT = \angle QST \quad \text{(1)}$$

In $\triangle PTR$ and $\triangle QTS$,

$\angle T$ is common $\quad \text{(2)}$

From (1) and (2), $\triangle RPT$ and $\triangle QST$ are similar

\therefore II is not false.

\therefore Only statement I is definitely false. Choice (A)

3. Let the normal speed of the bird be u km/hr and the speed at which the wind blows be v km/hr.

$$\frac{15}{u-v} - \frac{15}{u+v} = 9 \text{ and } \frac{15}{2u-v} - \frac{15}{2u+v} = \frac{3}{2}$$

Let $u = kv$

$$\frac{1}{k-1} - \frac{1}{k+1} = \frac{3v}{5} \quad \text{---- (1) and}$$

$$\frac{1}{2k-1} - \frac{1}{2k+1} = \frac{v}{10} \quad \text{---- (2)}$$

$$\text{Dividing (1) by (2) we get } \left(\frac{2}{k^2-1}\right) \left(\frac{4k^2-1}{2}\right) = 6$$

$$\Rightarrow 4k^2 - 1 = 6(k^2 - 1) \Rightarrow 2k^2 - 5 \Rightarrow k^2 = 5/2$$

Putting $k^2 = 5/2$ in (1),

$$\text{we get } \frac{3v}{5} = \frac{2}{\frac{5}{2}-1} \Rightarrow v = \frac{20}{9} = 2\frac{2}{9} \text{ km/hr}$$

Choice (B)

4. Given $Q\left(\frac{-4}{3}, \frac{16}{3}\right)$ is the reflection of $P\left(\frac{10}{3}, \frac{-10}{3}\right)$ on a

line (say $L = 0$)

Now the foot of the perpendicular (R) drawn from Q on $L = 0$ is the midpoint of PQ.

$$\therefore R = \left[\frac{\frac{10}{3} - \frac{4}{3}}{2}, \frac{\frac{-10}{3} + \frac{16}{3}}{2} \right] = \left(\frac{2}{2}, \frac{2}{2} \right) = (1, 1)$$

Choice (A)

Solutions for questions 5 and 6:

5. Since the given base is 5, the remainder rule for 4 is similar to the remainder rule for 9 that we have in base 10.
 When a number is expressed in base 5, the four's remainder of the number is equal to the fours remainder of the sum of the digits of the number.
 Given $N = 2323\dots23$ (100 digits)
 Sum of the digits in our base of 10 is 250.
 The 4's remainder of 250 is 2. [We can verify that if 250 is expressed in base 5, i.e. $(2000)_5$ the sum of the digits (i.e. 2) has the same 4's remainder]
 This means that when N itself is divided by 4, the remainder is 2.
 $\therefore N^{4231}$ leaves a remainder of 0 when divided by 4.

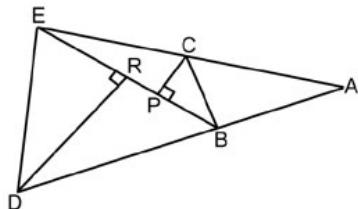
Alternative Solution:

The number N is of the form $2 \times 5^{99} + 3 \times 5^{98} + 2 \times 5^{97} + \dots + 3 \times 5^2 + 2 \times 5^1 + 3 \times 5^0 = 2(5^{99} + 5^{97} + \dots + 5^1) + 3(5^{98} + 5^{96} + \dots + 5^0) = 2 \times (\text{even number}) + 3(\text{even number}).$
 Hence N is an even number. Any even number raised to a power of 2 or more will definitely be divisible by 4.
 Choice (A)

6. In the given options other than 1423, all other numbers are divisible by 3. 1423 leaves a remainder 1 when divided by 3. Hence $(1423)^{2143}$ leaves remainder 1 when divided by 3.
 $\therefore (1423)^{2143}$ is not even.
 Note: In order to check out the remainders of each option, first convert them into base 10 and apply the remainder rule for three.
 For example $(1423)_5 = (238)_{10}$
 Clearly 238 divided by 3 leaves a remainder of 1 and hence $(1423)^{2143}$ leaves remainder 1 when divided by 3.
 Choice (B)

Solution for question 7:

7.



As $BC \parallel ED$, we can consider EB as a transversal between the two parallel lines.

Hence the angles $\angle CBE = \angle DEB$ and $\angle EDR = \angle BCP$ (because DR and PC are parallel to each other). Hence $\triangle EDR$ and $\triangle BCP$ are similar.

Also as $BC \parallel ED$, by basic proportionality theorem

$$\frac{BC}{ED} = \frac{AB}{AD}$$

$$\text{Hence } \frac{BC}{ED} = \frac{3}{10}$$

$$\frac{\text{Area of } \triangle EDR}{\text{Area of } \triangle BCP} = \left(\frac{BC}{ED} \right)^2 = \frac{9}{100} \quad \text{Choice (B)}$$

Solutions for questions 8 to 11:

8. Here we have to find out the production of rice and wheat (i.e. food grains) as a percentage of total crop production. Let the total crop production be $100x$.
 Kharif production = 75%; Rabi production = 25x
 Kharif food grains = 45x; Rabi food grains = 7.5x
 Total food grains = 52.5x
 \therefore Choice (D)
9. In this problem the actual value is not important.
 \therefore The relevant productions of total food grains of Kharif.
 $2008 - 50\% \text{ of } 40\% \text{ of } x = 0.2 \times X$

$$\begin{aligned} 2009 - 60\% \text{ of } 44\% \text{ of } (1.1)x &= 0.264 \times (1.1)x \\ 2010 - 55\% \text{ of } 60\% \text{ of } (1.1)^2 x &= 0.33 \times (1.1)^2 x \\ 2011 - 62\% \text{ of } 50\% \text{ of } (1.1)^3 x &= 0.31 \times (1.1)^3 x. \end{aligned}$$

By observation, the highest increase was in 2008 to 2009.
 Choice (A)

10. Let the total crop in 2008 be 100
 \Rightarrow total crop in 2010 = $(100 + 100)\% \text{ of } 100 = 200$
 \therefore required ratio = $\frac{75\% \text{ of } 60\% \text{ of } 200}{50\% \text{ of } 100} = 1.80$
 \therefore it is 80% more. Choice (C)

11. The production of Wheat in Rabi in 2011 = 38% of total food grains.
 $= 38\% \text{ of } 80\% \text{ of } 48\% \text{ total crop in } 2011 = 0.76$ (given)
 Hence, 52% of total crop = $\frac{0.52}{0.38 \times 0.80 \times 0.48} \times 0.76$
 $= 2.71$ Choice (C)

Solutions for questions 12 to 15:

12. In order to minimise the value of k , we need to construct the given cuboid using smaller cubes, but each of which is as large as possible. This construction is diagrammatically explained below:

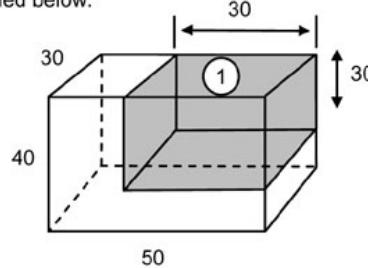


Fig (i)

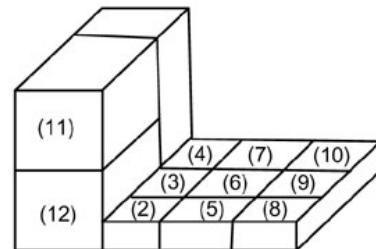


Fig (ii)

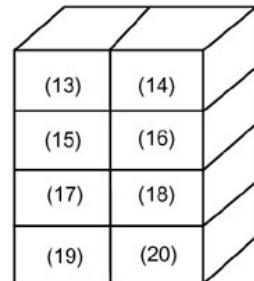


Fig (iii)

In fig (i) a cube of size 30 cm [Cube (1)] is removed and the remaining portion of the cube is shown in fig (ii). In fig (ii) there are 9 small cubes of size 10 cm each. [Cubes (2-10)] and two cubes of size 20 cm [Cube (11) and Cube (12)] are removed and the remaining portion is shown in fig (iii), which consists of exactly 8 small cubes of size 10 cm each, as shown [Cubes (13-20)].
 \therefore We get a minimum of 20 cubes.

