T.I.M.E.
Triumphant Institute of
Management Education Pvt. Ltd.

Ref: AIMCAT1716

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 – 34 Questions (ii) Data Interpretation and Logical Reasoning – 28 Questions and (iii) Quantitative Ability – 28 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 = 24

DIRECTIONS *for questions 1 to 6:* The passage given below is followed by a set of six questions. Choose the best answer to each question.

Extract 1:

"If you want your children to be brilliant, teach them myths. If you want them to be very brilliant, then teach them more myths." (Albert Einstein)

The following story has been narrated by Edward de Bono in "Water Logic – The Alternative to I am Right You are Wrong":

Johnny was a young boy who lived in Australia. One day his older friends offered him a choice between a one dollar coin and a two dollar coin. In Australia, the two-dollar coin is smaller in diameter than the one-dollar coin, but the two-dollar is slightly thicker.

Johnny took the one-dollar coin. His friends giggled and reckoned that Johnny was very stupid because he did not yet know that the smaller coin was worth twice as much as the bigger coin. Whenever they wanted to demonstrate Johnny's stupidity, they would repeat the exercise. They expected Johnny to pick the bigger coin. Johnny never seemed to learn. One day a bystander felt sorry for Johnny and explained that the smaller coin was actually worth twice as much as the larger coin. Johnny listened politely, then he said, "Yes, I know that. But how many times would they have offered me the coins if I had taken the two dollar coin the first time." **The young boy benefited when he did not operate from standard perceptions.**

Extract 2:

"When you follow your bliss ..... doors will open where you would not have thought there would be doors; and there wouldn't be a door for anybody else." (Joseph Campbell)

When you apply an old framework to a new idea, chances are you will not see the full potential of what is possible. Let me give you an example. One of my friends went for an alumni meeting that was held at the Taj Hotel, Mumbai. He was looking for a parking place and found none. Being a creative person, he came up with an interesting solution. He observed that there were several cars with chauffeurs. So, he noted the registration number of one of those cars and went to the porch. He made an announcement for the car. Obviously, the chauffeur responded and moved out. My friend quickly parked his car in the now vacant space and went for his alumni meeting. I wondered as to what most of us would have done. We would have looked for a vacant parking space. And driven around till we found one. Our perception is that you can't park your car in a space already occupied. **In this case too, my friend benefited when he did not operate from standard perceptions.**

Extract 3:

The most difficult thing for all of us is to look at anything with a genuinely open mind. That's because all of us compare anything we see with something we know, or are familiar with. Very often we also come to conclusions based on past knowledge, experience, education, upbringing, culture, beliefs, assumptions. All these things colour our perceptions and are the bars of our mental cage.

Because of this we face two problems. We are not able to break away from the cage and think differently. We are not able to look at new ideas differently because our view is obstructed by the bars of our mental cage.

Perceptions affect both the way we tend to define a problem, as well as the way we see solutions. I see this every time I am working with a client who wants to get help.

For instance, clients come with preconceived notions about the root cause of a problem. On probing, we find the real reasons are different. Similarly, our perceptions about the consequences of certain solutions could be very misleading too.

The first step in handling perceptions is to acknowledge them. And convert that to an advantage. For example, the same issue being seen by people with different perceptions could alter our understanding of the whole issue. Similarly, solutions to a problem from a group of people with different perceptions could throw up a range of possibilities we could never have thought of.

The trick lies in activating these perceptions and listening for value. That's what the best mentors, coaches and facilitators do.

1. All of the following statements can be inferred to be true from the first boldface sentence (in Extract 1) and Extract 1 as a whole EXCEPT?
   (A) The older Australian kids were operating under the assumption that the younger kid was making a mistake while the latter was making a dollar everytime they played the game.
   (B) Johnny thought that the day he chose the two-dollar coin, the game would be over. Even as his friends laughed, he preferred the dollars.
   (C) The older Australian kids were playing the game of right and wrong while the younger one played a game of profit.
   (D) The older Australian kids were being crafty but the younger one was not.

2. Which of the following is a false statement from your understanding of Extract 2 and your reading of Extract 3 as a whole?
   (A) The author's friend created a parking space when he did not find a vacant one.
   (B) The author's friend modified the perception of the author with respect to parking in a previously occupied space.
   (C) The author's friend applied innovative thinking to a new problem.
   (D) The author's friend perceived his car parked in a space already occupied.

