RACE TO 99 PERCENTILE

CAT 2018

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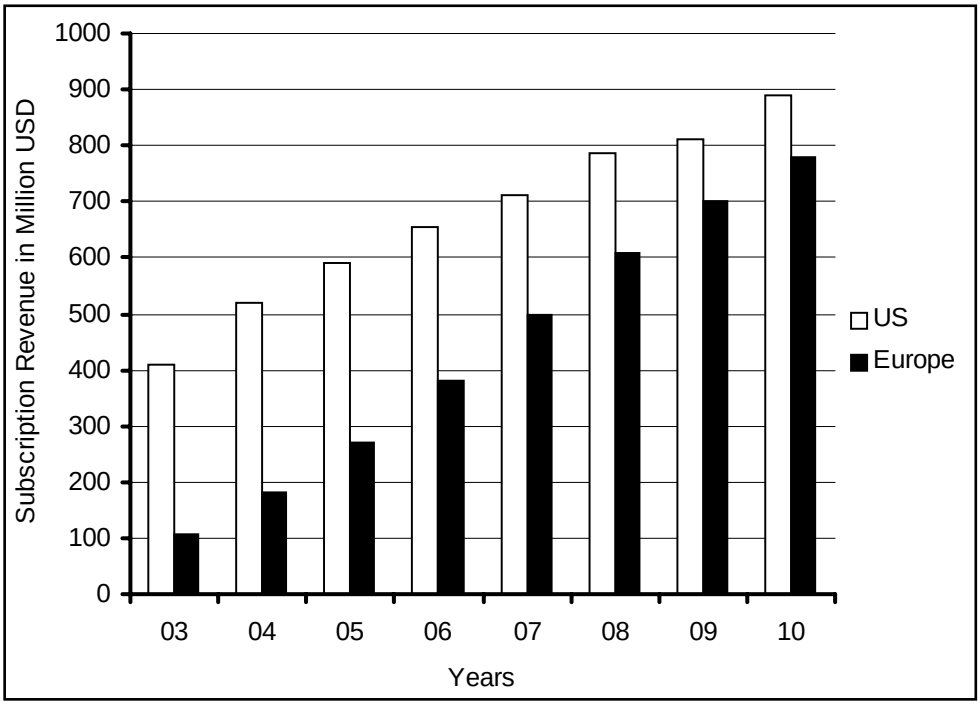
Directions for questions 1 to 4: Answer the following questions based on the information given below: **CAT 2008**

The bar chart below shows the revenue received in million US Dollars (USD), from subscribers to a particular Internet service. The data covers the period 2003 to 2007 for the United States (US) and Europe. The bar chart also shows the estimated revenues from subscription to this service for the period 2008 to 2010.



1. The difference between the estimated subscription revenue in Europe in 2008 and what it would have been if it were computed using the percentage growth rate of 2007 (over 2006), is closest to:
(1) 50 (2) 80 (3) 20 (4) 10 (5) 0

2. In 2003, sixty percent of subscribers in Europe were men. Given that women subscribers increase at the rate of 10 percent per annum and men at the rate of 5 percent per annum, what is the approximate percentage growth of subscribers between 2003 and 2010 in Europe? The subscription prices are volatile and may change each year.
(1) 62 (2) 15 (3) 78 (4) 84 (5) 50

3. Consider the annual percent change in the gap between subscription revenues in the US and Europe. What is the year in which the absolute value of this change is the highest?
(1) 03 - 04 (2) 05 - 06 (3) 06 - 07 (4) 08 - 09 (5) 09 - 10

4. While the subscription in Europe has been growing steadily towards that of the US, the growth rate in Europe seems to be declining. Which of the following is closest to the percent change in growth rate of 2007 (over 2006) relative to the growth rate of 2005 (over 2004)?
(1) 17 (2) 20 (3) 35 (4) 60 (5) 100

Directions for questions 5 to 8: Answer the following questions based on the information given below: **CAT 2007**

The following table shows the break-up of actual costs incurred by a company in last five years (year 2002 to year 2006) to produce a particular product:

	Year 2002	**Year 2003**	**Year 2004**	**Year 2005**	**Year 2006**
Volume of production and sale (units)	1000	900	1100	1200	1200
Costs (Rs.)					
Material	50,000	45,100	55,200	59,900	60,000
Labour	20,000	18,000	22,100	24,150	24,000
Consumables	2,000	2,200	1,800	1,600	1,400
Rent of building	1,000	1,000	1,100	1,100	1,200
Rates and taxes	400	400	400	400	400
Repair and maintenance expenses	800	820	780	790	800
Operating cost of machines	30,000	27,000	33,500	36,020	36,000
Selling and marketing expenses	5,750	5,800	5,800	5,750	5,800

The production capacity of the company is 2000 units. The selling price for the year 2006 was Rs. 125 per unit. Some costs change almost in direct proportion to the change in volume of production, while others do not follow any obvious pattern of change with respect to the volume of production and hence are considered fixed. Using the information provided for the year 2006 as the basis for projecting the figures for the year 2007, answer the following questions:

5. What is the approximate cost per unit in rupees, if the company produces and sells 1400 units in the year 2007?
(1) 104 (2) 107 (3) 110 (4) 115 (5) 116

6. What is the minimum number of units that the company needs to produce and sell to avoid any loss?
(1) 313 (2) 350 (3) 384 (4) 747 (5) 928

7. If the company reduces the price by 5%, it can produce and sell as many units as it desires. How many units the company should produce to maximize its profit?
(1) 1400 (2) 1600 (3) 1800 (4) 1900 (5) 2000

8. Given that the company cannot sell more than 1700 units, and it will have to reduce the price by Rs.5 for all units, if it wants to sell more than 1400 units, what is the maximum profit, in rupees, that the company can earn?
(1) 25,400 (2) 24,400 (3) 31,400 (4) 32,900 (5) 32,000

Directions for questions 9 to 12: Answer the questions on the basis of the information given below: **CAT 2005**

The table below presents the revenue (in million rupees) of four firms in three states. These firms, Honest Ltd., Aggressive Ltd., Truthful Ltd. and Profitable Ltd. are disguised in the table as A, B, C and D, in no particular order.

States	Firm A	Firm B	Firm C	Firm D
UP	49	82	80	55
Bihar	69	72	70	65
MP	72	63	72	65

Further, it is known that:
- In the state of MP, Truthful Ltd. has the highest market share.
- Aggressive Ltd.'s aggregate revenue differs from Honest Ltd.'s by Rs. 5 million.

