

Ref: AIMCAT1711

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 a total of 90 questions in three sections: (i) Verbal Ability and Reading Comprehension – 30 Questions (ii) Data Interpretation and Logical Reasoning – 30 Questions and (iii) Quantitative Ability – 30 Questions. The total time available for the test is **180 minutes**. However, you will be allotted exactly 60 minutes for answering the questions in each section and you cannot switch from one section to another while answering the questions in a section.
3. All questions carry three marks each. Each wrong answer to any multiple-choice type question will attract a penalty of one mark. Wrong answers to any non multiple-choice type question will not attract any penalty.

SECTION I: VERBAL ABILITY AND READING COMPREHENSION

SUB-SECTION: READING COMPREHENSION
Number of Questions = 20

DIRECTIONS for questions 1 to 5: The passage given below is followed by a set of five questions. Choose the best answer to each question.

As a so-called 'bathroom break girl' at the advertising agency BBDO in 1985, Susan Credle took over for receptionists when they left their desks. When she learned how to type quickly and accurately, she was promoted to secretary. In the decades since, she has become one of the most accomplished women in the industry, holding top executive positions at some of the most esteemed creative agencies. She has been behind numerous memorable campaigns, including the humanlike M&M's characters and Allstate's Mayhem ads.

But even today, there are male leaders in the industry who do not acknowledge her. At industry parties, people assume they should be talking to her husband, who is an architect. She tries not to show her emotions at work because when she does, she said, "I am immediately looked at as the crazy woman."

"To this day, when I feel the blood boiling in me and I just want to let it all out, I cut it by 90 percent because I'm a woman," she said.

Women now make up almost 50 percent of those working in the advertising industry, including a relatively small number, like Ms. Credle, in top executive positions. Yet when a female employee of the J. Walter Thompson agency filed a lawsuit in March accusing the company's chief executive of racist and sexist behavior, the accusations brought to the surface what women in the industry had talked about for years: that more than half a century after the "Mad Men" era, gender bias, while often unspoken or acknowledged, continues to affect how they are treated at work, whom they interact with and what positions they hold.

Advertising is far from the only industry that has struggled with issues of sexist behavior and gender bias through the years. But in interviews with more than a dozen women, mostly executives, who work in advertising, many said they found it hard to believe how much their particular business still remained a white man's world. Although some women said they had never personally experienced gender discrimination and referred to it as a thing of the past, many said they repeatedly felt ignored or dismissed by male colleagues and left out socially. They recalled times when they were the only woman in meetings with both co-workers and clients. Some pointed to the ads themselves as examples of how the industry's sexism manifested itself beyond office walls. "If all the advertising is being created through the dominant male lens and you look at what the result is, there's a bias in that and there's only one perspective," said Jean Bathany, the executive creative director at DDB Chicago. "Yes, there is the rapey talk and the grabby hands, but it's that subtle stuff that's chronic and can be more damaging," she added.

Nancy Hill, a longtime advertising executive who is now president and chief executive of the 4A's, an industry trade group, said that men called her "young girl" all the time, though she has been working in the business for decades. "They don't recognize that's demeaning," she said.

Megan Pagliuca, the global chief executive of Omnicom's Accuen agency, said sexism revealed itself in the prevalence of social events like golf outings and drinking events being used for business purposes, a sentiment echoed by several other women interviewed. Women, she said, feel pressure to learn to play golf or to generally act more like their male counterparts or risk missing out on establishing important relationships.

1. Which of the following can be understood about Credle from the passage?
 - (A) She was generally of a very angry disposition.
 - (B) She was one of the few women leaders in the top echelons of the advertising industry.
 - (C) The progress graph of her career was increasing but at a slow pace.
 - (D) Her husband was more successful as an architect than she was in her advertising job.

2. According to the passage, what did many women executives find hard to believe?
 - (A) The advertising industry, inspite of persevering and dedicated individuals, was not a sunrise industry as were other sectors.
 - (B) Other sectors also faced problems of racism and gender bias.
 - (C) Women executives were shocked at the length of time that it took the other sectors to get rid of gender bias and racism.
 - (D) Over the many years, the advertising industry has not been able to disentangle itself from racism and gender bias.

3. Which of the following can be understood to be true from the passage?
 - (A) Implicit gender bias is prevalent in the advertising world even today.
 - (B) J. Walter Thompson was notorious for his bad rapport with women.
 - (C) The first half of the century had many men who had diverse neurological problems and hence behaved in a mad and unbecoming manner with women.
 - (D) Women are not as deserving as men to be in top executive positions in the corporate world.

4. Why does the author mention golf outings and drinking events in the passage?

5. As discussed in the passage, all of the following would be examples of situations which amount to a display of gender bias in the advertising world EXCEPT?
 - (A) Male executives ignore their female colleagues during business meetings masquerading as social outings -- when colleagues go out for steak dinners or watch a sports game together from a box suite then women feel left out socially, like "invisible" outsiders.
 - (B) Women scrupulously avoid any taint of the "young girl look" in order to maintain control over subordinates and to effortlessly exert authority.
 - (C) Many ads produced by advertising agencies portray stereotypical gender roles, with mothers in the kitchen, for instance, and men driving cars.
 - (D) Male executives in the advertising field become visibly uncomfortable and end the conversation when the issue of gender and racial diversity is raised and discreetly subject female employees to racist and sexist comments.

DIRECTIONS for questions 6 to 10: The passage given below is followed by a set of five questions. Choose the best answer to each question.

A SET of straight and gleaming teeth makes for a beautiful smile. But how many people who have undergone a little dental maintenance know that they may have inside their mouths some of the first products of a new industrial revolution? Tens of millions of dental crowns, bridges and orthodontic braces have now been produced with the help of additive manufacturing, popularly known as 3D printing. Forget the idea of hobbyists printing off small plastic trinkets at home. Industrial 3D printers, which can cost up to \$1m, are changing manufacturing.

The business of dentures shows how. For the metal bits in false teeth, dentists have long relied upon a process called "investment casting". This involves creating an individual model of a person's tooth, often in wax, enclosing it in a ceramic casing, melting out the wax and then pouring molten metal into the cavity left behind. When the cast is split open, the new metal tooth is removed. It is fiddly, labour-intensive and not always accurate; then again the casting method is some 5,000 years old.