3. What does the author imply when he says, "We are not able to break away from the cage" in Extract 3?
   (A) We do not allow our experience and knowledge to colour our perceptions and are always able to look at new ideas with an open and unbiased mind.
   (B) We are always thinking based on our past knowledge or experience and are not being open minded.
   (C) Once we are trapped, we are not able to break the bars of the cage.
   (D) We are averse to letting people with different perceptions alter our understanding of a situation.

4. How is the first extract of the passage related to the second extract?
   (A) Both the extracts reinforce the idea that the protagonists benefited because they chose not to operate from set perceptions.
   (B) Both the first extract and the second extract provide comparable situations as examples which suggest that innovative thinking is a way to success.
   (C) The first extract provides an example to prove the point that we ought to be innovative in our thinking and the second extract exemplifies a related opinion that one needs to actively participate to find creative solutions to one's problems.
   (D) The first extract provides an example of a captured solution and the second extract provides an example of a caged idea.

5. As indicated in Extract 3, the idea that each one of us lives in mental cages of our own making is
   (A) proved beyond a shadow of doubt.
   (B) refuted by the author who exposes the inconsistencies and contradictions in that notion.
   (C) a matter of dispute according to the author who believes that it is based on an erroneous assumption.
   (D) an assumption of the author.

6. A mentor, coach or facilitator who is in agreement with the author of the passage will provide any of the following advice to people who need help EXCEPT?
   (A) "You need to change your rigid perceptions and break the old framework in order to be able to think differently and creatively."
   (B) "Only if you give up thinking in ways that other people expect you to think and then approach the problem in a different way, will you be able to succeed in thinking differently and solving the problem".
   (C) "You must always heed your inner voices which have something meaningful to say and give importance to your predetermined perceptions rather than think out of the box."
   (D) "You must listen to what other people have to say as they could probably look at a problem from a fresh angle and add a new perception to it."

DIRECTIONS *for questions 7 to 12:* The passage given below is followed by a set of six questions. Choose the best answer to each question.

In 2011, close to 200 higher-education professionals from selective institutions across the country gathered at the University of Southern California to come up with a plan to reshape college admissions. "The values and behaviours this system signals as important, and its tendency to reward only a narrow band of students," a report on the meeting concluded, "is crippling the mission of education." ...The gathering confirmed the growing consensus – even among those intimately involved in the most notorious aspects of admissions – that the system is in desperate need of reform. The intense competition it fuels undermines students' well-being; pressures applicants to fine-tune their test-taking skills and inflate their resumes; and distorts the purpose of higher education.

Instead of preparing themselves for college – or more importantly, for life – students spend all of their pre-college years preparing themselves for the moment of admission. "What we want is to have students who want to come and work hard because they can leverage their experience at the university and do something after they leave," said Wesleyan University President Michael Roth. "One of my predecessors used to say to students, 'If these turn out to be the best four years of your life, we've failed you.'"

Roth didn't participate in the USC conference, but he agrees with its tenets. "I think that that's the missing part now – this consumer mentality [of], 'Oh, I got in and now I get to enjoy the exclusive club,' rather than 'I got in, and now I get to use these resources to do something after the university.'"

The people who are out in the field recruiting applicants are rarely venerable educators who drive and shape the educational objectives of the school. In many cases, the front line of the admissions process is a cadre of relatively low-paid twenty-some things. Ultimately, the USC/Education Conservancy event did little to change the status quo at selective colleges. The admissions mania has, arguably, only gotten worse. Students today still spend months and sometimes even years of grueling work to secure a spot, spending thousands on test prep and college consultants, drafting essays and enrolling all kinds of extra curriculars, just to get into the running. And at the other end of all that work is what many critics describe as a lottery – even the most qualified students are merely gambling to get in.

Another campaign called Turning the Tide, which is being led by many of the same players, aims to do something similar, this time focusing on the character-building potential of the admissions process. Whereas the USC report focused mainly on de-emphasizing test scores and admissions selectivity and treating admission into a selective school as "beginning of an educational journey," this one aims to fundamentally alter students' reasons for getting into college. Based on a recent survey which found that most of the country's teens prioritize their own happiness or achievement over caring for others, Turning the Tide is calling on selective colleges to encourage applicants to engage in "meaningful, sustained community service," contribute to their families, and focus on the quality (versus the quantity) of extracurricular activities.