Choice (D)

13. Let the required value be x .

$$\frac{1}{6 + \frac{1}{2+x}} = x \Rightarrow \frac{2+x}{6(2+x)+1} = x \Rightarrow 6x^2 + 12x - 2 = 0$$

$$\Rightarrow x = \frac{-12 \pm \sqrt{192}}{12}$$

Also it can be observed that the given expression has all positive terms.

$\therefore x$ is positive

$$\frac{-12 - \sqrt{192}}{12} \text{ is negative, while } \frac{-12 + \sqrt{192}}{12} \text{ is positive.}$$

$$\therefore x = -\frac{-12 + \sqrt{192}}{12} = \frac{-3 + 2\sqrt{3}}{3} \quad \text{Choice (D)}$$

14. $f(x) = (x-3)(x-5)(x-7) + k^2(x-4)(x-6)(x-8)$

$$f(3) = 0 + k^2(-1)(-3)(-5) = -ve$$

$$f(4) = 1(-1)(-3) + 0 = +ve$$

$$f(5) = 0 + k^2(1)(-1)(-3) = +ve$$

$$f(6) = (3) \times (1) \times (-1) + 0 = -ve$$

$$f(7) = 0 + k^2(3)(1)(-1) = -ve$$

$$f(8) = 3 \times 3 \times 1 + 0 (0) = +ve$$

\therefore There are 3 real roots, one each between (3, 4), (5, 6), and (7, 8) respectively. Choice (A)

15. All the external angles are also integers in arithmetic progression and their sum is 360° . We list the factors of 360 in pairs below.

1×360	8×45
2×180	9×40
3×120	10×36
4×90	12×30
5×72	15×24
6×60	18×20

If we assume that, in each pair of factors, one factor represents the number of sides, the other would represent the average of all the external angles, in degrees.

The cases with 1 side and 2 sides are excluded.

The possible values of n and one set of possible values of some of the external angles are tabulated below.

(n)	(External angles)
3	100, 120, 140
4	60, 80, 100, 120
5	48, 60, 72, 84, 96
6	10, 30, 50, 70, 90, 110
8	38, 40, 42, 44, 46, 48, 50, 52

and so on till $N = 18$

Hence 10 possible values of n exist. Choice (C)

Solutions for questions 16 to 20:

Since the pigments have to be completed in the order P_1, P_2, P_3 and P_4 and each task has to be done by the machines in the order G, H, M, N and T.

(minutes)

Machine	Pigment			
	P_1	P_2	P_3	P_4
G	5	24	20	24
H	22.5	15	24	12
M	10	24	22.5	24
N	15	24	10	24
T	24	10	24	22.5

Let us make a table representing the time after which each of the tasks will be completed by the machines.

(minutes)

Machine	Pigment			
	P_1	P_2	P_3	P_4
G	5	29	49	73
H	27.5	44	73	85
M	37.5	68	95.5	119.5
N	52.5	92	105.5	143.5
T	76.5	102	129.5	166

In the first five minutes machine G is working on P_1 , while all other machines are idle. After five minutes machine G starts P_2 while machine H starts P_1 . After machine H finishes P_1 , it is taken up by machine M and machine H starts P_2 . So also even though machine H finishes P_1 after 27.5 minutes it cannot take up P_2 then, as machine G would still be working on it and will finish P_2 only after 29 mins. Then machine H starts with P_2 and so on.

And looking at the table, in the first and second rows we can see that after doing a particular pigment machine H always has to wait for machine G to complete the next pigment, so that machine H can take up that particular task.

\therefore Machine G has to do the pigments in the order P_1, P_2, P_3, P_4 and then again P_1 or in other words machine G cannot do the same pigment (say P_1) consecutively.

\therefore All machines follow the order P_1, P_2, P_3, P_4 and then again P_1 for the next unit of the dye.

So the slowest machine, T will start P_1 of the second unit of the dye after exactly 166 mins and will finish P_4 after $166 + (24 + 10 + 24 + 22.5) = 166 + 80.5$ mins, after the first unit of dye is finished. All subsequent units of the dye are produced after an interval of 80.5 minutes (time for T to complete the four pigments). Further verification can be done by tabulating the production time of the pigments for the second unit of dye. This can be done by adding four additional columns to the right of the above table – for P_1, P_2, P_3 and P_4 – and continuing the procedure of filling in the times subject to machine availability and raw material availability.

16. From the table given, the first dye is completed in 166 minutes. Choice (C)

17. If 'n' units are produced

$$166 + (80.5)n < 1440$$

maximum value of 'n' = 15

Maximum number of units produced in a day = $15 + 1 = 16$. Choice (B)

18. $\frac{(73 + 73.5 + 80.5 + 73 + 30.5) \times 16}{1440 \times 5} \times 100 = 84.5\%$ Choice (D)

19. N takes only 73 mins to finish all the four pigments, while corresponding times for H, N and T are 73.5, 80.5 and 80.5 minutes respectively.

\therefore N is idle for the maximum amount of time in a day. Choice (A)

20. One unit of dye is produced in the first 166 minutes.

By 143.5 minutes N completed the work on first dye. In these 143.5 minutes, N worked for $15 + 24 + 10 + 24 = 73$ minutes. \therefore It is idle for $143.5 - 73 = 70.5$ minutes. By the time $t = 143.5$ minutes M would have already (by $t = 129.5$ minutes in fact) processed another unit of P_1 and N can start off on P_1 immediately and work till $143.5 + 15 = 158.5$ minutes. By 153.5 minutes M would pass another unit of P_2 to N and N can immediately start of P_2 and work on it from $t = 158.5$ to $158.5 + 24 = 182.5$ minutes. It is not idle after 143.5 minutes.

\therefore The total time for which it is idle is 70.5 minutes.

Choice (C)

Solutions for questions 21 and 22:

21. There are all together x questions. The number of students who made 1 or more mistakes is 2^{x-1} . The number of students who made 2 or more mistakes is 2^{x-2} and so on.... Finally the number of students who made x mistakes is 2^0 . We may imagine that these numbers represent mistakes rather than students. Specifically, we may imagine that the number 2^{x-1} represents the first mistakes of all the students who made 1 or more mistakes. Similarly, 2^{x-2} represents the second mistakes of students who made 2 or more mistakes and so on. Finally, 2^0 represents the x^{th} mistake of the only student who made x mistakes.

Thus, the total number of mistakes is $2^0 + 2^1 + \dots + 2^{x-1} = 2^x - 1 = 8191$ (given)

$\therefore x = 13$ Choice (D)

22. Let the two digit number be 'xy', which is 18 less than square of the sum of the digits.
 $\therefore 10x + y = (x + y)^2 - 18$
 $\Rightarrow (x + y)^2 = (10x + y) + 18$
Since $10x + y$ is a 2 digit number, it can be at most 99.
 $\therefore (x + y)^2$ can be at most $99 + 18 = 117$.
 $(x + y)^2$ could represent all perfect squares below 117.
The possible two – digit numbers which are 18 less than 100, 81, 64, 49, 36, 25 are as follows:
 $100 - 18 = 82 = (8 + 2)^2 - 18$
 $81 - 18 = 63 = (6 + 3)^2 - 18$
 $64 - 18 = 46 \neq (4 + 6)^2 - 18$
 $49 - 18 = 31 \neq (3 + 1)^2 - 18$
 $36 - 18 = 18 \neq (1 + 8)^2 - 18$
 $25 - 18 = 7$ is not a two digit number.
 \therefore There exist only two numbers, 82 and 63.