9. What can be said regarding the following two statements?
Statement 1: Profitable Ltd. has the lowest share in MP market.
Statement 2: Honest Ltd.'s total revenue is more than Profitable Ltd.
(1) If Statement 1 is true then Statement 2 is necessarily true.
(2) If Statement 1 is true then Statement 2 is necessarily false.
(3) Both Statement 1 and Statement 2 are true.
(4) Neither Statement 1 nor Statement 2 is true.

10. What can be said regarding the following two statements?
Statement 1: Aggressive Ltd.'s lowest revenues are from MP.
Statement 2: Honest Ltd.'s lowest revenues are from Bihar.
(1) If Statement 2 is true then Statement 1 is necessarily false.
(2) If Statement 1 is false then Statement 2 is necessarily true.
(3) If Statement 1 is true then Statement 2 is necessarily true.
(4) None of these.

11. What can be said regarding the following two statements?
Statement 1: Honest Ltd. has the highest share in the UP market.
Statement 2: Aggressive Ltd. has the highest share in the Bihar market.
(1) Both statements could be true.
(2) At least one of the statements must be true.
(3) At most one of the statements is true.
(4) None of these.

12. If Profitable Ltd.'s lowest revenue is from UP, then which of the following is true?
(1) Truthful Ltd.'s lowest revenues are from MP.
(2) Truthful Ltd.'s lowest revenues are from Bihar.
(3) Truthful Ltd.'s lowest revenues are from UP.
(4) No definite conclusion is possible.

Directions for questions 13 to 16: Answer questions on the basis of the information given below: **CAT 2006**

In a Class X Board examination, ten papers are distributed over five Groups - PCB, Mathematics, Social Science, Vernacular and English. Each of the ten papers is evaluated out of 100. The final score of a student is calculated in the following manner. First, the Group Scores are obtained by averaging marks in the papers within the Group. The final score is the simple average of the Group Scores. The data for the top ten students are presented below. (Dipan's score in English Paper II has been intentionally removed in the table.)

Name of the student	PCB Group			Mathematics Group	Social Science Group		Vernacular Group		English Group		Final Score
	Phy.	Chem.	Bio.		Hist.	Geo.	Paper I	Paper II	Paper I	Paper II	
Ayesha (G)	98	96	97	98	95	93	94	96	96	98	96.2
Ram (B)	97	99	95	97	95	96	94	94	96	98	96.1
Dipan (B)	98	98	98	95	96	95	96	94	96	??	96.0
Sagnik (B)	97	98	99	96	96	98	94	97	92	94	95.9
Sanjiv (B)	95	96	97	98	97	96	92	93	95	96	95.7
Shreya (G)	96	89	85	100	97	98	94	95	96	95	95.5
Joseph (B)	90	94	98	100	94	97	90	92	94	95	95
Agni (B)	96	99	96	99	95	96	82	93	92	93	94.3
Pritam (B)	98	98	95	98	83	95	90	93	94	94	93.9
Tirna (G)	96	98	97	99	85	94	92	91	87	96	93.7

Note: B or G against the name of a student respectively indicates whether the student is a boy or a girl.

13. How much did Dipan get in English Paper II?

(1) 94 (2) 96.5 (3) 97 (4) 98 (5) 99

14. Among the top ten students, how many boys scored at least 95 in at least one paper from each of the groups?

(1) 1 (2) 2 (3) 3 (4) 4 (5) 5

15. Had Joseph, Agni, Pritam and Tirna each obtained Group Score of 100 in the Social Science Group, then their standing in decreasing order of final score would be:

(1) Pritam, Joseph, Tirna, Agni
(2) Joseph, Tirna, Agni, Pritam
(3) Pritam, Agni, Tirna, Joseph
(4) Joseph, Tirna, Pritam, Agni
(5) Pritam, Tirna, Agni, Joseph

16. Students who obtained Group Scores of at least 95 in every group are eligible to apply for a prize. Among those who are eligible, the student obtaining the highest Group Score in Social Science Group is awarded this prize. The prize was awarded to:

(1) Shreya (2) Ram (3) Ayesha (4) Dipan (5) No one from the top ten

Directions for questions 17 to 20: Answer the following questions based on the information given below:

A vending machine, having five switches viz. 1, 2, 3, 4 and 5, when operated, dispenses Coca-cola, 7-up, Mirinda, Limca and Pepsi depending upon which switch is turned on. The machine is such that each switch dispenses two different drinks and each drink is dispensed by two different switches. If two or more switches are turned on, the common drink, if any, nullifies each other and will not come out at all. To get the drink that one wants, he/she has to turn on the right combination of switches, put in the money and press the delivery button.

Following information is also given:
Turning on switches:

I. 1 and 3, we get 7-up and Mirinda.
II. 2, 4 and 5, we get 7-up and Mirinda.
III. 1 and 2, we get Coca-cola and Pepsi.
IV. 1 and 4, we get Limca, Coca-cola, Mirinda and Pepsi.
V. 3, 4 and 5, we get Coca-cola and Pepsi.
VI. 2, 3 and 5, we get Limca, Coca-cola, Mirinda and Pepsi.
VII. Switches 1, 2, 3, 4 and 5 do not supply 7-up, Limca, Coca-cola, Mirinda and Pepsi respectively.

17. One of the drinks which is dispensed by turning on switch 1 is
(1) Limca (2) Coca-cola (3) Mirinda (4) 7-up

18. 7-up is one of the drinks that is dispensed by turning on switch
(1) switch 1 (2) switch 2 (3) switch 3 (4) switch 4

19. One of the drinks which is dispensed by turning on switch 2 is
(1) 7-up (2) Mirinda (3) Limca (4) Pepsi

20. What drinks are dispensed by turning on switches 2 and 3?
(1) Mirinda, Limca and 7-up (2) Pepsi, Limca and 7-up
(3) Coca-cola and Mirinda (4) Coca-cola, Mirinda, Pepsi and 7-up

Directions for questions 21 to 24: Answer the questions on the basis of the information given below.

The cells in the following grid are to be filled with distinct integers from among 1 to 16. Numbers in some of the cells are already filled as shown below.

Row–1			3	
Row–2	14			
Row–3		6		12
Row–4				7
	Column 1	Column 2	Column 3	Column 4

The remaining cells are to be filled subject to the following conditions:

I. No cell in the first or fourth row contains an even number.
II. No cell in the first or fourth column contains a multiple of 5.
III. The sum of the numbers in cells along one of the diagonals is 18.
IV. No cell in the third column contains a number that is the square or cube of an integer.
V. The sum of the numbers in the cells of the column in which one of the cells contains 10, is not less than sum of the numbers in the cells of the column in which one of the cells contains 1.
VI. Not more than one cell along any diagonal contains a number that is the square of an integer.
VII. The sum of the numbers in the cells of the first row is equal to 30.