But it's unclear whether this campaign will gain any more traction than the USC iteration, and some – including Roth – are skeptical about its approach. "I do worry about trying to create a new system that will measure qualities that will supposedly make people better people. Because insofar as it becomes a new system, it will be gamed by people who already pad their resumes with all kinds of activities that supposedly show empathy, but what they really show is a desire to get into schools where empathy is a criterion for admission," Roth said.

7. What does Michael Roth imply when he quotes, "If these turn out to be the best four years of your life, we've failed you"?
   (A) Students should work hard in college and prepare themselves for the best and most productive years of their life.
   (B) Students should not enjoy their time in college but must focus on working hard.
   (C) Students should feel as if they are a part of an exclusive club, after gaining admission to a college.
   (D) Students should focus not only on learning but also on extracurricular activities.

8. Which of the following aptly captures the views of the gathering at the University of Southern California?
   (A) Students should not inflate their resumes as it distorts the admission procedure.
   (B) There is a need for reform in the admission process because it now results in intense competition among the students.
   (C) Admission to colleges for higher education should not be based on tests.
   (D) Students should concentrate more on extracurricular activities than on academics.

9. Which of the following can be inferred to be a reason that the USC/Education Conservancy event did little to change the status quo at selective colleges"?
   (A) The people who are on the field, recruiting applicants, are not educated.
   (B) The educators who outlined the admission process are not aware of the ground reality.
   (C) There is a disconnect between the educators who determine the educational objectives and the people who recruit applicants.
   (D) Applicants do not care about the educational objectives of the school.

10. The aim of Turning the Tide campaign is to
   (A) prompt the development of empathy in applicants for college admissions.
   (B) change the perception of the students such that they treat admissions to schools as the beginning of their educational journey.
   (C) dissuade selective colleges from admitting students solely based on their academic performance.
   (D) to de-emphasize test scores and admissions selectivity.

11. Some people, including Michael Roth, are skeptical about the new system that Turning the Tide plans to create because
    (A) it may be unfair to the applicants who are intelligent but not empathetic.
    (B) the applicants presenting themselves as empathetic might have a wider scope with applications.
    (C) it may result in students inflating their resumes.
    (D) it will only increase the competitive nature of admissions.

12. Which of the following can be inferred from the phrase "even the most qualified students are merely gambling to get in"?
    (A) The admission process of selective colleges is ineffective as it usually leaves out the most deserving candidates.
    (B) The admission process of selective colleges awards students who are highly competitive.
    (C) The admission process of selective colleges is objective and justly rewards the deserving candidates.
    (D) The admission process of selective colleges is subjective and an element of luck is involved in it.

DIRECTIONS *for questions 13 to 18:* The passage given below is followed by a set of six questions. Choose the best answer to each question.

The constant recycling of the Earth's crust through plate tectonics has provided Earth with a stable climate, mineral and oil deposits and oceans with a life-sustaining balance of chemicals. It even gives evolution a kick every few hundred million years and recycles water, carbon and nitrogen, creating an environment that is perfect for life.

Earth is the only planet that has plate tectonics. What went right? For plate tectonics to get going a planet has to be just the right size. Too small and its lithosphere will be too thick. Too big and its powerful gravitational field squeezes any plates together, holding them tightly in place. The rocks making up the planet should be not too hot, not too cold, not too wet and not too dry.

Plate tectonics has played a pivotal role in the formation of today's eastern United States. About a 1000 million years ago, a continent of unknown dimensions was rifted apart, creating an ancestral ocean more or less where the Atlantic is now. The older ocean has been called Iapetus, because Iapetus was the father of Atlas, for whom the Atlantic is named. Some geologists, who may feel that their science is dangerously clever, are **snappish** about Iapetus. They prefer to say proto-Atlantic.

The ancestral ocean existed a great deal longer than the Atlantic has, but gradually, across some 250 million years in the Paleozoic era, it closed. Moving toward each other, the great landmasses on either side buckled and downwarped the continental shelves and then came together in a crash no less brutal than slow--a continent-to-continent collision marked by an alpine welt, which has reached its old age as the Appalachian Mountains.