Things are done differently at an industrial unit in Miskin, near Cardiff, set up by Renishaw, a British engineering company. The plant is equipped with three of the firm's 3D printers; more will be added soon. Each machine produces a batch of more than 200 dental crowns and bridges from digital scans of patients' teeth. The machines use a laser to steadily melt successive layers of a cobalt-chrome alloy powder into the required shapes. The process is a bit like watching paint dry – it can take eight to ten hours – but the printers run unattended and make each individual tooth to a design that is unique to every patient. Once complete, the parts are shipped to dental laboratories all over Europe where craftsmen add a layer of porcelain. Some researchers are now working on 3D printing the porcelain, too.

The mouth is not the only bodily testing-ground for 3D-printed products. Figures gleaned by Tim Caffrey of Wohlers Associates, an American consultancy that tracks additive manufacturing, show that more than 60m custom-shaped hearing-aid shells and earmoulds have been made with 3D printers since 2000. Hundreds of thousands of people have been fitted with 3D-printed orthopaedic implants, from hip-replacement joints to titanium jawbones, as well as various prosthetics. An untold number have benefited from more accurate surgery carried out using 3D-printed surgical guides; around 100,000 knee replacements are now performed this way every year.

That the health-care industry has so swiftly adopted additive manufacturing should be no surprise. People come in all shapes and sizes, so the ability of a 3D printer to offer customised production is a boon. The machines run on computer-aided design (CAD) software, which instructs a printer to build up objects from successive layers of material; a medical scan in effect functions as your CAD file. And software is faster and cheaper to change than tools used in a traditional factory, which is designed to churn out identical products.

One reason why 3D printers are becoming more mainstream is that the "inks" they use are getting better thanks to advances in materials science, says Andy Middleton, the European head of Stratasys, an Israeli-American company that makes 3D printers. One method Stratasys uses, called PolyJet, is similar to inkjet printing: cartridges deposit layers of a liquid polymer which are cured with ultraviolet light. The company has just unveiled a new PolyJet model called the J750. It uses multiple cartridges to print items in 360,000 different colours and any combination of six different materials, which can be rigid or flexible, opaque or transparent.

Materials companies are coming up with more and more specialised ingredients for additive manufacturing. Alcoa, a leading producer of aluminium, recently said it would supply Airbus with 3D-printed titanium fuselage parts, 3D-printed fuel nozzles for jet engines and 3D-printed pylons used to attach engines to wings. In the future, large 3D printers will be used not only to print smartphones and portable consumer electronics but also to print cars, or atleast much of their structure, using a blend of plastic and carbon fibre.

6. What does the author mean when he poses the question "But how many people who have undergone a little dental maintenance know that they may have inside their mouths some of the first products of a new industrial revolution?" (para 1)?
 - (A) People are not bothered to know about the technology involved in dentistry unless they have a beautiful smile.
 - (B) 3D printing technology is too complicated for people to understand.
 - (C) Only people looking for a prospective business in 3D printing pay attention to its technology.
 - (D) People are still unaware of the multiple applications of 3D printing.
 7. What can be inferred from "more will be added soon" in para 3?
 - (A) People at Miskin are more prone to dental problems and hence 3D printing of dental crowns, bridges and orthodontic braces is more in demand over there.
 - (B) With the growing demand for 3D printing, the requirement for 3D printers is increasing.
 - (C) Employees at the British Engineering Company are not efficient in managing 3D printers and hence more automation is the need of the hour.
 - (D) More 3D printers will be required in case the existing 3D printers become defunct or run out of order.
 8. Which of the following can be clearly understood to be true with reference to 3D printing?
 - (A) 3D printing has been successful in carrying out very complex cardiac surgeries.
 - (B) Additive manufacturing was already on par with and has now supplanted conventional processes.
 - (C) Because 3D printing is cheap, it might not be a good business prospect for current investors.
- (D) 3D printing is well suited to the field of healthcare since products can be turned out that are specific to the particular requirements of individuals.
9. Which of the following can be understood from the passage?
 - (A) When the author says "The process is a bit like watching paint dry" (para 3), he implies that in the 3D printing processes described, the dental products seem to evolve gradually into their final shapes.
 - (B) When the author says "The process is a bit like watching paint dry" (para 3), he implies that like painting, 3D printing of dental bridges also involves craftsmanship in the use of porcelain and ceramic.
 - (C) The purpose behind the author's comment "People come in all shapes and sizes" (para 5) is to point to the capability of people in the healthcare industry in terms of catering to different kinds of people.
 - (D) The purpose behind the author's comment "People come in all shapes and sizes" (para 5) is to praise the benefits of customised production over mass production.
 10. All of the following have been mentioned in the passage as examples of 3D-printed industrial products that are currently used EXCEPT?
 - (a) Hearing-aid components
 - (b) Titanium jawbones
 - (c) Knee-replacement and hip-replacement joints
 - (d) Plastic trinkets
 - (e) Aircraft fuselage components
 - (f) Mobile phones

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

DIRECTIONS for questions 11 to 15: The passage given below is followed by a set of five questions. Choose the best answer to each question.

Innovation is a mysteriously difficult thing to dictate. Technology seems to change by a sort of inexorable, evolutionary progress, which we probably cannot stop – or speed up much either. And it's not much the product of science. Most technological breakthroughs come from technologists tinkering, not from researchers chasing hypotheses. Heretical as it may sound, "basic science" isn't nearly as productive of new inventions as we tend to think.

Suppose Thomas Edison had died of an electric shock before thinking up the light bulb. Would history have been radically different? Of course not. No fewer than 23 people deserve the credit for inventing some version of the incandescent bulb before Edison, according to a history of the invention written by Robert Friedel, Paul Israel and Bernard Finn.

The same is true of other inventions. Elisha Gray and Alexander Graham Bell filed for a patent on the telephone on the very same day. By the time Google came along in 1996, there were already scores of search engines. As Kevin Kelly documents in his book "What Technology Wants," we know of six different inventors of the thermometer, three of the hypodermic needle, four of vaccination, five of the electric telegraph, four of photography, five of the steamboat, six of the electric railroad. The history of inventions, writes the historian Alfred Kroeber, is "one endless chain of parallel instances."

It is just as true in science as in technology. Boyle's law in English-speaking countries is the same thing as Mariotte's Law in French-speaking countries. Isaac Newton vented paroxysms of fury at Gottfried Leibniz for claiming, correctly, to have invented the calculus independently. Charles Darwin was prodded into publishing his theory at last by Alfred Russel Wallace, who had precisely the same idea after reading precisely the same book, Malthus's "Essay on Population."