21. The numbers in the cells of the first row, excluding the cell whose number is given, are
(1) 5, 9, 13 (2) 1, 15, 11 (3) 11, 15, 9 (4) 5, 13, 1

22. In which column maximum number of perfect squares are present?

23. The numbers in the cells of the 3rd row, excluding the cells whose number is given, are
(1) 2, 8 (2) 4, 2 (3) 2, 16 (4) 4, 10

24. Find the sum of the numbers in the cells of the second column.

Directions for questions 25 to 28: Answer the following questions based on the information given below: **CAT 2005**

In the table below is the listing of players, seeded from highest (#1) to lowest (#32), who are due to play in an Association of Tennis Players (ATP) tournament for women. This tournament has four knockout rounds before the final, i.e., first round, second round, quarterfinals, and semi-finals. In the first round, the highest seeded player plays the lowest seeded player (seed #32) which is designated match No. 1 of first round; the 2nd seeded player plays the 31st seeded player which is designated match No. 2 of the first round, and so on. Thus, for instance, match No. 16 of first round is to be played between 16th seeded player and the 17th seeded player. In the second round, the winner of match No. 1 of first round plays the winner of match No. 16 of first round and is designated match No. 1 of second round. Similarly, the winner of match No. 2 of first round plays the winner of match No. 15 of first round, and is designated match No. 2 of second round. Thus, for instance, match No. 8 of the second round is to be played between the winner of match No. 8 of first round and the winner of match No. 9 of first round. The same pattern is followed for later rounds as well.

Seed#	Name of Player	Seed#	Name of Player	Seed#	Name of Player
1	Maria Sharapova	12	Mary Pierce	23	Silvia Farina Elia
2	Lindsay Davenport	13	Anastasia Myskina	24	Tatiana Golovin
3	Amelie Mauresmo	14	Alicia Molik	25	Shinobu Asagoe
4	Kim Clijsters	15	Nathalie Dechy	26	Francesca Schiavone
5	Svetlana Kuznetsova	16	Elena Bovina	27	Nicole Vaidisova
6	Elena Dementieva	17	Jelena Jankovic	28	Gisela Dulko
7	Justine Henin	18	Ana Ivanovic	29	Flavia Pennetta
8	Serena Williams	19	Vera Zvonareva	30	Anna Chakvetadze
9	Nadia Petrova	20	Elena Likhovtseva	31	Al Sugiyama
10	Venus Williams	21	Daniela Hantuchova	32	Anna-lena Groenefeld
11	Patty Schnyder	22	Dinara Safina		

25. If there are no upsets (a lower seeded player beating a higher seeded player) in the first round, and only match Nos. 6, 7, and 8 of the second round result in upsets, then who would meet Lindsay Davenport in quarter finals, in case Davenport reaches quarter finals?
(1) Justine Henin (2) Nadia Petrova (3) Patty Schnyder (4) Venus Williams

26. If Elena Dementieva and Serena Williams lose in the second round, while Justine Henin and Nadia Petrova make it to the semi-finals, then who would play Maria Sharapova in the quarterfinals, in the event Sharapova reaches quarterfinals?
(1) Dinara Safina (2) Justine Henin (3) Nadia Petrova (4) Patty Schnyder

27. If, in the first round, all even numbered matches (and none of the odd numbered ones) result in upsets, and there are no upsets in the second round, then who could be the lowest seeded player facing Maria Sharapova in semi-finals?
(1) Anastasia Myskina (2) Flavia Pennetta (3) Nadia Petrova (4) Svetlana Kuznetsova

28. If the top eight seeds make it to the quarterfinals, then who, amongst the players listed below, would definitely not play against Maria Sharapova in the final, in case Sharapova reaches the final?
(1) Amelie Mauresmo (2) Elena Dementieva (3) Kim Clijsters (4) Lindsay Davenport

Directions for questions 29 to 32: Answer the following questions based on the information given below: **CAT 2004**

Prof. Singh has been tracking the number of visitors to his homepage. His service provider has provided him with the following data on the country of origin of the visitors and the university they belong to:

Number of visitors

	DAY		
COUNTRY	**1**	**2**	**3**
Canada	2	0	0
Netherlands	1	1	0
India	1	2	0
UK	2	0	2
USA	1	0	1

Number of visitors

	DAY		
UNIVERSITY	**1**	**2**	**3**
University 1	1	0	0
University 2	2	0	0
University 3	0	1	0
University 4	0	0	2
University 5	1	0	0
University 6	1	0	1
University 7	2	0	0
University 8	0	2	0

29. To which country does University 5 belong?
(1) India or Netherlands but not USA (2) India or USA but not Netherlands
(3) Netherlands or USA but not India (4) India or USA but not UK

30. University 1 can belong to

(1) UK (2) Canada (3) Netherlands (4) USA

31. Which among the listed countries can possibly host three of the eight listed universities?

(1) None (2) Only UK (3) Only India (4) Both India and UK

32. Visitors from how many universities from UK visited Prof. Singh's homepage in the three days?

(1) 1 (2) 2 (3) 3 (4) 4

Para Jumbles

1.
(1) Careful budgeting, motivation and discipline are very important attributes of successful investors.
(2) Many will have built their wealth through a successful investment strategy but you may be surprised to find out how many don't have adequate savings for retirement or redundancy, let alone a solid investment plan.
(3) If you have had plenty of practice stretching your dollar further and living within your means, you might already have what it takes!
(4) We often meet people who are hooked on the good life: living in expensive suburbs, driving fancy cars, frequently dining out and taking overseas holidays.
(5) Lower income earners are often the ones who knuckle down and save.

2.
(1) The fjords' fame is wholly merited, but this is also a land of glaciers, grand and glorious, snaking down from ice-fields that rank among Europe's largest.
(2) Elsewhere, the mountainous terrain of Norway's interior resembles the ramparts of so many natural fortresses, and yields to rocky coastal islands that rise improbably from the waters like apparitions.
(3) Such landforms provide a backdrop for some of Europe's most charismatic wildlife – polar bears, reindeer and musk oxen to name just three – and the setting for many a picturesque wooden village.
(4) The drama of Norway's natural world is difficult to overstate. Impossibly steep-sided fjords of extraordinary beauty cut gashes from a jagged coastline deep into the interior.
(5) And then, of course, there's the primeval appeal of the Arctic.