In the Mesozoic era, 200 million years ago, rifting began again, pulling apart certain segments of the mountain chain, creating fault-block basins--remnants of which are the Connecticut River Valley, central New Jersey, the Gettysburg battlefields, the Culpeper Basin--and eventually parting the earth's crust enough to start a new ocean, which is now 3000 miles wide and is still growing.

Meanwhile, a rhythm of glaciation has been established in what is essentially the geologic present. Ice sheets have been forming on either side of Hudson Bay and have spread in every direction to cover virtually all of Canada, New England, New York, New Jersey, Pennsylvania, and the Middle West. Milankovitch had proposed that ice ages were caused by variations in the Earth's orbit around the sun. Yet the lack of information about other possible factors affecting climate (such as volcanic particulates or variations in the amount of sunlight received by the earth) does not make them unimportant.

The 'ice age' has come and gone at least a dozen times in the eastern United States, in cycles that seem to require about a hundred thousand years, and, judging by other periods of glaciation in the earlier history of the earth, the contemporary cycles have only begun. The next ice age is expected to occur in this century itself. So all predictions regarding the melting of ocean ice due to global warming are unwarranted, according to scientists.

We are living in a new Anthropocene epoch, part of the Quaternary period, which started more than 2.5 million years ago with the advent of the cyclical growth and retreat of massive glaciers. The Quaternary is part of the Cenozoic ("recent life") era that began 66 million years ago and is, in turn, part of the Phanerozoic ("revealed life") eon, which started 541 million years ago and encompasses all of complex life that has ever lived on this planet. In the end, the Anthropocene might supplant its old rival, the Holocene. Holocene means "entirely recent" in Greek and designates the most recent period in which the great glacial ice sheets receded. Some geologists wrongly believed that the Holocene epoch was "our time and space" while the Pleistocene or the "Ice Age" was all behind us.

The Holocene is only designated an epoch, when other interglacials are not, because back in the 18th century geologists thought humans were a very recent species, arriving via divine intervention or evolving on Earth in the Holocene. But scientists now know that *Homo sapiens* arose more than 200,000 years ago in the Pleistocene epoch. The Holocene appears to be nothing more than a relatively deglaciated interval. It will last until a glacier two miles thick plucks up Toronto and deposits it in Tennessee. If that seems unlikely, it is only because the most southerly reach of the Pleistocene ice fields to date stopped seventy-five miles shy of Tennessee.

13. Which of the following is farthest in meaning of the word 'snappish' as it has been used in the passage?
(A) splenetic (B) crusty
(C) testy (D) aphoristic

14. Which of the following statements best describes the organization of ideas in the first and second paragraphs of the passage?
(A) The first and second paras deal with the cause and effect of plate tectonics respectively.
(B) While the first para lists the benefits of plate tectonics, the second para enumerates the problems caused by it.
(C) While the first para explains how plate tectonics has helped the earth, the second para explains what has helped plate tectonics.
(D) The first para explains a process and the second para elaborates on it.

15. Which of the following statements can be inferred from the passage?
(a) Plate tectonics is responsible for provision of stable climate, creation of mineral deposits, earthquakes and volcanoes.
(b) Oceans existed before rocks were formed on earth and Ice ages were found to occur quickly in the years preceding the known origin of human kind on earth.
(c) Milankovitch theory is one plausible explanation for the ice ages.
(d) Glaciers tend to come and go in cycles of about a hundred million years.
(e) The Appalachian Mountains have been preserved intact for the past 200 million years.
(A) Only c (B) d and e (C) a, c and d (D) b and c

16. Which of the following, if true, casts the most serious doubt on the claim of some scientists that predictions of global warming are unfounded?
(A) Ice ages have harmful consequences though not as severe as the effects of global warming.
(B) The last century saw a large scale use of motor vehicles and refrigerators whose effect on ice melting in oceans is much more than all the factors that prevented ice formation in the earlier years.
(C) Ice ages were known to occur quickly in the years preceding the known origin of human kind on earth.
(D) Past history shows that the greater the global warming the earlier is the occurence of ice ages.