Choice (D)

Solutions for questions 23 and 24:

23. Statement I alone is sufficient to answer the question, while from statement II, we cannot find the cost of the oven because there is no information about whether a discount is given or not before selling.
Choice (A)

24. Let the age of the son after 'x' years be 'y' years.

$$\text{From A, } 6y - 4y = 16$$

$$y = 8$$

$$y + 4y + 6y = 11y = 88$$

Statement I alone is sufficient.

The age of the son after 'x' years will be '2x' years.

$$2x + 4(2x) + 6(2x) = 22x \text{ years}$$

As x is not known, statement II alone is not sufficient.

Choice (A)

Solutions for questions 25 and 26:

25. In order for no two of them to get adjacent parts, two of them must have taken exactly two parts each and the third must have taken one part.
There are 5C_2 ways of selecting two parts by the first person. Of these, 5 ways will be ways of selecting adjacent parts.
 $\therefore {}^5C_2 - 5 = 5$ ways will be ways of selecting non-adjacent parts for the first person.

Among the remaining three parts, two parts will be adjacent. Hence, the second person can choose two non-adjacent parts in only two ways. The third person gets the remaining part.

Also, the order of the first, second and third persons can be taken in ${}^3P_3 = 6$ ways, of which all the cases where the two persons receive two pieces each will get repeated once.

Hence, only $\frac{6}{2} = 3$ distinct orders of persons are possible.

\therefore Total number of ways = $(3)(5)(2) = 30$. Choice (C)

26. The data is tabulated below.

	Number of Workers	Hours/day	wages of each worker/hr
Before	$2n$	x	y
After	$3n$	$1.2x$	ky

If there is to be no change in the total wage bill per day
 $(2n)xy = (3n)(1.2x)(ky)$

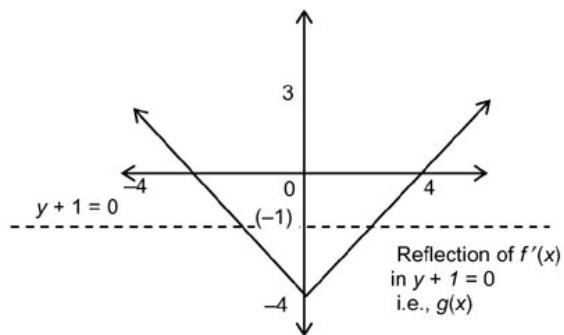
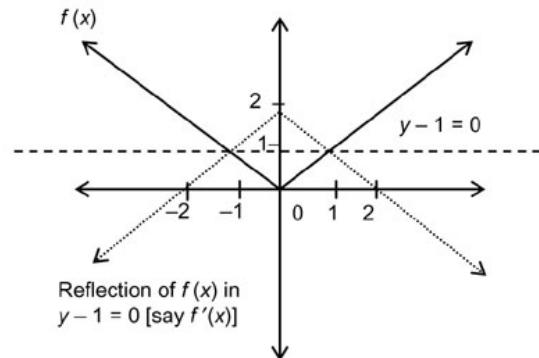
$$\Rightarrow \left(\frac{2}{3}\right)\left(\frac{1}{12}\right) = k \Rightarrow k = \frac{20}{36} = \frac{5}{9}$$

i.e., The wages per hour have to decrease by $\frac{4}{9}$ or
44.44%. Choice (B)

Solutions for questions 27 and 28:

27. In order to get the same graph, i.e., to nullify the effect of the first reflection, the graph should be reflected in the same mirror as in the first case.
Choice (B)

28. Since the two reflections take place in parallel mirrors, the shape is retained but the graph is vertically displaced.



Hence, as observed for the graphs $f(x) = g(x) + 4$.

Choice (D)

Solutions for questions 29 and 30:

29. The numbers can be categorized as

$3k + 1$	$3k + 2$	$3k$
1, 4, 7	2, 5, 8	3, 6

Consider $3k + 1$ and $3k + 2$ form of numbers.

$3k + 1$	$3k + 2$	Number of ways
1	1	${}^3C_1 \times {}^3C_1$
2	2	${}^3C_2 \times {}^3C_2$
3	3	${}^3C_3 \times {}^3C_3$
3	0	${}^3C_3 \times {}^3C_0$
0	3	${}^3C_0 \times {}^3C_3$
0	0	${}^3C_0 \times {}^3C_0$

\therefore Total number of ways in which numbers of the first two categories can be selected.

$$= [{}^3C_1 \times {}^3C_1 + {}^3C_2 \times {}^3C_2 + {}^3C_3 \times {}^3C_3 + {}^3C_3 \times {}^3C_0 + {}^3C_0 \times {}^3C_3]. \text{ Each number of form } 3k \text{ has 2 choices.}$$

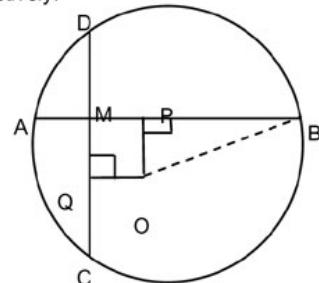
\therefore The total number of subjects of the required kind

$$= [9 + 9 + 1 + 1 + 1] \times 2^2 = 22 \times 4 = 88$$

\therefore Excluding the one case when the subset is a null set, we get $88 - 1 = 87$ subsets.

Choice (C)

30. Let O be the centre of the circle. Draw perpendiculars from O on AB and CD which meet (bisect) AB and CD at P and Q respectively.



In any circle, if two of its chords. (Say AB and CD) intersect at (say M), then $(AM)(MB) = (CM)(MD)$
 $\Rightarrow AM(18) = (12)(6) \Rightarrow AM = 4 \text{ cm}$

Consider $\triangle OPB$, $OP = QM = CM - CQ = CM - \frac{CD}{2}$
 $12 - \frac{18}{2} = 3 \text{ cm}$ and $PB = \frac{AB}{2} = \frac{AM + MB}{2} = \frac{4 + 18}{2} = 11 \text{ cm}$
 $\therefore \text{radius } OB = \sqrt{OP^2 + PB^2} = \sqrt{9 + 121} = \sqrt{130} \text{ cm}$
 $\therefore \text{Diameter of the circle is } 2\sqrt{130} \text{ cm. Choice (A)}$

Solutions for questions 31 to 33:

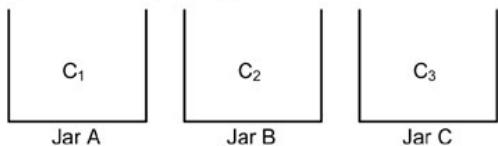
The different models which can be sent to the companies are

Company A	Company B	Company C
Ikon	M800	City
City	Zen	Corolla
Optra	Santro	Lancer
Corolla	Octavia	Mondeo
Accord	Alto	Baleno
Camry		
E-class		
Vectra		
Mondeo		

31. The cars which can be sent to company C are City, Corolla, Lancer, Mondeo and Baleno. So, as City and Corolla are sent to company A, any of the remaining cars can be sent to company C.
 Choice (D)
32. Swift, Wagon R, C-class and Fiesta cannot be sent to any of A, B or C.
 Choice (B)
33. Only Honda City, Toyota Corolla and Ford Mondeo can be sent to more than one company.
 Choice (A)

Solutions for questions 34 to 41:

34. Consider the three beakers A, B, C and their concentrations C_1 , C_2 and C_3 respectively, where $C_2 < C_1 < C_3$.



Since it is given that finally the concentration of exactly two of the three beakers is the same, either (i) the final concentration of B is equal to that of C, OR (ii) the final concentration of C equals that of A (Note that the concentration of A remains unchanged) OR (iii) the final concentration of A is equal to that of B. Now, since the initial concentrations of A and B are distinct, the final concentration of B cannot be equal to that of A.

Final concentration in Jar B = $\frac{C_1 + 2C_2}{3}$, which will lie between C_1 and C_2 and hence definitely not be equal to C_3 .

Also, since in the last transfer, some of the contents of B are poured into C, whose concentration is C_3 , (both contents of different concentrations), the final concentrations of B and C cannot be the same.