Para Completion

3. The story of Hazare's transformation began in 1964 at a Delhi railway station bookstall after he bought a book on Swami Vivekananda. Enthralled by the great sage's life and by his dictum that the noblest thing a man can do is work for the good of others, Hazare avidly began reading religious texts and biographies of social reformers. And after his escape from the Sabre jets at Khemkaran, Hazare became a vegetarian, gave up cigarettes and liquor, and vowed to remain a bachelor devoting himself to public service. Finally, in August 1975, Hazare returned to his village after retiring from the army. _____

(1) His service benefits amounted to Rs20, 000 and he planned to spend the money rebuilding the village temple. He hired carpenters and masons, and helped them lay bricks and lug wood.
(2) But he didn't have the money; to qualify for a pension he had to serve for several years more.
(3) A worthy cause, he realized, lay right in front of him: The upliftment of his own village, Ralegaon Siddhi.
(4) During his annual visits home, Hazare had been appalled by its steady deterioration—even the village temple had become badly run down.

4. The Great Chicago fire killed hundreds and destroyed 4 square miles of Chicago, Illinois. However, on the very same day a far worse fire occurred, in Peshtigo, Wisconsin. The October 8, 1871, Peshtigo Fire in Peshtigo, Wisconsin, is the conflagration that caused the most deaths by fire in United States history. On the same day as the Peshtigo and Chicago fires, the cities of Holland and Manistee, Michigan, across Lake Michigan, also burned, and the same fate befell Port Huron at the southern end of Lake Huron. _____

(1) By the time the fire had diminished, thousands of square miles of forest had been consumed and several communities were destroyed. Between 1,200 and 2,500 people are thought to have lost their lives.
(2) The fire was so intense it jumped several miles over the waters of Green Bay, and burned parts of the Door Peninsula, as well as jumping the Peshtigo River itself to burn on both sides of the inlet town.
(3) Surviving witnesses reported that the firestorm generated a tornado that threw rail cars and houses into the air.
(4) Many of the survivors of the firestorm escaped the flames by immersing themselves in the Peshtigo River, wells, or other nearby bodies of water. Some drowned while others succumbed to hypothermia in the frigid river.

Odd Para Jumble

5. We were speeding on our massive green kite, autopilot set to follow the wind, about 155 degrees off wind, a course that brought us heading straight for the fishing vessel.

(1) All of sudden she popped up at the horizon. We locked her on the radar and observed she was not moving at all.
(2) A fishing vessel is used to catch fish in the sea, or on a lake or river, usually by artisan fishers
(3) For days, we have not seen another ship and on Saturday, we passed a fishing vessel, in the early afternoon.
(4) It was a fishing vessel, which looked like hovering on one spot.

6. The Ebola outbreak in West Africa is unlike anything since the emergence of HIV/Aids, top US medical official Thomas Friedan has said.

(1) The Journal of Public Health in Africa reports that millions of native Africans are plagued by health issues such as AID/HIV, malaria, tuberculosis, diarrhoea, heart disease, malnutrition and several lower respiratory disorders.
(2) The outbreak has killed more than 3,860 people, mainly in West Africa. More than 200 health workers are among the victims.
(3) The presidents of Liberia, Sierra Leone and Guinea appealed for more aid to help fight the disease.
(4) A fast global response could ensure that it did not become "the next Aids," the director of the Centers for Disease Control and Prevention (CDC) said.

Passage - 1

Evolutionary psychology takes as its starting point the uncontroversial assertion that the anatomical and physiological features of the human brain have arisen as a result of adaptations to the demands of the environment over the millennia. However, from this reasonable point of departure, these psychologists make unreasonable extrapolations. They claim that the behavior of contemporary man (in almost all its aspects) is a reflection of features of the brain that acquired their present characteristics during those earliest days of our species when early man struggled to survive and multiply.

This unwarranted assumption leads, for example, to suggestions that modern sexual behavior is dictated by realities of Pleistocene life. These suggestions have a ready audience, and the idea that Stone Age man is alive in our genome and dictating aspects of our behavior has gained ground in the popular imagination. The tabloids repeatedly run articles about “discoveries” relating to “genes” for aggression, depression, repression, and anything for which we need a readymade excuse. Such insistence on a genetic basis for behavior negates the cultural influences and the social realities that separate us from our ancestors.

The difficulty with pseudo science of this nature is just this popular appeal. People are eager to accept what is printed as incontrovertible, assuming quite without foundation, that anything printed has bona fide antecedents. We would do well to remember that the phrenologists of the nineteenth century held sway for a considerable time in the absence of any evidence that behavioral tendencies could be deduced from the shape of the skull. The phrenologists are no more, but their genes would seem to be thriving.

7. The author’s primary purpose in the passage is to
(1) argue for the superiority of a particular viewpoint
(2) attack the popular press
(3) ridicule a particular branch of science
(4) highlight an apparently erroneous tendency in an area of social science

8. The author mentions phrenologists as
(1) pseudo scientists who are the logical antecedents of evolutionary psychologists
(2) a group with inherent appeal to the followers of evolutionary psychologists
(3) a warning against blind acceptance of ideas
(4) scientists with whom evolutionary psychologists share common assumptions

9. The author apparently believes that the journalists writing for the tabloids
(1) are more concerned with popular appeal than with authenticity
(2) believe that human behavior has a genetic basis
(3) run the same articles over and over again
(4) are highly irresponsible in their efforts to pander to the public

Passage - 2

It is exceedingly difficult to make people realize that an evil is an evil. For instance, we seize a man and deliberately do him a malicious injury: say, imprison him for years. One would not suppose that it needed any exceptional clearness of wit to recognize in this an act of diabolical cruelty. But in England such a recognition provokes a stare of surprise, followed by an explanation that the outrage is punishment or justice or something else that is all right, or perhaps by a heated attempt to argue that we should all be robbed and murdered in our beds if such senseless villainies as sentences of imprisonment were not committed daily. It is useless to argue that even if this were true, which it is not, the alternative to adding crimes of our own to the crimes from which we suffer is not helpless submission.

Chickenpox is an evil; but if I were to declare that we must either submit to it or else repress it by seizing everyone who suffers from it and punishing them by inoculation with smallpox, I should be laughed at; for though nobody could deny that the result would be to prevent chickenpox to some extent by making people avoid it much more carefully, and to effect a further apparent prevention by making them conceal it very anxiously, yet people would have sense enough to see that the deliberate propagation of smallpox was a creation of evil, and must therefore be ruled out in favor of purely humane and hygienic measures. Yet in the precisely parallel case of a man breaking into my house and stealing my diamonds I am expected as a matter of course to steal ten years of his life. If he tries to defeat that monstrous retaliation by shooting me, my survivors hang him. The net result suggested by the police statistics is that we inflict atrocious injuries on the burglars we catch in order to make the rest take effectual precautions against detection; so that instead of saving our diamonds from burglary we only greatly decrease our chances of ever getting them back, and increase our chances of being shot by the robber.