17. All of the following statements can be understood from the passage EXCEPT?
(a) The passage discusses changes around the Atlantic area in the aspects of plate tectonics and glacial geology.
(b) On time scales of hundreds of millions of years, oceans can open and close, and mountains can rise.
(c) Tennessee remains free of glaciers in the Pleistocene, but may not remain so in the future.
(d) Some scientists are not in favour of the name 'Iapetus' for the ancestral ocean.
(e) The lithosphere of the earth is not too thick and Earth's gravitational field is of a size which holds the tectonic plates rigidly in their position.
(A) Only c (B) b and e
(C) a, c and d (D) Only e

18. What is the author's attitude towards the idea of the Holocene epoch?
(A) Excited (B) Fascinated
(C) Skeptical (D) Concerned

DIRECTIONS *for questions 19 to 21:* The passage given below is followed by a set of three questions. Choose the best answer to each question.

The military history of Canada during World War I began on August 4, 1914, when Britain entered the First World War (1914–1918) by declaring war on Germany. This automatically brought Canada into the war, because of Canada's legal status as a British dominion which left foreign policy decisions in the hands of the British parliament. However, the Canadian government had the freedom to determine the country's level of involvement in the war.

Canadians of British descent – the majority – gave widespread support arguing that Canadians had a duty to fight on behalf of their Motherland. Canadian Prime Minister Robert Borden offered assistance to Great Britain, which was quickly accepted.

The Canadian Expeditionary Force (CEF) was the designation of the field force created by Canada for service overseas in the First World War. Although the force was raised quickly, it was riven with political patronage and lacked a solid core of professional officers and NCOs. 620,000 men and women volunteered in the war by enlisting as nurses, soldiers and chaplains. In general, non-white people and those born in enemy nations like China, Germany and Japan were not welcomed into the military. During the First World War, the Canadian Army authorized the formation of 260 infantry battalions to serve in the Canadian Expeditionary Force. Only a small fraction of these battalions ever reached France to serve on the front lines.

The first Canadian Division of the CEF departed for Great Britain in October 1914. It remained in Great Britain for additional training till February 1915 when it embarked for France. The Canadian Corps was formed from the CEF after the second Canadian Division embarked for France in September 1915. The soldiers of the Corps were mostly volunteers as conscription was not implemented until the end of the war. The Corps was expanded by the addition of the third Canadian Division which formed in France in December 1915 and the fourth Canadian Division which formed in Britain during April 1916 and arrived in France in August 1916. The fifth Canadian Division began assembling in Britain in February 1917, but was broken up in February 1918.

The highpoints of Canadian military achievement during the Great War came during the Ypres, Somme and Vimy battles.

The April 1915 battle for Ypres was the site of the first use of poison (chlorine) gas during the war. Despite the surprise of the German attack and their use of gas, the Canadian forces were able to stabilize their lines and fall back in good order to more defensible positions.

The battle of the Somme began on 1st July 1916. The *Somme Offensive* had three objectives – to relieve pressure on the French armies at Verdun, to inflict as heavy losses as possible on the German armies, and to aid allies on other fronts by preventing any further transfer of German troops from the west. The Canadian Corps suffered the highest number of casualties in this battle but it developed, significant experience in the use of infantry and artillery and in tactical doctrine, preparation and leadership under fire. The Canadian divisions fought separately and then rejoined the Canadian Corps at Vimy Ridge.

In the Battle of Vimy Ridge (April 1917), for the first time, all four Canadian divisions were to be assembled to operate in combat as a Corps.

Canada's total casualties stood at the end of the war at 67,000 killed and 250,000 wounded, out of an expeditionary force of 620,000 people mobilized.

19. Which of the following statements can be inferred from the passage?
(A) Poison gas was first used in the world in the April 1915 battle for Ypres and the Canadians vanquished the Germans despite the use of poison gas.
(B) The Canadian Corps suffered heavy losses in the battle of the Somme.
(C) Chinese, Japanese and Blacks were compulsorily enlisted as soldiers in the Canadian Corps in September 1915.
(D) All four Canadian divisions fought together as a single Corps for the first time in the battle of the Somme.

20. What can be said to be the reason for the large number of people from Canada volunteering to help Great Britain against Germany?
(A) A large number of the volunteers were of British origin.
(B) The volunteers were spurred to action by German atrocities in Britain and were attracted by the financial prospects of serving in the British army.
(C) Canadians were worried about the Germans invading their country.
(D) Legally Canada was a British dominion and the foreign policy decisions of the British parliament compelled the Canadians to support Britain against Germany.