Increasingly, technology is developing the kind of autonomy that hitherto characterized biological entities. The Stanford economist Brian Arthur argues that technology is self-organizing and can, in effect, reproduce and adapt to its environment. It thus qualifies as a living organism, at least in the sense that a coral reef is a living thing. Sure, it could not exist without animals (that is, people) to build and maintain it, but then that is true of a coral reef, too.

And who knows when this will no longer be true of technology, and it will build and maintain itself? To the science writer Kevin Kelly, the "technium" – his name for the evolving organism that our collective machinery comprises – is already "a very complex organism that often follows its own urges." It "wants what every living system wants: to perpetuate itself."

By 2010, the Internet had roughly as many hyperlinks as the brain has synapses. Today, a significant proportion of the whispering in the cybersphere originates in programs – for monitoring, algorithmic financial trading and other purposes – rather than in people. It is already virtually impossible to turn the Internet off.

The implications of this new way of seeing technology – as an autonomous, evolving entity that continues to progress whoever is in charge – are startling. People are pawns in a process. We ride rather than drive the innovation wave. Technology will find its inventors, rather than vice versa. Short of bumping off half the population, there is little that we can do to stop it from happening, and even that might not work.

11. Which of the following is implied in the passage about Edison?
 - (A) Edison had risked his life to invent the electric bulb and his invention led to a resurgence of interest in the field of electricity.
 - (B) The credit for the invention of the electric bulb was not shared fairly among its contributors as Edison was faster in filing a patent for the invention of the electric bulb.
 - (C) Many other people had invented other types of bulbs during the same time as Edison and history would be the same even if he had not invented the electric bulb.
 - (D) Edison was smarter than the others and was the first to invent the most advanced bulb of his time, thereby markedly changing the course of history.

12. What does the author imply when he refers to Alfred Kroeber's written statement "The history of inventions is one endless chain of parallel instances"?
 - (A) Inventions have been endless in the past.
 - (B) Inventions are constantly evolving and one thing leads to another.
 - (C) Most of the inventions occur simultaneously.
 - (D) For most of the inventions, there can be multiple inventors working independently at around the same time.

13. Which of the following is a true statement from para 4 of the passage?
Identify all that apply and enter the corresponding number in the input box given below. You must enter your answer in increasing order only. For example, if you think (1) and (2) apply, then enter 12 (but not 21) in the input box.
 - (1) Boyle's law and Mariotte's law, in essence, deal with the same scientific idea though they were stated in different parts of the world, around the same time.
 - (2) Charles Darwin and Alfred Russel Wallace read the same list of books.
 - (3) Isaac Newton and Gottfried Leibniz were not in good terms with each other.
 - (4) Gottfried Leibniz developed calculus on his own.

14. Which of the following would best parallel the situation presented in paras 2, 3 and 4?
 - (A) Lab 1 in Los Angeles and Lab 2 in New York work in collaboration to prove a certain theory.
 - (B) Lab 1 proves a theory and Lab 2 uses the result in the advancement of technology.
 - (C) Lab 1 and Lab 2 work separately to produce the same result around the same time.
 - (D) Lab 1 and Lab 2 in the same university work on the same area but produce results that contradict each other.

15. All of the following are mentioned in the passage to suggest that technology is a living thing EXCEPT
- The number of hyperlinks in the internet have increased.
 - Technology is maintained and built by man.
 - Technology strives to keep itself going and it evolves along with its surroundings.
 - The advances made by science and technology are hardly comparable.
 - Technology is a juggernaut and preserves its existence.
 - We are controlling technology like pawns on a chessboard.
- (A) a and e (B) b, d and f (C) b and f (D) c and d

DIRECTIONS for questions 16 to 20: The passage given below is followed by a set of five questions. Choose the best answer to each question.

Mathematics has been called the language of the universe. Scientists and engineers often speak of the elegance of mathematics when describing physical reality, citing examples such as π , $E=mc^2$, and even something as simple as using abstract integers to count real-world objects. Yet while these examples demonstrate how useful maths can be for us, does it mean that the physical world naturally follows the rules of mathematics as its "mother tongue," and that this mathematics has its own existence that is out there waiting to be discovered? This point of view on the nature of the relationship between mathematics and the physical world is called Platonism, but not everyone agrees with it.

Derek Abbott, Professor of Electrical and Electronics Engineering at The University of Adelaide in Australia, has written a perspective piece to be published in the *Proceedings of the IEEE* in which he argues that mathematical Platonism is an inaccurate view of reality. Instead, he argues for the opposing viewpoint, the non-Platonist notion that mathematics is a product of the human imagination that we tailor to describe reality.

This argument is not new. In fact, Abbott estimates (through his own experiences, in an admittedly non-scientific survey) that while 80% of mathematicians lean towards a Platonist view, engineers by and large are non-Platonist. Physicists tend to be "closeted non-Platonists," he says, meaning they often appear Platonist in public. But when pressed in private, he says he can "often extract a non-Platonist confession."

So if mathematicians, engineers, and physicists can all manage to perform their work despite differences in opinion on this philosophical subject, why does the true nature of mathematics in its relation to the physical world really matter?

The reason, Abbott says, is that because when you recognize that maths is just a mental construct—just an approximation of reality that has its frailties and limitations and that will break down at some point because perfect mathematical forms do not exist in the physical universe—then you can see how ineffective maths is.

And that is Abbott's main point (and most controversial one): that mathematics is not exceptionally good at describing reality, and definitely not the "miracle" that some scientists have marvelled at. Einstein, a mathematical non-Platonist, was one scientist who marvelled at the power of mathematics. He asked, "How can it be that mathematics, being after all a product of human thought which is independent of experience, is so admirably appropriate to the objects of reality?"

In 1959, the physicist and mathematician Eugene Wigner described this problem as "the unreasonable effectiveness of mathematics." In response, Abbott's paper is called "The Reasonable Ineffectiveness of Mathematics." Both viewpoints are based on the non-Platonist idea that math is a human invention. But whereas Wigner and Einstein might be considered mathematical optimists who noticed all the ways that mathematics closely describes reality, Abbott pessimistically points out that these mathematical models almost always fall short.

What exactly does "effective mathematics" look like? Abbott explains that effective mathematics provides compact, idealized representations of the inherently noisy physical world.

"Analytical mathematical expressions are a way of making compact descriptions of our observations," he says. "As humans, we search for this 'compression' that math gives us because we have limited brain power. Maths is effective when it delivers simple, compact expressions that we can apply with regularity to many situations. It is ineffective when it fails to deliver that elegant compactness. It is that compactness that makes it useful and practical ... if we can get that compression without sacrificing too much precision."