But the thoughtless wickedness with which we scatter sentences of imprisonment is as nothing compared to the stupid levity with which we tolerate poverty as if it were either a wholesome tonic for lazy people or else a virtue to be embraced as St. Francis embraced it. If a man is indolent, let him be poor. If he is drunken, let him be poor. If he is not a gentleman, let him be poor. If he is addicted to the fine arts or to pure science instead of to trade and finance, let him be poor. If he chooses to spend his wages on his beer and his family instead of saving it up for his old age, let him be poor. Let nothing be done for “the undeserving”: let him be poor. Serve him right! Also — somewhat inconsistently — blessed are the poor!

10. The passage is most probably intended to
(1) serve as an introduction to a more detailed discussion of poverty
(2) censure imprisonment as a punitive measure
(3) analyze the possible repercussions of social evils
(4) continue a prior discussion of strong measures against social evils

11. It can be inferred from the passage that the author would agree with all the following **except**
(1) most people don’t realize that by punishing offenders they are surrendering themselves to the vicious cycle of crime and punishment
(2) sentences of imprisonment have little success in reducing the crime rate in society
(3) it would be ridiculous to inoculate people suffering from chicken pox with small pox
(4) if criminals were not strongly punished for their misdeeds there would be no law and order in society

12. The author's argument about imprisonment would be most weakened by showing that
(1) imprisonment is not widely regarded as an act of cruelty
(2) chicken pox and burglary are not analogous evils
(3) imprisonment does not cause malicious injury
(4) sentences of imprisonment are given increasingly rarely

13. The author apparently believes that people at the time he wrote the passage were
(1) inclined to consider poverty a social evil
(2) too ready to judge other people unfairly
(3) inconsistent in their attitude to poverty
(4) in favour of unusually harsh punishment of all offenders

Passage - 3

Influenced by Evangelical attitudes, art and literature of the nineteenth century were expected to contribute to moral education. Running afoul of that expectation was the Pre-Raphaelite Brotherhood (PRB), which invited the vituperations of reviewers of its day. Being "retrogressive" in a progressive era may be a serious fault, according to Charles Dickens' rhetoric about the art of John Millais; but being "fleshly" and "aesthetic" in an age of moral earnestness may be worse, as D. G. Rossetti, another PRB ringleader, discovered when poet and critic Robert Buchanan attacked him and his work in "The Fleshly School of Poetry" (1871).

However much the PRB had offended the establishment, most of the brothers had insisted on the importance of the arts as moral guides. Yet Rossetti had expressed doubts about art designed to be morally uplifting: the painter-hero of his short story "Hand and Soul" (1850) tries through art to inspire "moral greatness," only to witness his frescoes of Peace spattered by blood shed in a vendetta. And, privileging form at the expense of meaningful content and animal passion at the expense of conventional morality, the poems and Rossetti himself, Buchanan wrote, were "never spiritual, never tender, always self-conscious and aesthetic."

14. According to the passage, Rossetti's poems
(1) were criticized by reviewers as not progressive enough
(2) violated certain aesthetic ideals through their portrayals of violence
(3) came under attack for their emphasis on form at the expense of substance
(4) advocated certain behaviour which ran contrary to the prevailing morality of the time

15. Which among the following is(are) member(s) of PRB?
I. John Millais
II. D.G Rossetti
III. Robert Buchanan

(1) Only II
(2) Both I and II
(3) Only III
(4) I, II and III

16. Which of the following can be inferred from the passage?
(1) Evangelical societies expected literature to contribute to moral education.
(2) PRB was founded in the nineteenth century.
(3) Rossetti had rejected the tenents of PRB
(4) None of these

Passage - 4

The question of beauty has captivated and frustrated artists, writers, and scholars for centuries. What defines beauty, and who can justifiably be described as beautiful? Is there a universal "look" that is beautiful in contrast to one that is not? History and literature are replete with descriptions of women who are said to be the "most beautiful." Greek myth claimed that Helen of Troy was the most beautiful woman in the world, with a "face that launched a thousand ships," as well as a ten-year war between Greeks and Trojans. But there is no clear account of Helen's appearance, and even Hollywood has been unable to agree on this issue, rendering Helen a variety of ways in different movie productions about the Trojan War. Today, scientists are beginning to consider the question of beauty and to devise tests that attempt to quantify attractiveness. The goal is to see whether beauty is simply a subjective perception or if people in general tend to agree on who is beautiful and who is not. In some tests, participants from a variety of cultural backgrounds are asked to compare different faces and to decide who is beautiful and who is not. In the majority of these tests, the participants agree in large percentages that the faces most likely to be considered beautiful are in fact beautiful. Some scientists have even tested infants, showing them pictures of different faces. The tests indicate that the gaze of the infants tends to linger more on the beautiful faces rather than on the faces not traditionally considered beautiful.

Other scientists have found that this potential for a universal appreciation of beauty leads to interesting consequences. As psychologist Nancy Etcoff notes, beauty can affect belief in one's character. That is, beautiful people are often assumed to be better than unattractive people in terms of character or other traits. There is evidence that in classroom situations beautiful children are often scored higher than unattractive or less beautiful children, apparently under the assumption that the beautiful children *must* be doing well. Scientists are quick to note that this is not a conscious decision on the instructor's part but is an unconscious response to the child's appearance. Even adults are not immune to this bias. In applying for jobs, attractive applicants often receive the desired employment, whether or not they are more qualified than a less attractive applicant. Political analysts also claim that the attractive candidate wins the election, regardless of his or her political platform. Historians have found that during the Nixon and Kennedy debates of 1960, viewers tended to favor Kennedy in the video debates and Nixon in the radio debates, and it has been suggested that Kennedy's attractive and youthful appearance gave him the leading edge.

Scientists claim that a certain combination of features is universally considered beautiful, but one element that has not been tested to any great extent is the effect of personality on beauty. In the immediate sense, beauty might be associated with character, with beautiful people assumed to be morally or ethically better than others. But perhaps there is a reverse relation to consider. That is, character might affect beauty, and not the other way around. Etcoff hints at the effect of character or personality in determining beauty: she records that upon meeting the writer George Eliot, a woman who was generally considered to be very unattractive, her fellow writer Henry James was immediately struck by her ugly appearance; but in the course of talking with her for only a few minutes he discovered an inner beauty that completely altered his opinion of her outward appearance. It may be that although physical features are indeed important in determining beauty, beauty itself is not simply "skin deep" and can be defined by more than an arrangement of eyes, nose, and lips. Scientists studying the phenomenon of beauty would do well to turn their attention to the more intangible qualities that define beauty and to consider what lies beneath the skin in addition to what lies on it.