21. What is the author's primary purpose in this passage?
(A) The author wants to highlight the importance of the Canadian Corps to the British army.
(B) The author wants to give a brief account of how the Canadian Divisions were formed.
(C) The author wants to give the reader an insight into Canadian military history during World War I.
(D) The author aims to chronicle one of the crucial events of WWI.

DIRECTIONS *for questions 22 to 24:* The passage given below is followed by a set of three questions. Choose the best answer to each question.

It might have been.

Those aren't the saddest words only for lovers, as the poet John Greenleaf Whittier wrote, but also for investors.

The pain of missing out on the tripling of the U.S. stock market since March 2009 has become almost unbearable for many investors who have been watching from the sidelines, financial advisers say.

Some who got out of stocks five years ago are fixating on how much richer they would have been if they had stayed put. Others are suffering the social distress of listening to friends bragging about their bigger returns.

Psychologist Daniel Kahneman, who won the Nobel Prize in economics in 2002, likes to say that one of the keys to investing successfully is properly anticipating your regret.

Learning from other people's remorse now may help you minimize your own later – by learning how to reframe your regrets and by making gradual changes to your investing plan that are likely to keep you from doing anything rash.

Several financial advisers told me this past week about clients who are chafing to move most or all of their money into stocks. Often, those who lost the most in 2008 and 2009 – and begged to be taken out of stocks entirely – are the most eager to pile back in now.

"Some investors have an overwhelming, self-defeating desire to adjust their asset allocation based on recent past results," says Frank Armstrong, president of Investor Solutions, a financial-advisory firm in Miami. "While markets are reasonably efficient, many investors are hopelessly inefficient."

Recent returns can distort your behavior for different reasons. If you have been riding the market's upsurge, you may feel as if you can afford to take extra risks with "house money," or profits in excess of your own capital – much the way casino gamblers tend to bet more aggressively after a big score.

Conversely, if you have missed out, you may chase the rising market in a desperate attempt to get back to "break-even," or the level of wealth you would have had if you had stayed in all along.

Recent gains or losses change how the human brain assesses risk, according to a study that will appear later this year in a well-regarded psychology publication, the Journal of Economic Behaviour & Organization.

People were roughly 20% more likely to take a gamble after either a gain or loss than after a neutral outcome, the study shows. During the experience of profits and losses alike, several regions of the brain involved in emotion became more active, while activity dwindled in areas devoted to executive decision-making.

"The experience of gain or loss appears to reduce your deliberation, how much you think about and pay attention to your decisions," says neuroeconomist Kaisa Hytönen of the Aalto University School of Science in Espoo, Finland, the lead author of the study. "That relative lack of deliberation may be driving you to take more risk in your future choices."

22. As can be inferred from the passage, understanding the impact of recent gains or losses on the human brain
(A) might help investors take well thought-out decisions.
(B) might increase the profits that investors make from stocks.
(C) might help investors take decisions based on their emotions.
(D) will help investors take riskier decisions.

23. Which of the following can be inferred from Frank Armstrong's comments provided in the passage?
(A) Making investments decisions based on recent results will increase the profits of the investors.
(B) Investment decisions based on recent results will make the market inefficient.
(C) Making investment decisions based on recent results is an inefficient method of investing.
(D) Making investment decisions based on recent results will cause investors to chase a rising market.

24. According to the passage, which of the following will not be helpful to the investors in taking deliberate decisions?
(A) Learning to manage emotions from other investors.
(B) Learning to focus on the gains that can be obtained in the future.
(C) Making gradual changes to investment plans.
(D) Learning to anticipate regrets.

SUB-SECTION: VERBAL ABILITY
Number of Questions = 10

DIRECTIONS *for questions 1 to 4:* 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. (1) On entering the hall, I soon realized that I was witnessing an ancient rite, the investiture of new fellows into the Royal Society, one of the most ancient scholarly organizations on the planet.
(2) In the spring of 1974, about two years before the Viking spacecraft landed on Mars, I was at a meeting in England sponsored by the Royal Society of London to explore the question of how to search for extraterrestrial life.
(3) When at last he finished, there was a stirring ovation – Stephen Hawking was a legend even then.
(4) During a coffee break I noticed that a much larger meeting was being held in an adjacent hall, which out of curiosity I entered.
(5) In the front row a young man in a wheelchair was, very slowly, signing his name in a book that bore on its earliest pages the signature of Isaac Newton.