"I argue that there are many more cases where maths is ineffective than when it is effective. Maths only has the illusion of being effective when we focus on the successful examples. But our successful examples perhaps only apply to a tiny portion of all the possible questions we could ask about the universe."

16. According to the passage, what is the difference between Platonism and non-Platonism with respect to Mathematics?
- Platonism posits that mathematics dictates the rules that physical world follows whereas non-Platonism states that mathematics is independent of the physical world.
 - According to Platonism, the physical world follows the rules of mathematics whereas according to non-Platonism, mathematical rules are tailored to fit the physical world.
 - Platonism states that mathematics and physical world cannot exist without each other whereas non-Platonism states that

- mathematics and physical world can exist independent of each other.
- (D) Platonism is an inaccurate view of reality whereas non-Platonism is an accurate view of the reality.
17. According to Abbott, which of the following is true?
- There are no perfect mathematical models which accurately explain all physical reality.
 - Mathematics will become completely ineffective when our knowledge of the universe increases.
 - Even though mathematics is a product of human brain, it can exist outside human imagination.
 - Mathematics has the potential to govern the rules of the physical world.
18. Which of the following, if true, can explain the inclination of some physicists to be "closeted non-Platonists"?
- Non-Platonism is considered a more popular opinion as compared to Platonism.
 - Platonism is held in a higher regard among physicists as compared to Non-Platonism.
 - Mathematical Platonism explains most of the problems of physics whereas Non-Platonism does not.
 - The number of physicists who actively argue for Non-Platonism is greater as compared to those who argue for Platonism.
19. According to the passage, what is the difference between the views of Derek Abbott and Eugene Wigner regarding mathematics?

SUB-SECTION: VERBAL ABILITY Number of Questions = 10

DIRECTIONS for questions 1 to 3: The sentences given in each of the following questions, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4 or 5). Decide on the proper order for the sentences and key in this sequence of five numbers as your answer.

- (1) The winning entry is the CESAR series of photographs which reframe perceptions of caesarian section birth, through startling portraits of the first seconds of life.
- (2) They express the possibility that art and science can step into the void previously filled by religion.
- (3) French photographer Christian Berthelot has been announced as the winner of the £10,000 Medicine Unboxed Creative Prize 2015.
- (4) Indeed, like all great works of art that have been crafted, they are images of mesmeric beauty that stay on our retinas and in our memories.
- (5) The theatrical nature of the lighting, compositions and iconography in the CESAR series echoes masterpieces of the Italian Baroque.

2. (1) Cuneiform, was invented some 6,000 years ago in what is now southern Iraq, and it was

(A) While Abbott was a non-Platonist, Wigner was a Platonist.

(B) Abbott studied the ways in which mathematics closely described reality whereas Wigner studied the ways in which mathematics was not able to describe reality.

(C) While Abbott was the first to describe the concept of 'effective mathematics', Wigner was the first to study its effectiveness in describing reality.

(D) Wigner studied how effective mathematics was in describing reality whereas Abbott concentrated on how ineffective mathematics was in describing reality.

20. Which of the following would best illustrate the illusion of the effectiveness of mathematics mentioned in the last paragraph of the passage?

(A) Choice-supportive bias: The tendency to remember one's choices as better than they actually were.

(B) Continued Influence effect: The tendency to believe previously learned misinformation even after it has been corrected.

(C) Survival bias: Logical error of concentrating only on successes and ignoring failures.

(D) Focusing effect: The tendency to place too much importance on one aspect of an event.

most often written on iPhone-sized clay tablets a few inches square and an inch high.

- As remarkable as is the discovery of new bits of millennia-old literature is the story of cuneiform itself, a now obscure but once exceedingly influential writing system, the world's first examples of handwriting.
- But not clay, which has proven to be the most durable, and perhaps most sustainable, writing surface humanity has used.
- Cuneiform made headlines recently with the discovery of 22 new lines from the Epic of Gilgamesh, found on tablet fragments in Iraq.
- Deciding to use clay for a writing surface was ingenious: vellum, parchment, papyrus and paper – other writing surfaces people have used in the past – deteriorate easily.

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- (1) Our thoughts torture us.
 - (2) The tempo of life is such that from the time such a person gets out of bed in the morning till he goes to sleep at night he is constantly running after things.
 - (3) Such a hectic, high speed living will certainly destroy our mental balance and also be detrimental to our physical well-being.
 - (4) Gradually we become so maladjusted to life that it seems no longer worth living and the only remedy to this is to learn to slow down.

- (5) The occurrence of stress and strain is a common phenomenon because most people are driving themselves at a pace which is too fast.

DIRECTIONS for questions 4 to 7: Five sentences related to a topic are given in each question. Four of them can be put together to form a meaningful and coherent paragraph. Identify the odd one out. Choose its number as your answer and key it in.

4. (1) With new access to Schulz's personal files, professional archives and family, Mr. David Michaelis presents the fullest picture we have yet of the cartoonist's life and personality.
(2) The comic strip "Peanuts" was more than a decade old when I started reading it as a kid in the mid-1960s.
(3) The clean, minimalist drawings, the sarcastic humor, the unflinching emotional honesty, the inner thoughts of a household pet, the serious treatment of children, the wild fantasies, the merchandising on an enormous scale -- in countless ways, Schulz blazed the wide trail that almost every cartoonist since has tried to follow.
(4) The overwhelming commercial success of the strip often overshadows its artistic triumph, but throughout its 50-year run, Charles Schulz wrote and drew every panel himself, making his comic strip an extremely personal record of his thoughts.
(5) At that time, "Peanuts" was becoming a force of pop culture, with best-selling books and a newly burgeoning merchandising empire of plastic dolls, sweatshirts, calendars and television specials.

5. (1) While that is encouraging, this complacency cannot deflect us from the problem itself.
(2) The financial turmoil of the past year is not incidental, but a reflection of systemic weaknesses in global financial markets.
(3) The rural development ministry had assured the nation that we have enough grains in storage to see us through a crisis.
(4) Handing out free rice or wheat will not answer the long-term problem.
(5) The issue is not just of food, it is of livelihood and in our agriculture-based economy that points to an enormous number of people dependent on farming.