Hence, the only possible left is that the new concentration

of C = $\frac{\left(\frac{C_1+2C_2}{3}\right) + 2C_3}{3}$ must be equal to the concentration of A, i.e., C_1 .

Therefore $C_1 = \frac{C_1+2C_2+6C_3}{9}$

$\Rightarrow 8C_1 = 2C_2 + 6C_3$

$\Rightarrow 4C_1 = C_2 + 3C_3$

Choice (C)

$$35. q = \frac{p^2 + 3p\sqrt{p} + 27\sqrt{p} + 81}{p + 6\sqrt{p} + 9}$$

$$= \frac{p\sqrt{p}(\sqrt{p} + 3) + 27(\sqrt{p} + 3)}{(\sqrt{p} + 3)^2} = \frac{p\sqrt{p} + 27}{\sqrt{p} + 3} = p - 3\sqrt{p} + 9$$

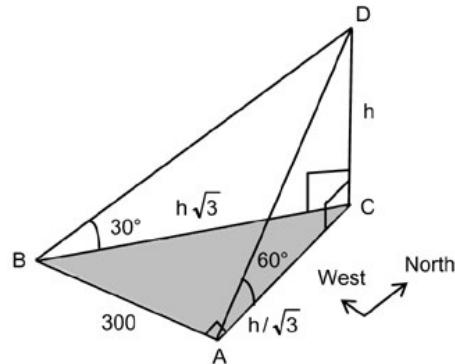
[$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$]

$$= \left(p - 3\sqrt{p} + \frac{9}{4}\right) + \left(\frac{27}{4}\right) = \left(\sqrt{p} - \frac{3}{2}\right)^2 + \frac{27}{4}$$

As p increases from 25 to 49, q increases monotonically from 19 to 37.

$\therefore q$ satisfies only the condition (5) i.e., $19 \leq q < 38$.
 Choice (D)

36. Let CD be the tower of height = h metres.
 Given $\angle DAC$ (i.e.) elevation of tower at point 'A' is 60°



Since the second point is due west of A [C is north of A]
 $\therefore \angle CAB = 90^\circ$

From $\triangle ADC$:

$$AC = h \cot 60^\circ = \frac{h}{\sqrt{3}} \rightarrow (1)$$

In $\triangle CBD$:

$$BC = h \cot 30^\circ = h\sqrt{3} \rightarrow (2)$$

Applying Pythagoras theorem for ABC;
 $BC^2 = AB^2 + AC^2$

$$\Rightarrow (h\sqrt{3})^2 = (300)^2 + \left(\frac{h}{\sqrt{3}}\right)^2$$

$$\Rightarrow \frac{8}{3}h^2 = (300)^2$$

or

$$h = 75\sqrt{6}$$

Choice (C)

37. Let the correct equation be $x^2 + bx + c = 0$
 \therefore The equation copied by Ganesh would have been,

$$x^2 + bx - c = 0$$

and the equation copied by Sarath would have been

$$x^2 - bx - c = 0$$

(as the mistakes were committed only in the signs)

\therefore According to Ganesh's equation, 12 is a root.

$$\therefore 144 + 12b - c = 0 \rightarrow (1)$$

According to Sarath's equation, 2 is a root

$$\therefore 4 - 2b - c = 0 \rightarrow (2)$$

(1) - (2) gives

$$14b = -140$$

$$\Rightarrow b = -10$$

Substituting the value of b in (2),

$$2b = 4 - c \Rightarrow -20 = 4 - c$$

$$c = 24$$

\therefore The correct equation is $x^2 - 10x + 24 = 0$

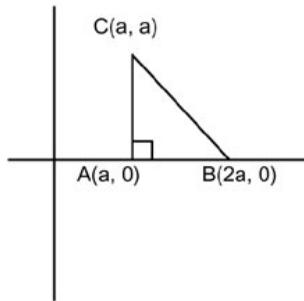
$$\Rightarrow (x - 6)(x - 4) = 0$$

$$x = 6, \text{ or } x = 4$$

\therefore difference between its roots is 2.

Choice (A)

38.



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

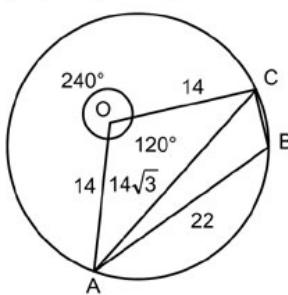
\therefore ABC is a right angled isosceles triangle

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

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

Choice (C)

39. Three sides of the hexagon are of length a ($a = 22$ cm) and the other 3 sides are of length b . If α and β are the angles that each side of length a and b subtend at the centre $\alpha + \beta = 120^\circ$ ($\because 3(\alpha + \beta) = 360^\circ$)



At least one side of length a and one of length b have to be adjacent. Say $AB = a$ and $BC = b$.

Since $\angle COA = 240^\circ$, $\angle ABC = 120^\circ$

$$\therefore AC = \sqrt{3}(\text{radius}) = 14\sqrt{3} \text{ cm}$$

$$\text{In } \triangle ABC, AB^2 + BC^2 - 2(AB)(BC) \cos 120^\circ = AC^2$$

$$\Rightarrow a^2 + b^2 + ab = (14\sqrt{3})^2 = 588$$

$$\Rightarrow b^2 + 22b - 104 = 0$$

$$\Rightarrow (b + 26)(b - 4) = 0$$

$$\Rightarrow b = 4 \quad (\because b > 0)$$

Choice (A)

40. Let us select three numbers (a, b, c) , of the given 12 numbers. The number of ways in which we can select 3 numbers is ${}^{12}C_3 = \frac{(12)(11)(10)}{(3)(2)(1)} = 220$.

Since in each selection, we can have only one possible arrangement such that $a > b > c$.

\therefore The total number of sets = 220. Choice (D)

41. Number of packs bought by customer = 12

$$\text{Number of gift cakes received} = \text{Integer part of } \left(\frac{12}{5} \right) = 2.$$

Total number of cakes received by the customer

$$= (4)(12) + 2 = 50.$$

Total money paid by the customer = $12(3s)$, where s is the listed price of each cake.

For 50 cakes, the listed price = 50s.

Actual amount paid is 36s.

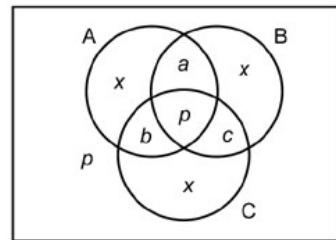
Hence, discount is 14s.

$$\text{Discount percentage} = \left(\frac{14s}{50s} \right) (100\%) = 28\%$$

Choice (D)

Solutions for questions 42 to 44:

The data is represented in the venn diagram below.



$$\text{Given } \frac{x+b}{a+p} = \frac{3}{2} \quad \dots (1)$$

$$x+c = a+p \quad \dots (2)$$

$$\frac{x+c}{b+p} = \frac{2}{3} \quad \dots (3)$$

$$\Rightarrow \frac{a+p}{b+p} = \frac{2}{3} \quad \dots (4)$$

$$(1) \times (4)$$

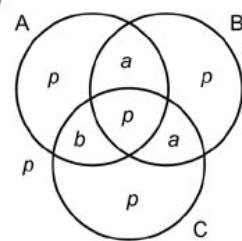
$$x+b = b+p$$

$$\Rightarrow x = p \quad \dots (5)$$

From (2)

$$x+c = a+p$$

$$\Rightarrow c = a \quad (\text{from (5)})$$



42. Only A is 280 = p .

For every 11 people surveyed it is given that $p = 1$.

Since $p = 280$, total people surveyed must be $280 \times 11 = 3080$.

[Alternately, the total number of people surveyed will be a multiple of 11, and only 3080, i.e., choice (2) is a multiple of 11].

Choice (B)

43. Clearly out of every 11 people surveyed we have 6 people who like exactly two brands. Since 4081 people were surveyed there will be 2226 people who like exactly two brands.