2. (1) Thousands of Canadian boys begin to play the sport at the "novice" level, before they are even in kindergarten.
(2) And if your Major Junior A team plays for the Memorial Cup, that means you are at the very top of the top of the pyramid.
(3) Canadian hockey is a meritocracy.
(4) By the time players reach their mid teens, the very best of the best have been channeled into an elite league known as Major Junior A, which is the top of the pyramid.
(5) From that point on, there are leagues for every age class, and at each of those levels, the players are sifted and sorted and evaluated, with the most talented separated out and groomed for the next level.

3. (1) The fortress houses some six hundred prisoners, political offenders or ciminals of the most dangerous kind.
(2) And Belle Isle has another highly efficient protection system provided by nature itself, a phenomenon known to local fishermen as the Mill Race, a ferocious ten knot current that churns the water into white foam on even a calm day.
(3) No vessel may approach closer than four miles

and the designated clear area around the island is closely monitored by an excellent approach radar system.

(4) Most of them are serving life sentences and most of them will die there because one thing is certain: no one has ever escaped from Belle Isle.

(5) Belle Isle has a rock fortress situated forty miles to the east of Marseilles and some ten miles from the coast.

4. (1) When our heroes meet again, what do they find? Did time slow down for Stella, making her years younger than her home-bound brother?

(2) Our story stars two twins, sometimes unimaginatively named A and B; we prefer the monikers Stella and Terence.

(3) Not to keep anyone in suspense, Special Relativity plumps unequivocally for the first answer: Stella ages less than Terence between the departure and the reunion.

(4) Or can Stella declare that the Earth did the travelling, so Terence is the younger?

(5) Terence (the terrestrial sort) sits at home on Earth; Stella (who sets her sights on the stars) flies off in a spaceship at nearly the speed of light, turns around after a while, thrusters blazing, and returns.

DIRECTIONS *for questions 5 to 7:* Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

5. (1) This is not the original sense of the "memento mori" phrase as used by Horace for whom, mindfulness of our own mortality is key in making us realize the importance of the moment.

(2) Related but distinct is the expression "memento mori" ("remember that you are mortal") which carries some of the same connotation as "carpe diem".

(3) The NBC television series *Community* satirized the movie in the episode "Introduction to Film," with John Michael Higgins playing a comedically eccentric version of Williams' character.

(4) In the 1989 movie *Dead Poets Society*, the English teacher John Keating, played by Robin Williams, famously says: "Carpe Diem. Seize the day, boys. Make your lives extraordinary."

(5) Today many listeners will take the two phrases as representing almost opposite approaches, with "carpe diem" urging us to savour life and "memento mori" urging us to resist its allure.

6. (1) On the other hand, Arkush writes, Chinese proverbs are striking in their belief that "hard work, shrewd planning and self-reliance or cooperation with a small group will in time bring recompense."

(2) That's the kind of fatalism and pessimism typical of a repressive feudal system in Russia, where peasants have no reason to believe in the efficacy of their own work.

(3) The historian David Arkush once compared Russian and Chinese peasant proverbs, and the differences are striking.

(4) Working really hard is what successful people do, and the genius of the culture formed in the rice paddies is that hard work gave those in the fields a way to find meaning in the midst of great poverty and uncertainty.

(5) "If God does not bring it, the earth will not give it" is a typical Russian proverb.

7. (1) Superlatives such as "fantastic" and "incredible" were inadequate to describe those eventful days.

(2) Breaking deeply imbedded habitual tendencies such as procrastination, impatience, criticalness, or selfishness that violate basic principles of human effectiveness involves more than a little willpower and a few minor changes in our lives.

(3) Most energy was spent in the first few minutes of lift-off, in the first few miles of travel, than was used over the next several days to travel half a million miles.

(4) But to get there, those astronauts literally had to break out of the tremendous gravity pull of the earth.

(5) Those of us who watched the lunar voyage of Apollo 11 were transfixed as we saw the first men walk on the moon and return to earth.