6. (1) If I offered you a choice between being an architect for \$75000 a year and working in a tollbooth everyday for the rest of your life for \$100000 a year, which would you accept?
(2) I'm guessing the former, because there is complexity, autonomy, and a relationship between effort and reward in doing creative work, and that's worth more to most of us than money.

- (3) It is not how much money we make that ultimately makes us happy between nine and five but it's whether our work fulfills us.
(4) And in your work there is a relationship between effort and reward: the longer or more effectively you work on and in your business the more money you can make.
(5) Most people agree that autonomy, complexity and a connection between effort and reward are the three qualities that work has to have if it is to be satisfying.

7. (1) It is still very much with us, paradoxically re-invoked by the events of 1989/90 and the expansion of Europe to the east in the aftermath of the collapse of communism and economic globalization.
(2) During World War II, it was believed by many military strategists of air power that major victories could be won by attacking industrial and political infrastructure, rather than purely military targets.
(3) The myriad debates on restitution and memory, which have been going on in Europe for decades, indicate that World War II never ended.
(4) In summary, World War II did not only result in the death and destruction on a large scale but also in an a far-reaching revolution of existing property relations.
(5) The growing privatization and reprivatization in Eastern Europe revive pre-war memories that lay buried under the blanket of collectivization and nationalization of property after 1945.

DIRECTIONS for questions 8 to 10: Each question presents a sentence, part or all of which is underlined. Beneath the sentence, four different ways of phrasing the sentence are given. Select the answer choice that produces the most effective sentence in terms of word choice and sentence construction; your answer should make the sentence clear, exact and free of grammatical error. It should also minimize awkwardness, ambiguity and redundancy.

8. When change becomes both more profound as well as rapid, highly centralized Weberian-style bureaucracies are so cumbersome and so entrenched in their established ways to cope.
(A) both more profound as well as rapid, highly centralized Weberian-style bureaucracies are so cumbersome and so entrenched
(B) both profound as well as rapid, highly centralized Weberian-style bureaucracies are so cumbersome and too entrenched
(C) both more profound and more rapid, highly centralized Weberian-style bureaucracies are too cumbersome and too entrenched
(D) more profound as well as more rapid, highly centralized Weberian-style bureaucracies are so cumbersome and so entrenched

9. Indian commitment to democracy is sometimes attributed simply to the impact of British influence and if that were yet a primary reason it would not be clear why such a influence would not have similarly worked for hundred other countries which also emerge from the same empire on which the sun had to not set.
- (A) and if that were yet a primary reason it would not be clear why such a influence would not have similarly worked for hundred other countries which also emerge from the same empire on which the sun had to not set.
- (B) and if that were yet a primary reason it would not be clear why such a influence would not have similarly worked for hundred other countries that also emerge from the same empire on which the sun had not to set.
- (C) and yet if that were a primary reason, it would not be clear why such an influence should not have worked similarly for hundred other countries which also emerged from the same empire on which the sun used not to set.
- (D) and yet if that were the primary reason, it would not be clear why such an influence should not have worked similarly for a hundred other countries that also emerged from the same empire on which the sun used to not set.
10. With the passing away of Mr. I. K. Gujral, India had lost a noble and distinguished politician, a man of extraordinary abilities and humane, a leader of admirable vision and radical thinking on his outlook on the relationship among India and Pakistan.
- (A) India had lost a noble and distinguished politician, a man of extraordinary abilities and humane, a leader of admirable vision and radical thinking on his outlook on the relationship among
- (B) India lost a politician of nobility and distinction, a man of extraordinary abilities and distinctive humaneness, a leader of admirable vision and radical thinking in his outlook on the relationship between
- (C) India lost a politician of nobility and distinction, a man of extraordinary abilities and exceptional humaneness, a leader of admirable vision and radical thinking in his outlook in the relationship between
- (D) India had lost a noble and distinguished politician, a man of extraordinary abilities and humaneness, a leader of admirable vision and radical thinking in his outlook on the relationship between

SECTION II: DATA INTERPRETATION AND LOGICAL REASONING

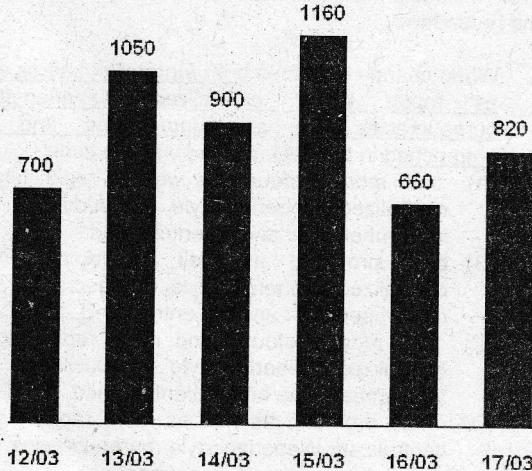
SUB-SECTION: DATA INTERPRETATION

Number of Questions = 15

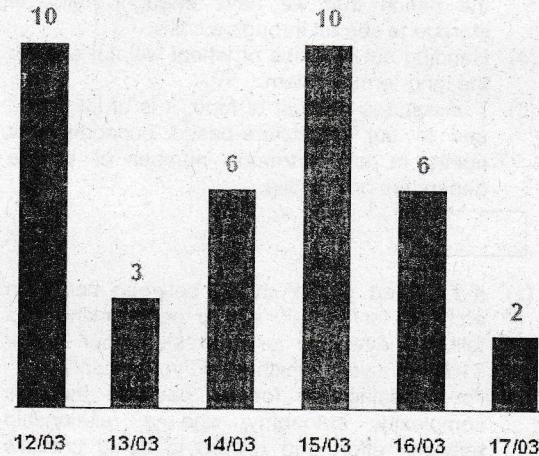
DIRECTIONS for questions 1 to 4: Answer these questions on the basis of the information given below.

In Nehru Zoological Park, the price of the entry ticket is different for Indians and Foreigners. While the price of the ticket is ₹10 for Indians, it is ₹50 for Foreigners. These are the only types of entry tickets to the park. It is known that, from March 12th to March 17th, a total of 89 Foreigners purchased the entry ticket to the park. Further, each person purchased exactly one ticket and no person purchased the ticket twice. The first bar graph below provides the total revenue obtained from the sale of tickets on each of the six days. The second bar graph provides the difference between the number of Indians and Foreigners who purchased the entry ticket on each day during the same period.

Revenue from Entry Tickets (in ₹)



Difference between the Number of Indians and Foreigners



DIRECTIONS for questions 1 to 4: Select the correct alternative from the given choices.