Choice (D)

44. Out of every 1001 people surveyed we have that 91 people like only A and 546 people like exactly two. Given that number of people who like D is at most 7% of people who like exactly two brands it must be less than or equal to 38.22 — (1)

Similarly since it is equal to at least 42% of people who like only A it must be greater than or equal to 38.22 — (2)

The above two regions given in (1) and (2) are non-overlapping. The number of people who liked D, i.e., x will have to be at least equal to the sum of the least possible values from (1) and (2). Now, region (1) is less than or equal to 38.22, and hence the minimum value can be 0. Region (2) is greater than or equal to 38.22, so the minimum integral value possible is 39.

Hence the least possible value of x is $0 + 39 = 39$.

Hence, it is clear that out of every 1001 surveyed at least 39 like D.

Choice (D)

Solution for question 45:

$$45. 6 + (6 + 12) + (6 + 12 + 18) + \dots + (6 + 12 + 18 + \dots + 6 \times n)$$

$$= 6[1 + 1 + 2 + 1 + 2 + 3 + \dots + 1 + 2 + 3 + \dots + n]$$

$$= 6 \sum_{n=1}^n \frac{n(n+1)}{2} = n(n+1)(n+2)$$

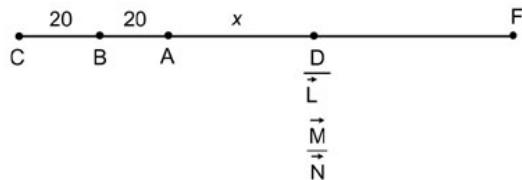
Choice (B)

Solutions for questions 46 and 47:

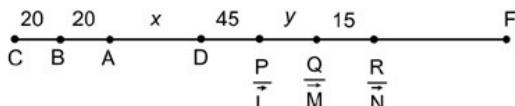
The initial positions of Lucky, Micky, Nicky are A, B, C respectively. Let AD = x km. Let their speeds be ℓ , m, n respectively.



Their positions when they all reach the motel D at the same time



When Lucky was 45 km ahead of D, (at P) let Micky be at Q and Nicky be at R. Then their positions are given below. (From the above position, we can observe that $n > m > \ell$)



Lucky, Micky and Nicky cover the distances AD, BD and CD respectively in the same time (say t_1).

They also take the same time (say t_2) to cover the distances DP, DQ and DR respectively.

Hence, using the concept of relative speeds, Nicky caught up with both Micky and Lucky at the same time.

$$\Rightarrow \frac{20+20}{n-\ell} = \frac{20}{n-m}$$

$$\Rightarrow n = 2m - \ell \quad \text{--- (1)}$$

Also, from motel D, we get that in the time Lucky covered 45 km, Nicky gained 15 km over Micky.

$$\Rightarrow \frac{45}{\ell} = \frac{15}{n-m}$$

$$\Rightarrow 3n = 3m + \ell \quad \text{--- (2)}$$

From (1) and (2) we get $m:n = 4:5$ and hence we get $\ell:m:n = 3:4:5$.
 $m:n = 4:5$

46. $m:n = 4:5$

Choice (B)

47. By the time all three reach D, Nicky gained 40 km over Lucky. But their speeds are in the ratio 5 : 3.

\Rightarrow For every 3 km that Lucky travels Nicky gains 2 km.

\Rightarrow In the time that Nicky gained 40 km, Lucky traveled 60 km.

\Rightarrow AD = 60 km.

Also, from D onwards, if Nicky gained 15 km over Micky,

then Micky will gain $15 \times \frac{(5-4)}{(4-3)} = 15$ km over Lucky.

\Rightarrow PQ = 15 km

Finally, if RF = d, $\frac{d}{5v} = \frac{d+(15)}{2 \times 4v}$

(since all three reach F simultaneously, after M doubles his speed)

$\Rightarrow d = 25$ km

Now CF = CB + BA + AD + DP + PQ + QR + RF

$= 20 + 20 + 60 + 45 + 15 + 15 + 25 = 200$ km

Choice (A)

Solutions for questions 48 to 50:

48. A 100-digit number when multiplied by a 200-digit number will have either 299 or 300 digits in the product.

When 299-digit number when multiplied by a 300-digit number will have either 598 or 599 digits. Similarly, the product two 300-digit numbers will have either 599 or 600 digits. So, there can be 598, 599 or 600 digits in the final product.

Choice (A)

49. The answer is 4. This is possible, when all the four planes in the squadron are flying in positions corresponding to the four vertices of a regular tetrahedron. Choice (B)

50. Let a, b, c be sides of the triangle

$$\Rightarrow s = \frac{a+b+c}{2}$$

$$\Rightarrow s-a = \frac{a+b+c}{2} - a$$

$$= \frac{b+c-a}{2} = \frac{\alpha}{2} \text{ (say)} \quad \text{--- (1)}$$

$$\text{Similarly } s-b = \frac{a+c-b}{2} = \frac{\beta}{2} \quad \text{--- (2)}$$

$$\text{And } (s-c) = \frac{a+b-c}{2} = \frac{\gamma}{2} \quad \text{--- (3)}$$

From (1), (2), (3)

$$\frac{\alpha+\beta}{2} = c; \frac{\beta+\gamma}{2} = a; \frac{\gamma+\alpha}{2} = b;$$

since α, β, γ are +ve real no. s

A.M \geq G.M

$$\Rightarrow a = \frac{\gamma+\beta}{2} \geq \sqrt{\gamma\beta}$$

similarly $b \geq \sqrt{\gamma\alpha}$ $c \geq \sqrt{\alpha\beta}$

multiplying above three relations

$$abc \geq \sqrt{\alpha^2\beta^2\gamma^2}$$

$$\Rightarrow abc \geq \alpha\beta\gamma$$

from (1), (2), (3)

$$\Rightarrow abc \geq 2(s-a) \cdot 2(s-b) \cdot 2(s-c)$$

$$\Rightarrow \frac{abc}{8} \geq (s-a)(s-b)(s-c)$$

Alternative solution:

For this type of problems, consider an equilateral triangle.

$$\text{We get } (s-a)(s-b)(s-c) = \frac{abc}{2}$$

So, choice (1) and choice (3) can be eliminated.

Take an example of a simple known triangle.

Say $a = 3, b = 4, c = 5$

$$\Rightarrow s = \frac{3+4+5}{2} = 6$$

$$\Rightarrow (s-a)(s-b)(s-c) = 6 \text{ and } abc = 6$$

$$\Rightarrow (s-a)(s-b)(s-c) = 6 < 7.5 \text{ (i.e. } abc/8) \text{ Choice (B)}$$

Difficulty level wise summary - Section I	
Level of Difficulty	Questions
Very Easy	-
Easy	4, 23, 24, 26, 27, 31, 32, 33, 41
Medium	3, 5, 6, 7, 8, 9, 10, 11, 13, 22, 25, 34, 35, 37, 38, 40, 42, 43, 44, 45, 48, 50
Difficult	1, 2, 15, 16, 17, 18, 19, 20, 21, 28, 30, 36, 39, 46, 47, 49
Very Difficult	12, 14, 29

SECTION – II

Solutions for questions 51 to 55:

Number of words and Explanatory notes for RC:

Number of words : 857

51. Statements (b) and (c) present the essence of the author's argument, as seen in the first and sixth paragraphs of the passage. Hence Choice (C) is correct. Refer to the last sentence of para 6 – The needs of womentraditional workforce does not require and that companies cannot afford. So (b) is correct. Also, from the

second sentence of the sixth paragraph (Ending these programs reinforces the idea that a diverse workforce is a "luxury" inessential to business success) and the first two sentences of the first paragraph ("non-essential" programs and people are eliminated and programs to support workers are scaled back; employee flexibility is one of these "luxuries"), statement (c) can be inferred to be true. The terms "non-essential", "luxuries", "solutions", "special accommodations" etc are given in quotes, to indicate the author's reservations with those terms. He does not agree with the word 'luxury'.
Choice (C)