17. Which of the following best summarizes the central idea of the passage?
(1) Despite society's claim that all are beautiful in their own way, scientific studies show that beauty is quantifiable and some faces are always considered beautiful.
(2) Scientists testing for beauty need to consider more than mere outward appearances to determine what makes a person beautiful.
(3) Beauty is related far more to personality and character than it is to outward appearances.
(4) Beauty is inevitable, and the beautiful will always find more success than those who are less attractive.

18. It may be inferred from the passage that the author believes which of the following?
(1) After long ignoring beauty, scientists have finally recognized its importance and have begun to quantify beauty in objective tests.
(2) There is a specific combination of features that is considered beautiful across cultural boundaries.
(3) Beauty is determined entirely by cultural standards, and what one culture perceives as beautiful another might dismiss as unattractive.
(4) Personality might play a significant role in determining whether or not a person will be perceived as beautiful.

19. Which of the following best expresses the reasoning behind the author's main argument?
(1) Beauty is so subjective that much more testing is required to obtain any definitive results about what constitutes beauty.
(2) Infants can identify beauty because they recognize the qualities of a person's character, as well as the features on a person's face.
(3) Given the mystery that sometimes surrounds perceptions of beauty, it is likely that beauty is determined by more than an arrangement of facial features.
(4) Beautiful people have received inappropriate privileges that have created long-term consequences in society.

20. The information that in classroom situations teachers respond differently to attractive students than to unattractive students is intended to do which of the following?
(1) Indicate that beauty sometimes plays a role in the perception of a person's character or qualities.
(2) Illustrate that society gives unnecessary privileges to the beautiful
(3) Show that the personality or character of the schoolchildren affected their outward appearance
(4) Suggest that youth is inevitably associated with beauty

21. The author's tone toward the claim that beautiful people are often assumed to be of good character and receive privileges for their appearance can best be described as which of the following?
(1) Combative scepticism
(2) Quiet resignation
(3) Informative warning
(4) Righteous anger

1. If ab × cd = 1073 and ba × cd = 2117, find the value of (ab + cd) given that ab, ba and cd are all two digit positive integers.
(1) 66 (2) 65 (3) 63 (4) 95

2. Find the maximum value of $|30 + 9x - 3x^2|$, where $-1 \le x \le 4$.
(1) $\frac{93}{4}$ (2) $\frac{147}{4}$ (3) 30 (4) 18

3. A shop stores x kg of rice. The first customer buys half this amount plus half a kg of rice. The second customer buys half the remaining amount plus half a kg of rice. Then the third customer also buys' half the remaining amount plus half a kg of rice. Thereafter, no rice is left in the shop. Which of the following best describes the value of x? **CAT 2008**
(1) $2 \le x \le 6$ (2) $5 \le x \le 8$ (3) $9 \le x \le 12$ (4) $11 \le x \le 14$ (5) $13 \le x \le 18$

4. Three consecutive positive integers are raised to the first, second and third powers respectively and then added. The sum so obtained is perfect square whose square root equals the total of the three original integers. Which of the following best describes the minimum, say m, of these three integers? **CAT 2008**
(1) $1 \le m \le 3$ (2) $4 \le m \le 6$ (3) $7 \le m \le 9$ (4) $10 \le m \le 12$ (5) $13 \le m \le 15$

5. If $\frac{a}{b+c} = \frac{b}{c+a} = \frac{c}{a+b} = r$, then r cannot take any value except. **CAT 2004**

(1) $\frac{1}{2}$ (2) -1 (3) $\frac{1}{2}$ or -1 (4) $-\frac{1}{2}$ or -1

6. If a, b, c are real numbers such that $a^3 + b^3 + c^3 = 3abc$ and $a+b+c \neq 0$, then the relation between a, b and c will be

(1) a + b = c (2) a = b = c (3) a + c = b (4) b + c = a

7. What values of x satisfy $x^{2/3} + x^{1/3} - 2 \leq 0$? **CAT 2006**

(1) $-8 \leq x \leq 1$ (2) $-1 \leq x \leq 8$ (3) $1 < x < 8$ (4) $1 \leq x \leq 8$ (5) $-8 \leq x \leq 8$

8. If both the roots of the quadratic equation $(-2x^2 + bx + c) = 0$, are negative, then what is the sign of $\frac{(b+c)}{(bc)}$?

(1) Always Negative (2) Always Positive
(3) Cannot be determined (4) Will vary according to the values of 'b' and 'c'

9. Find all the values of p, such that 6 lies somewhere between the roots of the equation $x^2 + 2(p - 3)x + 9 = 0$ ('x' is a real number)

(1) $p < -\frac{3}{4}$ (2) $p > 6$ (3) $0 < p < 6$ (4) $0 < p < \frac{3}{4}$ (5) $p > -\frac{3}{4}$

10. The angles of a quadrilateral are in an arithmetic progression. If the largest angle of the quadrilateral is thrice of its smallest angle, find the value of the largest angle.
(1) 45° (2) 90° (3) 135° (4) 150°

11. Find the value of 36S if $S = \frac{6}{(2)\times(3)\times(4)}\times\frac{1}{2} + \frac{7}{(3)\times(4)\times(5)}\times\frac{1}{2^2} + \frac{8}{(4)\times(5)\times(6)}\times\frac{1}{2^3} + \ldots$ till infinite terms.
(1) 4 (2) 4.5 (3) 5 (4) 6

12. If $a_1 = \frac{1}{2\times5}, a_2 = \frac{1}{5\times8}, a_3 = \frac{1}{8\times11}, \ldots,$ then $a_1 + a_2 + a_3 + \ldots + a_{100}$ is **CAT 2017**
(1) $\frac{25}{151}$ (2) $\frac{1}{2}$ (3) $\frac{1}{4}$ (4) $\frac{111}{55}$

13. If x is a real number such that $\log_3 5 = \log_5 (2 + x)$, then which of the following is true? **CAT 2017**
(1) $0 < x < 3$ (2) $23 < x < 30$ (3) $x > 30$ (4) $3 < x < 23$

14. If x = a(b – c), y = b(c – a) and z = c(a – b), then find the value of $\frac{1}{abc}\left[\frac{x^2}{yz} + \frac{y^2}{xz} + \frac{z^2}{xy}\right]$. (Given that $xyz \neq 0$)
(1) $\frac{1}{abc}$ (2) $\frac{27}{abc}$ (3) $\frac{3}{abc}$ (4) $\frac{9}{abc}$ (5) $\frac{1}{3abc}$

15. Sum of the first n terms of a geometric progression is given as $S_n = \alpha.\left(\frac{1}{3}\right)^n + \beta$. If the sum of infinite terms of this series is unity, then

(1) $\alpha + \beta = 1$ (2) $3\alpha + \beta = -1$ (3) $\alpha + 2\beta = -1$ (4) $2\alpha + 3\beta = 1$

16. If a, b and c are non-zero real numbers such that |a – b| =|c| and |a – c| = |b|, then what is the value of $b^2 + c^2$?