DIRECTIONS for questions 5 to 7: Answer these questions on the basis of the information given below.

In a shop which sells bags, the shopkeeper accepts only five different currencies – Dirhams (AED), Pounds (GBP), Rupees (INR), Zloty (PLN) and Dollars (USD). There are exactly five different types of bags – Rucksack, Knapsack, Suitcase, Duffel bag and Gym bag – available in the shop. The price of each type of bag was listed in all the five currencies. On a particular day, Harish, who had all the five types of currencies with him, visited the shop to buy bags. However, Harish noticed that the five different prices mentioned (in different currencies) on each bag, when converted into the same currency, were not necessarily equal. Further, Harish wanted to minimize the value of money that he spends in buying any bag by choosing the currency in which to pay for it. The first table given below provides the price of each bag in each of the five currencies and the second table provides the relative values of one unit of each currency in terms of INR.

Bag	AED	GBP	INR	PLN	USD
Rucksack	62.5	14.2	1150.0	79.3	18.6
Knapsack	77.0	17.6	1510.0	100.0	23.4
Suitcase	105.0	23.4	2150.0	149.3	32.9
Duffel Bag	55.0	11.9	1140.0	76.7	15.1
Gym Bag	50.0	10.6	840.0	58.7	11.4

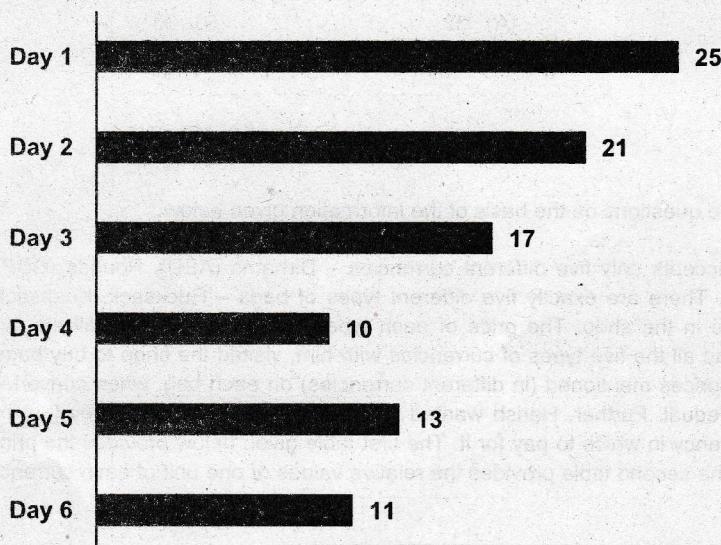
1 AED = 20 INR
1 GBP = 90 INR
1 PLN = 15 INR
1 USD = 70 INR

DIRECTIONS for questions 5 to 7: Select the correct alternative from the given choices.

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

Cherished Cheshire, a playschool, conducts a test for admitting kids to the school. The test was conducted across six days from Day 1 to Day 6, and the marks scored by any kid in the test can only be integers. The following bar graph provides the number of kids who attempted the test on each day and the table provides the average of the marks scored by all the kids who attempted the test until that day:

Number of Kids



Day	Average
Day 1	23.00
Day 2	23.91
Day 3	25.02
Day 4	24.47
Day 5	23.49
Day 6	23.89

DIRECTIONS for questions 8 to 11: Type in your answer in the input box provided below the question.

8. The sum of the marks scored by all the kids who wrote the test on Day 4 is

9. The sum of the marks scored by all the kids who wrote the exam on any single day is at most

10. The number of days for which the average marks of the kids who wrote the exam on that day was more than 25 was

11. The number of days on which it is possible that no kid scored more than 20 marks is at most

DIRECTIONS for questions 12 to 15: Answer these questions on the basis of the information given below.

Kiran, who sells mobile phones through an online portal, collected the details about his customers and the ratings given by them for his products. The ratings given by any customer comprises four components – Delivery, Communication, Packaging and Price. Any customer can give a rating from 1 to 5 for each of the four parameters. The Final Rating of any customer is the average of the ratings across the four parameters. The following table provides details about the customers and the ratings that they gave:

Name	Gender	Age	Communication	Delivery	Packaging	Price
Akshay	M	23	4	2	2	3
Alice	F	21	4	3	3	3
Amar	M	24	3	4	4	4
Anamika	F	56	4	3	5	2
Anne	F	51	2	3	2	3
Balu	M	24	1	4	1	4
Bhavana	F	27	3	3	1	3
Harini	F	20	4	2	3	2
Hugh	M	16	2	1	4	5
Karan	M	29	3	2	4	2
Lalu	M	35	5	1	4	3
Latha	F	36	4	1	5	3
Manjula	F	41	3	1	2	3
Mano	M	45	1	3	2	2
Minny	F	54	2	4	2	2
Naveen	M	52	3	4	3	2
Pavani	F	51	4	2	2	1
Pavitra	F	24	5	5	2	3
Prateek	M	15	4	3	2	4
Ram	M	26	3	4	3	2
Ramesh	M	34	2	5	3	3
Sam	F	54	1	5	4	3
Veena	F	52	3	5	5	4
Wasim	M	62	3	3	1	3
Yamuna	F	21	4	2	4	4

DIRECTIONS for questions 12 to 15: Select the correct alternative from the given choices.

- DIRECTIONS** for questions 12 to 15: Select the correct alternative from the given choices.

12. Among the customers whose age is less than 30, for how many customers is the Final Rating less than 3?
(A) 4 (B) 5
(C) 6 (D) 7

13. Among all the females, for how many customers is the Final Rating less than 3 but rating for Delivery at least 3?
(A) 6 (B) 5
(C) 4 (D) 3

14. What is the average Final Rating of all the customers whose age is greater than 50 but less than 60?
(A) 4.05 (B) 4.70
(C) 3.04 (D) 2.87

15. What is the average age of the customers who did not give a rating of 1 for any of the four parameters?
(A) 33.47 (B) 35.67
(C) 38.33 (D) 31.23

SUB-SECTION: LOGICAL REASONING
Number of Questions = 15

DIRECTIONS for questions 1 to 4: Answer these questions on the basis of the information given below.