52. Choice (A) is not true. Choice (B) is not applicable for 1950 companies. Choice (C) is true - "We believe.....serious workers are the ones who put in the most face time" is given in the second para and "Best Buy returned to a face time model" has been mentioned in the fourth para. Choice (D) is also not true, its opposite is true. Thus Choice (C) is correct.
Choice (C).
53. 'substantive' refers to productive engagement in the workplace. Choices B, C and D refer to substantial, substance and substantiation respectively. Thus Choice (A) is correct.
Choice (A)
54. Choice (A) is not evident. Choice (C) is an unwarranted assumption. Choice (D) does not give the reason why. Choice (B) is true – "influence of social stigma on business decisions." Thus B is correct.
Choice (B)
55. Choice (A) is given in the second sentence of the passage – Employee flexibility is typically considered one of these "luxuries." Choice (B) is given – "The needs of women minorities....". Choice (C) is explained in the seventh paragraph using the example of autism. Choice (D) is not stated and seems out of context. Thus Choice (D) is correct.
Choice (D)

Solution for question 56:

56. From I alone, unless the date on which Venus played is known, the question cannot be answered.
Hence I alone is not sufficient.
From II alone, the 15th day is Tuesday and number of odd days is one. Hence 25th February is a Monday.
Hence II alone is sufficient.
Choice (B)

Solutions for questions 57 and 58:

57. The government's claim is that it is solely responsible for the decline in the appeal of smoking. This claim is weakened if Choice (A) is true – the number of smokers has increased (showing that smoking still appeals to people) even if the sales volume has declined. Choices (B) and (C) are not relevant to the claim. Choice (D) would be right if the government's claim had been about the reduction in sales.
Choice (A)
58. The contention of the journalists is that as other methods of obtaining confession are available, so third degree methods should not be adopted by the police. However, if (D) were true, it would show that the accused won't speak the truth under normal circumstances. Hence the police have to resort to 'third degree methods'. As the journalists do not question the very act of obtaining confessions (A) is incorrect.
Choice (B) is wrong as the contention of the journalists is not that adoption of third degree methods is against law. (C) does not invalidate the arguments of the journalist, if anything it adds strength to the argument.
Choice (D)

Solutions for questions 59 and 60:

59. It can be observed on a careful reading of the paragraph that sentences (a) (...how this happens....), sentence (b) (Music is also completely *sui generis*....), sentence (c) (It has been and remains.....), sentence (f) (And it engages people's attention....) cannot begin the paragraph as these sentences need a precedent. Also sentence (d) is very

specific (.... on hearing a particular piece of music....). So sentence (e) is a very general sentence which begins the paragraph. It sets the background for the rest of the paragraph. This statement highlights the fact that music is unique to the human race. Sentence (c) continues the idea. "unique to the human race" is linked with "music has been a part of every known civilization on earth." Some additional features of music are given in sentence (g). So, 'ecg'. It may seem that sentence (d) follows sentence (f) by adding to the list of features of music. But, sentences in (b) have to precede sentence (d). "the listener will decode it....." in sentence (b) is linked with "listeners have experienced..." in sentence (d). Also sentences 'da' form a mandatory pair. 'find out how this happens' in sentence (a) follows from 'without being able to tell why....' in sentence (d). So 'bda'. Sentence (f) is the odd man out sentence and can come in another paragraph which talks about "Music can mean different things in different cultures." This sentence also needs further elaboration or substantiation about "building blocks of music or musical system". So, 'ecgbda'. The other choices disrupt the thought flow.
Choice (C)

60. It can be observed on a close reading of the paragraph that only sentences (f) and (c) sound like introduction sentences. The remaining sentences need a precedent or reference. Sentence (a) (...seemed to have a consistent character....), sentence (b) (...evoke the many-sided characters....), sentence (g) (...judge them less....) can come later in sequence. Also sentence (e) cannot begin the paragraph as it provides a situational example for a point that needs to be explained first. Sentence (d) sounds out of context and it certainly cannot begin the paragraph. The paragraph talks about character and between sentences (c) and (f), sentence (f) is a better starting sentence. It is a standalone sentence as it tells us what character is not. The remaining sentences tells us what character is and how one should not judge the many characters in oneself. Sentence (f) and (c) respectively, define what character is not and what character is. Sentence (c) is followed by sentence (a). "consistent character.....controlling our environment" links with "circumstance and context" in sentence (c). Sentence (e) provides an example for the contextual reference (...good at controlling the environment....) in sentence (a). So, 'fcae'. Sentence (b) comes after the example of dinner-partiesgiven in sentence (e). Just as the author's friends can see him in different situations based on which they would make different conclusions about the author, circumstances and context also bring out the many-sided characters in us. Statement (g) concludes the paragraph with an appropriate course of action. So, 'fcaebg'. Statement (d) is the odd man out sentence. The other choices disrupt the thought flow. Wrong sentences have been eliminated from the sequence as odd man out sentences in choices B and C. Choice (C) also doesn't work because of the disconnect in the 'ab' sequence.
Choice (A)

Solution for question 61:

61. Given that, Amar got more job offers than the persons from Madras but less than that by Anwar.
∴ Amar is not the person with no offers or three offers.
Further Amar did not get two offers.
⇒ Amar got one offer.
⇒ The person from Madras got no offers.
The person from Madras cannot be Anwar or Antony
∴ The person is Akbar.
⇒ The person from Delhi must be Anwar.
The final table is as follows:

Person	Place	Number of Companies
Amar	Bangalore	1
Anwar	Delhi	3
Akbar	Madras	0
Antony	Hyderabad	2

From the above table, only statement (C) is true.
Choice (C)

Solutions for questions 62 to 66:

Number of words and Explanatory notes for RC:

Number of words : 859

62. A liberal arts education enables one to acquire knowledge of the best thought of the past so as to live in an informed and reasonable way in the present. Students are favouring the vocational over the liberal arts and even within the liberal arts, students are choosing marketable or practical job-oriented subjects like economics. In the fourth para, Delbanco mentions that the liberal arts are "soul saving" (as a hedge against utilitarian values). Utilitarianism holds that the proper course of action is the one that maximizes utility, usually defined as maximizing happiness and reducing suffering. There is a difference between "soul saving" and "skill acquiring" education. So the passage implies that there is a conflict between "soul saving" and "utilitarian". This is best captured in Choice (B). Choice (A) is nowhere implied though the author does mention that a good deal of the old liberal arts education was dreary (Refer fourth paragraph). The nature of "skill acquiring" curricula cannot be said to be flat or boring in nature. The same has not been discussed. So Choice (A) can be eliminated. Choice (C) is not the assumption – one should not confuse "soul saving" "utilitarian values are not what the liberal arts aim at, and with soul and body together". Choice (D) is a very general sentence and does not apply to the passage. There may be an overlap in the curriculum of "skill acquiring education" and "liberal arts". So "mutually exclusive" as given in Choice (D) cannot be inferred. Choice (B)
63. In the fourth para, Delbanco warns that it won't do to posit (assume) some ideal but antiquated golden age when higher education approached perfection. The liberal arts education was dreary and people were not capable of understanding it. He also mentions in the third sentence – Whether, in the majority of students who undertook to study the liberal arts, they truly were "soul saving" or not may be open to question, but what isn't open to question is that today, the liberal arts have lost interest in their primary mission. So the author views the "golden age" of liberal arts with skepticism – (doubts whether the ideal objective was ever achieved). The author does not disapprove of the "golden age" of liberal arts. He mentions in the fourth para that the liberal arts had an important primary mission (....'attaining and sustaining curiosity and humility'....'engaging in some serious self-examination'....'action upon our mental nature, and the formation of our character'). So Choice (B) is incorrect. 'condescension' is the trait of displaying arrogance by patronizing those considered inferior. The author does not have a condescending view of the "golden age" of liberal arts. So Choice (C) is incorrect. Choice (A) is incorrect. 'disparaging' means to "speak in a slighting or disrespectful way; depreciating; belittling." This is not how the author views the "golden age" of liberal arts. Choice (D)
64. Choice (B) does not weaken Delbanco's view who agrees with Max Weber that there is a distinction between "soul saving" (liberal arts education) and "skill-acquiring" (vocational education) education. In the second para, the author says that students are "fleeing from 'useless' subjects to 'marketable' subjects such as economics," in the hope that this will lend them the practical credentials and cachets that might impress prospective employers. The penultimate sentence of the fourth para states that a liberal arts education does not hold a higher position in the world's regard today. So Choice (C) is in agreement with Delbanco's view. Choice (D) again does not weaken Delbanco's view. Delbanco says that the liberal arts have lost interest in their primary mission of attaining and sustaining curiosity and humility in students, as given in the last sentence of the fourth paragraph. Choice (A) weakens Delbanco's view. In the last para, Delbanco warns thata good deal of the old liberal arts education was dreary a liberal arts education does not hold a higher position in the world's regard today. Choice (A) seems to