(1) $a^2 - 2bc$ (2) 2bc (3) a^2 (4) $a^2 + 2bc$

17. In a regular polygon, the number of diagonals is 'k' times the number of sides. If the interior angle of the polygon is θ, then the value of k is

(1) $\frac{3\theta - \pi}{2(\pi - \theta)}$ (2) $\frac{2(3\theta - \pi)}{\pi - \theta}$ (3) $\frac{2(\pi - \theta)}{3\theta - \pi}$ (4) $\frac{(\pi - \theta)}{2(3\theta - \pi)}$

18. Let n! = 1 × 2 × 3 × ... × n for integer n ≥ 1. **CAT 2005**

If p = (1 × 1!) +(2 × 2!) + (3 × 3!) + … + (10 × 10!), then p + 2 when divided by 11! leaves a remainder of

(1) 10 (2) 0 (3) 7 (4) 1

19. Find the sum of $\sqrt{\left(1+\frac{1}{1^2}+\frac{1}{2^2}\right)}+\sqrt{\left(1+\frac{1}{2^2}+\frac{1}{3^2}\right)}+\ldots\sqrt{\left(1+\frac{1}{2007^2}+\frac{1}{2008^2}\right)}$ **CAT 2008**

(1) $2008-\left(\frac{1}{2008}\right)$ (2) $2007-\left(\frac{1}{2007}\right)$ (3) $2007-\left(\frac{1}{2008}\right)$ (4) $2008-\left(\frac{1}{2007}\right)$ (5) $2008-\left(\frac{1}{2009}\right)$

20. A table of 'n' rows and 'n' columns is created such that the value of the cell in the ith row and the jth column is given by (i + 1) + j. Some numbers are selected from the table. If it is found that exactly one number has been selected from each row and each column, then the sum of the selected numbers will be equal to

(1) $n^2 + 1$ (2) $\frac{n(n+1)}{2}$ (3) n(n + 2) (4) n(n + 1)

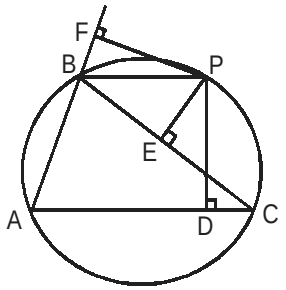
21. If $a_{n+1} = \sqrt{\left|a_n^2 - 16\right|}$ and $a_1 = 7$, then find the value of a_{79}.

(1) $\sqrt{15}$ (2) 1 (3) $\sqrt{17}$ (4) 7

22. Let f(x) = 2x – 5 and g(x) = 7 – 2x. Then |f(x) + g(x)| = |f(x)| + |g(x)| if and only if **CAT 2017**

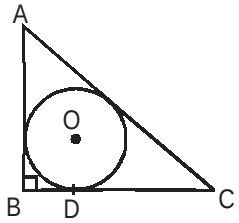
(1) $\frac{5}{2} < x < \frac{7}{2}$ (2) $x \le \frac{5}{2}$ or $x \ge \frac{7}{2}$ (3) $x < \frac{5}{2}$ or $\ge \frac{7}{2}$ (4) $\frac{5}{2} \le x \le \frac{7}{2}$

23. In the given figure, P is a point on the circumcircle of ΔABC, From P, perpendiculars PD, PE & PF are drawn on the sides AC, BC and AB respectively. If $\angle BPF = 30°$, then find the measure of $\angle DPC$



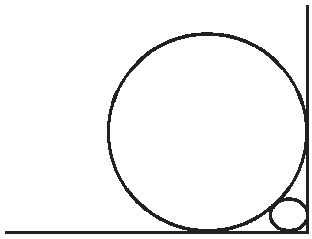
(1) 30° (2) 60° (3) 40° (4) 50° (5) 20°

24. In the figure given below, ΔABC is an isosceles right angled triangle and the "in-circle" with center O touches the side BC at D. If AB = 2 cm, find the length (in cm) of BD.



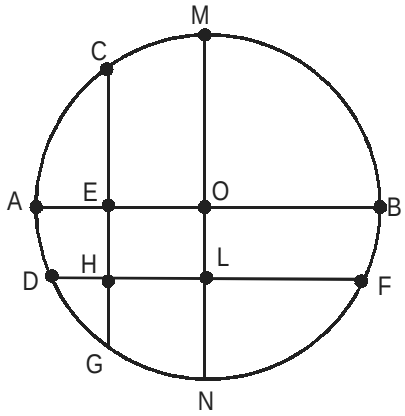
(1) $1-\frac{1}{\sqrt{2}}$ (2) $2-\sqrt{2}$ (3) $2-\frac{1}{\sqrt{2}}$ (4) $\sqrt{2}-1$

25. A circle with radius 2 is placed against a right angle. Another smaller circle is also placed as shown in the adjoining figure. What is the radius of the smaller circle? **CAT 2004**



(1) $3-2\sqrt{2}$ (2) $4-2\sqrt{2}$ (3) $7-4\sqrt{2}$ (4) $6-4\sqrt{2}$

26. In the following figure, the diameter of the circle is 3 cm. AB and MN are two diameters such that MN is perpendicular to AB. In addition, CG is perpendicular to AB such that AE : EB = 1 : 2, and DF is perpendicular to MN such that NL : LM = 1 : 2. The length of DH in cm is **CAT 2005**

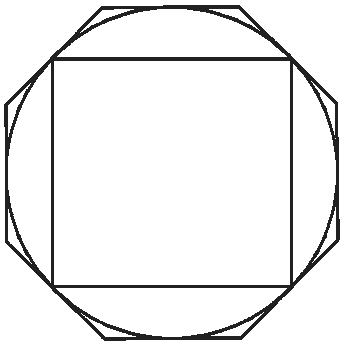


(1) $2\sqrt{2}-1$ (2) $\frac{(2\sqrt{2}-1)}{2}$

(3) $\frac{(3\sqrt{2}-1)}{2}$ (4) $\frac{(2\sqrt{2}-1)}{3}$

27. If the diagonals of a rhombus are in the ratio 3 : 4, what is the ratio of the side to the smaller diagonal of the rhombus?
(1) 3 : 5 (2) 5 : 3 (3) 5 : 6 (4) 6 : 5

28. A square is inscribed in a circle and the circle is inscribed in a regular octagon. Find the ratio of the area of the square to that of the octagon.