Each of six persons – A through F – was born in a different city among New York, San Francisco, Los Angeles, Paris, London and Cairo. However, no person lives in the same city that he was born in and each person lives in one of the six cities given above. Further, no two persons live in the same city. It is also known that

- known that:

 - (i) the person who was born in Los Angeles lives in Cairo and B was born in New York.
 - (ii) F, who was not born in Paris, does not live in Cairo and the person who was born in London lives in Los Angeles.
 - (iii) the person who was born in Cairo does not live in London and A was not born in Los Angeles.
 - (iv) C lives in London and D lives in Paris.
 - (v) the person who lives in New York was born in Paris.

DIRECTIONS for questions 1 to 4: Select the correct alternative from the given choices.

DIRECTIONS for questions 5 to 7: Answer these questions on the basis of the information given below.

A conductor in a bus can issue three types of tickets, which cost ₹5, ₹7 and ₹14 respectively. On a particular day, exactly six passengers – Arvind, Gautami, Lakshmi, Laxman, Priya and Supriya – boarded the bus and each passenger purchased exactly one ticket from the conductor. The conductor and all the six passengers had coins of only three denominations with them – ₹1 coins, ₹2 coins and ₹5 coins. Further, at the start of that day, the conductor had with him exactly five ₹1 coins, four ₹2 coins and two ₹5 coins. During the day, each of the six passengers either paid an amount equal to the exact value of the ticket that they purchased OR paid in excess to the nearest multiple of five using only ₹5 coins. The conductor gave back the remaining amount to the passengers, if they paid an amount in excess of the value of the ticket. It is also known that

- Value of the ticket. It is also known that

 - (i) the maximum amount that any one person got back from the conductor was ₹3 and Priya received it.
 - (ii) Supriya and Gautami purchased the same type of ticket and among the two, only Supriya got back any amount from the conductor, which was equal to ₹1.

- (iii) the maximum number of coins given to the conductor by any person while purchasing his/her ticket was eight.
 - (iv) Laxman and Gautami were the only persons who did not pay for their tickets using ₹5 coins and Laxman paid using lesser number of coins than Lakshmi did.
 - (v) Arvind was the only person who paid for his ticket using a single coin.
 - (vi) at the end of the day, the conductor had with him exactly six ₹1 coins, thirteen ₹2 coins, and ten ₹5 coins.

DIRECTIONS for question 5: Select the correct alternative from the given choices.

5. Which type of ticket did Lakshmi buy?
(A) ₹14 ticket
(B) ₹7 ticket
(C) ₹5 ticket
(D) Cannot be determined

DIRECTIONS for question 6: Type in your answer in the input box provided below the question.

6. What is the number of passengers who paid an amount in excess of the value of their ticket?

1

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

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

Mr. Rohan D'Souza, who retired from his job at the end of 2014, was reminiscing about his career. His career spanned thirty-five years and he worked exactly once in each of seven different cities – Ahmedabad, Bhopal, Chandigarh, Hyderabad, Nasik, Panaji and Trivandrum. It is known that he started working in each city at the start of a year, and the number of years for which he worked in any city was a distinct integer. The following information is known about the cities that he worked in and the duration for which he worked in each city:

- (i) Mr. D'Souza worked in Ahmedabad for five years immediately before he worked in Nasik.
 - (ii) In no city did he work for more than eight years and he worked in Panaji for a lesser duration than in Nasik.
 - (iii) He started working in Panaji in 2007 and he worked in Panaji immediately after Bhopal.
 - (iv) Hyderabad was not the first city that he worked in but he worked in Hyderabad before he worked in Nasik.
 - (v) He was working in the first city of his career in 1985 and, he worked in Chandigarh for a lesser duration than in Ahmedabad

DIRECTIONS for question 8: Select the correct alternative from the given choices.

8. Which is the fourth city that Mr. D'Souza worked in?
(A) Ahmedabad (B) Bhopal
(C) Nasik (D) Panaji

DIRECTIONS for question 9: Type in your answer in the input box provided below the question.

9. For how many years did Mr. D'Souza work in Chandigarh?

years

DIRECTIONS for questions 10 and 11: Select the correct alternative from the given choices.

DIRECTIONS for questions 12 to 15: Answer these questions on the basis of the information given below.

Eight students, A through H, are standing in a line, from East to West, not necessarily in the same order. Each student in the line is facing either East or West. Each student in the line announces a number which is the number of students in the line standing in front of him. The following table presents the number announced by each student:

Student	A	B	C	D	E	F	G	H
Number	5	2	6	4	6	7	3	0

Further, it is also known that

- (i) no three students standing consecutively are facing the same direction.
 - (ii) the number of students facing West is not more than four.

DIRECTIONS for question 12: Select the correct alternative from the given choices.

DIRECTIONS for question 13: Type in your answer in the input box provided below the question.

13. Among the eight students, how many students are facing East?

1

DIRECTIONS for questions 14 and 15: Select the correct alternative from the given choices.

14. If C is standing in front of B, A must be standing four places away from
(A) H. (B) E.
(C) G. (D) C.

15. How many students are not standing behind any of the students standing immediately next to them?
(A) 1
(B) 2
(C) 3
(D) Cannot be determined

SECTION III: QUANTITATIVE ABILITY
Number of Questions = 30

DIRECTIONS for questions 1 and 2: Select the correct alternative from the given choices.

DIRECTIONS for question 3: Type in your answer in the input box provided below the question.

3. Find the sum of the series:
 $S = 100^2 - 99^2 + 98^2 - 97^2 + 96^2 - 95^2 + \dots + 2^2 - 1^2$

1

DIRECTIONS for questions 4 to 6: Select the correct alternative from the given choices.

6. If $\left(3\sqrt{\frac{16}{81}}\right)^{2x-5} = \left(\frac{27}{8}\right)^{x-11}$, then the value of x is equal to
 (A) 3. (B) 7. (C) 5. (D) 6.

DIRECTIONS for question 7 and 8: Type in your answer in the input box provided below the question.

7. Find the remainder when $37!$ is divided by 41.

8. How many pairs of (a, b) satisfy the equation $a^4 - b^4 = 9876$, where a and b are positive integers?

DIRECTIONS for question 9: Select the correct alternative from the given choices.

9. If a is a single digit from 0 to 9, find the value of a , given that $743a6$ is divisible by 44.
 (A) 1 (B) 3 (C) 5 (D) Cannot be determined

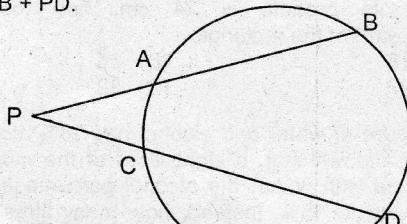
DIRECTIONS for questions 10 and 11: Type in your answer in the input box provided below the question.