convey that the death of the liberal arts education would constitute a serious subtraction. Rivalling expert opinions and the vaunting or boasting of the second- and third-rate in politics and art would take over the first rate opinions or judgements or standards that constitute the liberal arts education or training.

Choice (A)

65. Choice (A) is supported by "No one tells you how to do it" and "... no matter how extensive one's notes." Refer to the fifth para. In the last para, the author states that his students who did intellectual work consciously decided "not to go for the money." Thus Choice (B) is correct. "...punish teachers for holding to a high standard...." as given in the sixth para supports Choice (C). Thus all statements are correct.
66. In the seventh paragraph, the author points out that language must be precise, unlike horseshoes that can be approximate. The author defends the exacting standards of linguistics in prose compositions. So I is incorrect and II is correct. Refer to the second sentence of the seventh paragraph. The passage mentions ".....writers..... as guides to understanding life." So statement IV is correct and statement III is incorrect.

Choice (C)

Solutions for questions 67 to 69:

67. The EU attack that the sentence discusses is a verbal attack. As it is not a physical attack, it cannot be warded off, so option A cannot be eliminated. To defend or shield an attack is to protect it and thus, show support for it, which is not what Gordon Brown did. So options B and C can be eliminated. Therefore, the 1st blank is filled by 'rebuffed', meaning, 'rejected (the criticism)' and the 2nd blank is filled by 'profligate', meaning, 'recklessly extravagant' and the answer option is D (rebuffed.....profligate). Languorous means lacking energy, spirit, liveliness or vitality; languid, lackadaisical. Emollient means softening and soothing, especially to the skin; making less harsh or abrasive; mollifying. Syncretic means reconciliation or fusion of differing systems of belief, as in philosophy or religion, especially when success is partial or the result is heterogeneous.
68. We realize, upon reading the passage, that the 1st blank is to be filled by a synonym of 'expanding'. That word is 'burgeoning'. The other words for the first blank are contextually inappropriate. 'Swarming', means 'massing in large numbers'. Beleaguered means to harass or beset. Swashbuckling means flamboyantly reckless and boastful behavior; flamboyantly adventurous. Hence, the 2nd blank is filled by 'chafe', meaning, 'irritate', and the answer option is B (burgeoning.....chafe). Actuate means to put into motion or action; activate. Bezoar refers to a hard indigestible mass of material, such as hair, vegetable fibers, or fruits, found in the stomachs or intestines of animals, especially ruminants, and humans.

Choice (B)

69. As the options for the 1st blank except 'ceriferous' are all contextually appropriate, let us attempt to fill the second blank. 'Vignettes', mean 'pleasing pictures, sketches or literary descriptions'. This means that 'vignettes' encompasses 'pictures', 'scenes' and 'anecdotes' and so, best fills the 2nd blank. The 1st blank is, therefore, filled by 'recollection' and the answer option is A (recollection.....vignettes). Ceriferous means producing or bearing wax. Bete noire refers to a person or thing that one particularly dislikes or dreads.

Choice (A)

Solutions for questions 70 and 71:

70. 'Sensual' is something that gives pleasure to your physical senses. 'Sensuous' gives pleasure to the mind or body through the senses. Hence (b). 'Appeal' is followed by 'of'. Hence (b)

'condone' is to pardon while 'condole' is to console. Hence (b) Costs can touch dizzy heights. So dizzyly is correct and not hazily which means vaguely. So (a). Recriminations (mutual exchanges or accusations) is apt and not reprobations (excluded from salvation, morally unprincipled; shameless). So (a)

'Mendicity' refers to the condition or activities of a beggar. Mendacity means untruthfulness. So (a).
Hence 'bbbaaa'. Choice (B)

71. In the first sentence, 'adversative' is correct. Adversative refers to a word or phrase expressing something that is opposed to or the opposite of what has been said. 'Adverse' on the other hand refers to something negative and unpleasant. Hence (b).

In the second sentence, the correct word is 'solecism'. This refers to a non-standard usage or grammatical construction; an impropriety, mistake, or incongruity. 'Solipsism' is the philosophic theory that the self is the only thing that can be known and verified. Hence (a).

In the third sentence, the correct word is '-derisive' (b), which means mocking; jeering.

While 'derisive' means mocking or conveying contempt, 'derisory' means laughable; ridiculous. 'Derisory' is used for something that invites contempt or scorn. In the last sentence, insoluble which means something that does not dissolve is right. Indissoluble means something (especially a relationship) that cannot be ended – (a). Choice (C)

Solution for question 72:

72. Approbate means approve or agree or formally sanction. 'Insinuate' means to suggest or hint. 'Ratcheted' means to cause something to rise (or fall) as a step in what is perceived as an irreversible process. 'Expropriated' means to take (property) from its owner for public use or benefit. Hence the closest replacement for the italicized word in the paragraph is 'insinuated'. This means 'to make somebody think that something is true.' Here the archaeologists had the evidence and this made them think that it was true.

Choice (A)

Solution for question 73:

73. The usage of the word 'ground' is incorrect in statement (c). This should read: The novice needed to learn the business from the ground up. This implies that he has to learn the ropes completely, from the most basic level to the highest level of the business. 'd' is wrong as well – it should be 'from under their feet'. This means to anticipate someone's action or argument and thus make it irrelevant or meaningless.

The other sentences have the correct usage of the word 'ground'. In sentence (a), the idiom 'broke new ground' means to do something original or innovative (something not done before). Statement (b) is correct. In statement (e), the idiom 'to be back on one's own ground' means to be in a situation where one has knowledge or competence. 'Covered new ground' is also an idiom which means 'to make progress or address an area of reference or discussion. 'Stood his ground' in statement (f) is an idiom which means to maintain one's position or to be steadfast.

Choice (A)

Solutions for questions 74 to 76:

From (iii), the score in one of the matches is

India – Pakistan 4 - 2

From (iv), the score is one of the matches is

From (ii) and (iii), by looking at the number of goals scored by India, the only possibility of score is

4 - 2 4th match

8 - 4 Other match

From (vi)

6 - 6 2nd match

8 - 4 1st match

As 3rd match is played in India, 1-0 must be the score of the match in Pakistan i.e. the 5th match and 5 – 1 is the score of the 3rd match.