(1) $\left(1+\sqrt{2}\right):4$ (2) $\left(2\sqrt{2}-1\right):4$ (3) $\left(\sqrt{2}-1\right):4$ (4) Can't say

29. Two circles, both of radii 1 cm, intersect such that the circumference of each one passes through the centre of the other. What is the area (in sq. cm.) of the intersecting region? **CAT 2008**

(1) $\frac{\pi}{3}-\frac{\sqrt{3}}{4}$ (2) $\frac{4\pi}{3}+\frac{\sqrt{3}}{2}$ (3) $\frac{2\pi}{3}+\frac{\sqrt{3}}{2}$ (4) $\frac{2\pi}{3}-\frac{\sqrt{3}}{2}$ (5) $\frac{4\pi}{3}-\frac{\sqrt{3}}{2}$

30. Consider a right circular cone of base radius 4 cm and height 10 cm. A cylinder is to be placed inside the cone with one of the flat surfaces resting on the base of the cone. Find the largest possible total surface area (in sq. cm) of the cylinder.

(1) $\frac{100\pi}{3}$ (2) $\frac{80\pi}{3}$ (3) $\frac{120\pi}{7}$ (4) $\frac{130\pi}{9}$ (5) $\frac{110\pi}{7}$ **CAT 2008**

31. Let $x = \sqrt{4+\sqrt{4-\sqrt{4+\sqrt{4-...\text{to infinity}}}}}$. Then x equals **CAT 2005**

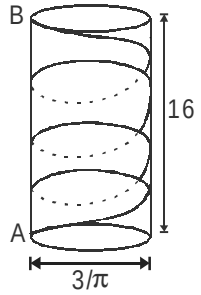
(1) 3 (2) $\left(\frac{\sqrt{13}-1}{2}\right)$ (3) $\left(\frac{\sqrt{13}+1}{2}\right)$ (4) $\sqrt{13}$

32. If the product of three consecutive positive integers is 15600 then the sum of the squares of these integers is **CAT 2017**
(1) 1777 (2) 1785 (3) 1875 (4) 1877

33. At what time between 6 pm and 7 pm will be hands of the clock coincide?
(1) 6:32:44 pm (2) 6:33:46 pm (3) 6:32:30 pm (4) 6:34:42 pm (5) 6:33:24 pm

34. A function f(x) satisfies f(1) = 3600 and f(1) + f(2) + … + f(n) = n^2 f(n), for all positive integers n > 1. What is the value of f(9)?
(1) 80 (2) 240 (3) 200 (4) 100 (5) 120

35. An ant starts from point A and crawls along the surface of the cylinder to reach the point B, vertically above A. The path followed by the ant is equal to that of 4 identical spirals as shown in the figure. Find the radius of the circle that circumscribes a square such that the perimeter of the square is equal to the distance traversed by the ant. The diameter of the cylinder is $3/\pi$ units and the height is 16 units.



(1) $\frac{5}{2}$ (2) $\frac{5}{\sqrt{2}}$ (3) $\frac{\sqrt{5}}{2}$ (4) $\frac{\sqrt{5}}{3}$

36. A ball of diameter 4 cm is kept on top of a hollow cylinder standing vertically. The height of the cylinder is 3 cm, while its volume is 9π cm^3. Then the vertical distance, in cm, of the topmost point of the ball from the base of the cylinder is

CAT 2017

37. What is the area (in sq. units) bounded by the curve $|x| + |y| = \sqrt{2}$?

(1) 2 (2) 4 (3) 8 (4) 16

38. A flight leaves Bangalore at 4 : 15 pm and reaches Dubai at 6 : 45 pm. Another flight leaves Dubai at 3 : 30 pm and reaches Bangalore at 9 pm. If their speed was 800 km/hr and they followed the same path. What is the distance (in km) between Bangalore and Dubai?

(1) 3000 (2) 3200 (3) 3400 (4) 3600

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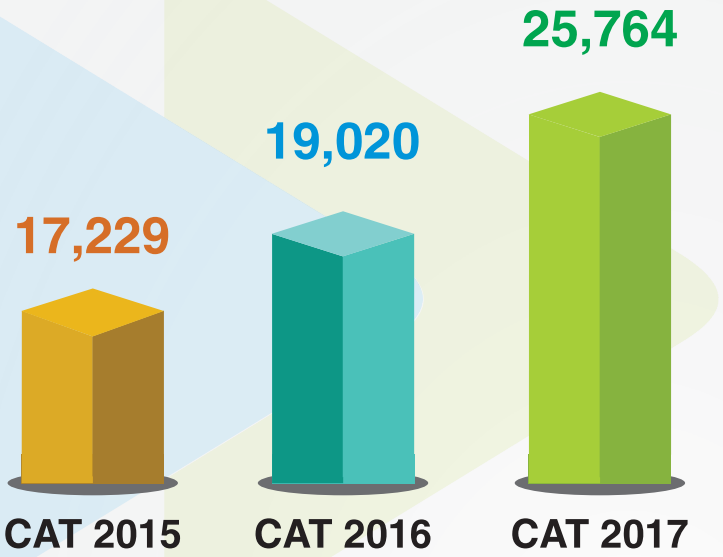

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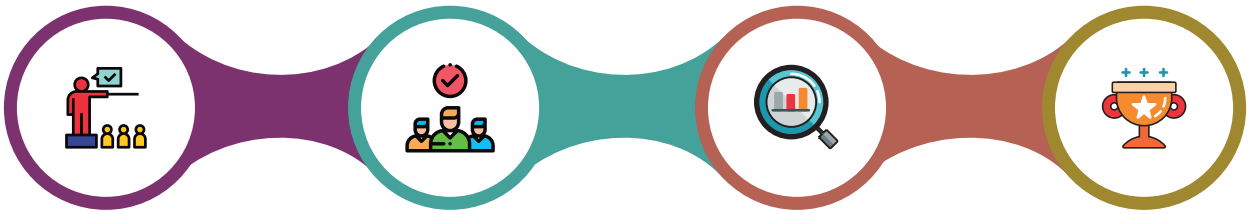

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