10. In how many ways can four friends, Bheem, Chutki, Raju and Jaggu, share 50 laddoos among themselves, such that each of them gets an odd number of laddoos?

11. In a right angled isosceles triangle, of area 90 sq. cm, a rectangle of maximum possible area is inscribed, such that the length of the rectangle is twice its breadth. Find the area (in sq. cm) of the rectangle.

DIRECTIONS for questions 12 to 14: Select the correct alternative from the given choices.

12. In a certain race, A beats B by 20 m and C by 40 m. If the speed of B is 25% more than the speed of C, then find the length (in m) of the track.
 (A) 100 (B) 200 (C) 120 (D) 160
13. In the figure below, if $CD = 2 PA$, $AB = 14$ cm and $PC = 12$ cm, find the measure (in cm) of $PB + PD$.

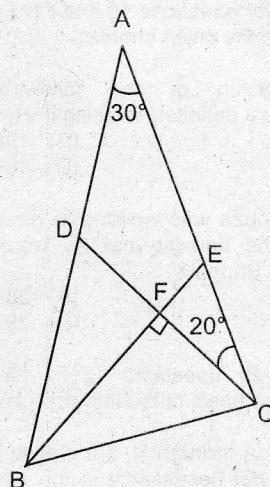


- (A) 66 (B) 80 (C) 68 (D) 92

14. One can go from city A to city C either directly or via city B. If one can go from A to C in a total of 32 ways, from A to B in eight ways and from A to C directly in eight ways, then in how many ways can one go from B to C?
 (A) 2 (B) 3 (C) 4 (D) 6

DIRECTIONS for questions 15 and 16: Type in your answer in the input box provided below the question.

15. In the figure below, $DB = DC$, $\angle CAB = 30^\circ$ and $BF \perp DC$. If BF , when produced, intersects AC at E , find the measure (in degrees) of $\angle EBC$.



16. Bhola was asked by his master to fill a water tank by carrying water from the nearby pond. If the volume of the tank is 11 cu. ft. and Bhola uses a bucket which is in the shape of the frustum of a cone, with the radii of the top and bottom surfaces being $\frac{1}{2}$ ft and $\frac{1}{4}$ ft respectively and height being 1 ft, how many buckets of water will Bhola need to fill the tank? Assume that the tank is initially empty and that he fills the bucket to its brim each time.

DIRECTIONS for questions 17 to 19: Select the correct alternative from the given choices.

17. If a certain sum, invested under compound interest, amounts to twice as much at the end of the seventh year as it would at the end of the second year, then the amount at the end of the 64th year will be how many times that at the end of the 49th year?
 (A) 8 (B) 16 (C) 32 (D) 4
18. If $x^2 - 3x + p = 0$ has exactly one root lying between -1 and 2 (excluding -1 and 2), then which of the following is true regarding the range of p ?
 (A) $(-8, -5)$ (B) $(-4, 2)$ (C) $(3, 8)$ (D) $(3, 11)$

19. A total of 315 students appeared for the Board exam from a school. If the ratio of the number of students who failed to those who passed in the exam is $1 : n^3$, where n is a natural number, how many students passed in the examination?
- (A) 35
 (B) 140
 (C) 280
 (D) Cannot be determined

DIRECTIONS for question 20: Type in your answer in the input box provided below the question.

20. If the area of a circle in which a chord of length $6\sqrt{3}$ units subtends an angle of 120° at a point on the circumference of the circle is $k\pi$ sq. units, find k .

DIRECTIONS for questions 21 to 26: Select the correct alternative from the given choices.

21. If a, b and c are positive real numbers such that

$$a + b + c < \frac{1}{a} + \frac{1}{b} + \frac{1}{c} \text{ and } abc = 1, \text{ then which of}$$

the following is definitely true?

- (A) Exactly one a, b , and c is greater than 1.
 (B) Exactly two of a, b and c are less than 1.
 (C) Exactly two of a, b and c are greater than 1.
 (D) At least two of a, b and c are less than 1.

22. Find the value of x , such that $\log_2 x + \log_x 16 = 4$.

- (A) 4
 (B) 8
 (C) 16
 (D) 2

23. Two business partners, A and B, invested their capitals in the ratio of 2 : 3 respectively, with their periods of investment not being equal. If they shared the year-end profit in the ratio of 1 : 2 respectively, what is the ratio of their respective periods of investment?

- (A) 3 : 4
 (B) 4 : 3
 (C) 2 : 1
 (D) 1 : 4

24. If $a = \sqrt{5} - 2$, then which of the following gives the value of $a^3 + \frac{1}{a^3}$?

- (A) $34\sqrt{5}$
 (B) 76
 (C) $32\sqrt{5}$
 (D) $42\sqrt{3}$

25. If set $A = \{7, 17, 19, 23, 31, 47\}$ and set B comprises the sums of all the possible pairs of elements in set A (taken one pair at a time), find the average of all the elements in set B.

- (A) 32
 (B) 48
 (C) 28.8
 (D) None of the above

26. If the value of a two-digit number increases by 20% when the order of its digits is reversed, then find the difference between the two digits of that number.
- (A) 1
 (B) 2
 (C) 3
 (D) 4

DIRECTIONS for question 27: Type in your answer in the input box provided below the question.

27. If the number of subsets of set P that contain exactly four elements is 126, then find the total number of proper subsets of set P.

DIRECTIONS for question 28: Select the correct alternative from the given choices.

28. How many sets $\{x, y\}$, where x and y are distinct integers, are possible, such that the product of x and y is equal to the product of the numbers 3, 13, 23 and 33?

- (A) 6
 (B) 12
 (C) 18
 (D) 24

DIRECTIONS for questions 29 and 30: Type in your answer in the input box provided below the question.

29. A and B are two points with coordinates $(0, 0)$ and $(16, 64)$ respectively. M_1 is the midpoint of the line joining A and B, M_2 the midpoint of that joining M_1 and A, M_3 the midpoint of that joining M_2 and A and so on. If the coordinates of M_{10} are (h, k) , then find the value of $\left(\frac{1}{h} + \frac{1}{k}\right)$.

30. A starts a certain work and after he completes exactly half the work, he leaves and B takes up the remaining work and it takes a total of 25 days for the work to be completed this way. If A and B working together can complete the work in 12 days, and A is slower than B, then find the number of days in which the work will be completed, if A alone first works on exactly one-fifth of the work, after which B alone completes the rest of the work.