	India	Pakistan	Venue
1 st	8	4	Pakistan
2 nd	6	6	India
3 rd	5	1	India
4 th	4	2	Pakistan
5 th	1	0	Pakistan

74. Choice (B) is true. Choice (B)

75. India scored 8 goals in the first match. Choice (D)

76. The 2nd & 3rd matches are played in India. Choice (B)

Solutions for questions 77 to 82:

Number of words and Explanatory notes for RC:

Number of words : 878

77. Refer primarily to the first paragraph. There is firstly, the ethic of Buddha and Jesus, which stresses the feminine virtues. There is secondly, the ethic of Machiavelli and Nietzsche, which stresses the masculine virtuous. The third ethic of Socrates, Plato and Aristotle discounts both the feminine and masculine virtues and gives importance to power, intelligence and egoism. The fifth sentence of the first paragraph is the key sentence for this question. Spinoza's ethic unconsciously reconciles these apparently hostile philosophies and weaves them into a harmonious unity. So Choice (C) is correct. Choice (A) is incorrect because of the word 'equates' which would mean a conscious effort on the part of Spinoza to treat the three as being essentially the same. 'Reconciles' is not the same as 'equates'. Choice (D) is incorrect. The fifth sentence of the first paragraph only tells us that Spinoza's ethic gave us a system of morals which is the supreme achievement of modern thought. 'System of analyses of morality' has nowhere been mentioned. Choice (B) is suspect from a careful reading of the third paragraph. The ninth sentence tells us that Spinoza built his ethic not on altruism and the natural goodness of man.

Choice (C)

78. Refer to the fourth sentence of the first paragraph which elaborates on the third ethic system. Choice (A) (...the most virtuous form....) is ruled out as the system advocates a varying mixture of aristocracy and democracy in government. Choice (B) is true. The informed and mature mind can judge.....when love should rule and when power; identifies virtue, therefore, with intelligence..... Choice (C) has not been mentioned. Choice (D) is extreme. The ethic system only denies the universal applicability of either the feminine or the masculine virtues.

Choice (B)

79. Spinoza believes that egoism is a necessary corollary of the supreme instinct of self-preservation. Corollary means a proposition that follows from (and is often appended to) one already proved or existing. So A is incorrect. Egoism follows from the instinct of self-preservation. It cannot lead to self-preservation. In the penultimate sentence of the third para, the author says that Spinoza builds his ethic on an inevitable and justifiable egoism. Self-preservation is equivalent to the foundation of virtue and leads to man's happiness. From the lines {Each man must love himself (egoism) desire whatever leads him truly to a greater state of perfection (this implies that this is a separate task and egoism does not necessarily lead a person to a greater level of perfection) preserve his being so far as in him lies} given in the later half of the third paragraph, one can

infer Choice (D). Spinoza believes that egoism is perfectly reasonable and should be accepted, unlike the system of morals that teaches a man to be weak. 'should not be resisted' in Choice (C) is a passive way of saying the correct step and is incorrect. Egoism is not portrayed as a force to be resisted or not resisted. Choice (D)

80. The second paragraph only discusses pleasure and pain as transition states and that too, in relation to a definition of happiness. So statement (a) is out of scope. Statement (b) cannot be inferred from a careful reading of the last two sentences of para 3. The lines only mention two extremes – utopian reformers believed in altruism and the cynical conservatives believed in the natural wickedness of man. Statements (c) and (d) as such, need precedents and more substantiation and cannot complete the blank in the second para. The second paragraph goes on to explore pleasure and pain as transition states. It can be observed that the third para then goes on to elaborate on 'emotion'. So a more suitable ending to the second paragraph would be one that relates states of transition to emotion, such as: "All passions are passages, all emotions are motions, towards or from completeness and power". Statement (e) is true from the first few sentences of the fourth para, more specifically from the third sentence. Choice (A)

81. Statements (a) and (b) are out of scope. From the first three sentences of para 4 –"all virtues are forms of ability and power..... He who repents is twice unhappy and doubly weak." – statement (c) can be understood. The contextual reference to "tenoned and mortised" is "supplemented with (deeds)." So statement (d) is incorrect as "pertinacity" means "persistent determination." Statement (e) can be understood to be an analogic reference to the boldfaced part of the fourth para. So, (a), (b) and (d) cannot be understood. Choice (C)

82. The author explains that Spinoza's 'Ethics' reveals its core only over a series of sittings and that a reading would only bring the reader to the beginning of understanding. To deal with the 'layers' then (i.e. for further understanding), the book must be read again. This set of thoughts is appropriately concluded with Choice (B). Choice (C) is not appropriate. Though the book is called 'Ethics' the author refers to it more as representative of Spinoza's thoughts through his lifetime. Choice (A) is incorrect as the para is not about philosophy in general but about Spinoza's philosophy. Choice (D) is a misdirection. The names 'Euclid' and 'Nietzsche' appear in the passage but the last few sentences do not warrant a comparison of Spinoza's work with that of Euclid or Nietzsche. Choice (B)

Solutions for questions 83 and 84:

83. The given time is 5 hours 45 minutes.
The time in the mirror = 12 hours – (the time given)
⇒ 11 hours 60 minutes – (5 hours 45 minutes)
= 6 hours 15 minutes. Choice (B)

84. From (iii) and (i), A is the husband of Q and E is the husband of R.
Now from (ii), D is the husband of P.
Now from (iv), C is the husband of S and hence B is the husband of T.
(A, Q), (B, T), (C, S), (D, P) and (E, R) is the correct combination. Choice (D)

Solution for question 85:

85. Choices (A) and (D) are incorrect because the comparison is between art and science. Hence the words 'than that of' are incorrect. The correction is 'greater than'. In choices (A) and (B), we find the words 'proceeds with' which are incorrect because the appropriate collocation is 'proceeds by'. In Choice (B), 'later' is used instead of 'latter' and so is incorrect. Choice (C)

Solution for question 86:

86. Statements (a) and (d) are incorrect. In statement (a), the word 'we' should be followed by 'are'as contemptuous as we are....., and 'better' needs to be followed by 'than we have'. In statement (d), the word 'listen' should be followed by the preposition 'to' (listen to and learn from.....) and 'than us' would need to be replaced by 'than we have'. Choice (C)

Solutions for questions 87 to 89:

87. (a) The second half of the statement "the Roman empire collapsed....." is a record of disastrous events i.e. a collection of facts. The first half of the sentence is a statement of general perception. Therefore this statement is a fact.
(b) While the cause-effect relationship between climate, crop failures and disease can be considered factual, the one between crop failures, plague and social transformations would be more inference than fact. Since the first part is the main clause, this statement qualified as an inference. (I).
(c) and (d) Any statement which informs us of what some one else has said, or what is true according to some research/ records is a fact, because whether that person, or the documents, say so or not is verifiable – Fact.
 Choice (D)

88. (a) This statement is a personal opinion as who would qualify as the 'principal enemies' is a matter of perception. It is not measurable as enmity cannot be quantified – Judgement.
(b) This statement is a generalization. It is a series of allegations against all politicians, all these allegations are personal opinions, and hence this statement is a judgement.
(c) and (d) The idea initiated in statements 1 and 2 is carried forward here. In these two statements too, the author records his own opinions. Hence these two statements are judgements.
 Choice (C)

89. (a) This author is of the opinion that China's trying to attain market economy status, is most ironic. This is a judgement.
(b) The basic meaning of this sentence is that China has been taking certain steps to ensure that it is accorded the market economy status, and that some countries have accepted its request and some haven't. While this is verifiable, the 'wooing with little effect' makes this an opinion as well – Judgement.
(c) This 'on the face of it' implies that the author thinks there is more. Also an opinion – Judgement. 'May seem largely economic' is an opinion.
(d) Statement (d) presents options open to the government and there is not enough in the sentence to treat it as a report of verifiable capability. Again, more an opinion, than fact – Judgement. Choice (A)

Solutions for questions 90 to 92:

The given information is as follows:
 B_1 and B_2 are not adjacent. G_3 is to be seated opposite B_2 and G_2 is to be seated opposite B_4 .

90. G_4 is seated facing B_3 .
⇒ G_1 is seated facing B_1 . As B_1 and B_2 are not to be seated adjacent to each other and given that G_1 is not at an end of the row, it implies that B_1 is not at an end of the row. Hence, B_1 has to be in one of the two middle places in the row.
⇒ B_2 and the girl facing him i.e., G_2 , are at an end of the row.
Hence, G_1 is the only one between G_2 and G_4 .
 Choice (A)

91. B_1 and B_2 cannot sit together, they can sit in the following possible ways.