DIRECTIONS *for questions 8 to 10:* Read the following paragraph and answer the question given below it.

8. Researchers from the University of Nevada, Reno, have discovered that coffee can be turned into an alternative fuel other than caffeine: biodiesel. And you can have your coffee and drink it too. No need to use the fresh stuff, old grounds are more than up to the task, according to material scientist Mano Misra and his colleagues.

Which of the following, if true, would support the use of coffee as an alternative fuel?

(A) Coffee has the added benefit of not being a primary food source, unlike other major bio resources.

(B) 65 percent of the weight of dried coffee grounds is oil, which unlike any other source, can be converted into biodiesel.

(C) Coffee's high proportion of antioxidants such as chlorogenic acid acts as a natural preservative for the resulting biodiesel, preventing it from going bad like many other forms of biofuel.

(D) All of the above.

9. If you wish to persuade people that because Adam ate an apple, all (including those who have never heard of this interesting occurrence) will be roasted in an everlasting fire by a benevolent Deity, you must catch them young, making them stupid by all

means of drink and drugs, and carefully isolate them from all contact with books or companions capable of making them think.
What is an assumption in the above paragraph?
(A) Young minds are not gullible.
(B) Man cannot think without the help of books and companions.
(C) Isolation from company makes one a fool.
(D) People who do not believe in a benevolent Deity will go to hell.

10. Karan Johar says, "Think of a Hollywood release starring Sean Connery, Tom Cruise and Leonardo Di Caprio, and then add Audrey Hepburn, Julia Roberts and Kate Hudson; the combination cannot fail." That's what the 29 year-old director aimed for with *Kabhie Khushi Kabhie Ghum*, which featured three generations of India's brightest movie stars Amitabh Bachchan, Shah Rukh Khan, Hritik Roshan, Jaya Bachchan, Kajol and Kareena Kapoor in one of Bollywood's most expensive productions ever and which he expected to be a huge hit.
The underlying assumption in the above paragraph is that
(A) Amitabh Bachchan, Shah Rukh Khan, Hritik Roshan are the Bollywood equivalent of Sean Connery, Tom Cruise and Leonardo Di Caprio; and stars influence the success of a film.
(B) Big budget movies have often turned out to be huge hits.
(C) The plot of Karan Johar's movie was the same as that of the Hollywood release.
(D) Small budget films in India cannot be as successful as Hollywood movies.

SECTION II: DATA INTERPRETATION AND LOGICAL REASONING

SUB-SECTION: DATA INTERPRETATION
Number of Questions = 14

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

ColdAir Airlines, which connects Atlantis to various other cities, sells exactly ten tickets for each of their flights at their kiosk in Atlantis airport. The price of the ticket for any flight depends on the number of tickets available for that flight at the kiosk just before the ticket is purchased. The price of each ticket (in USD) is calculated based on the following formula:

$$\textit{Price of ticket (in USD)} = \frac{200}{\textit{Number of tickets available}} + 50$$

During a particular day, exactly twenty customers purchased ColdAir flight tickets for three different flights – CA-187, CA-543 and CA-923 – at the kiosk in Atlantis airport. Further, all the ten tickets were available at the beginning of the day for each flight and each customer purchased exactly one ticket. The following table provides, for each customer, the name of the customer, the time at which he/she purchased the ticket, the flight for which he/she purchased the ticket:

Customer	Purchase Time	Flight
Aiden	11:23	CA-543
Alexander	21:16	CA-187
Aria	09:54	CA-543
Aurora	11:41	CA-187
Ava	10:24	CA-543
Benjamin	15:45	CA-923
Caleb	16:11	CA-187
Charlotte	10:15	CA-923
Declan	13:12	CA-543
Elijah	12:18	CA-923

Customer	Purchase Time	Flight
Elliott	14:18	CA-923
Emilia	17:25	CA-923
Emma	19:24	CA-543
Emmett	22:51	CA-923
Ethan	16:41	CA-543
Finn	19:52	CA-543
Nora	12:32	CA-187
Olivia	13:51	CA-187
Scarlett	16:17	CA-543
Violet	20:05	CA-923

Note: The entries in the above table have been arranged in the alphabetical order of the names of the customers.

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

1. How many customers paid at least USD100 for their ticket?
   (A) 6 (B) 1
   (C) 3 (D) 4

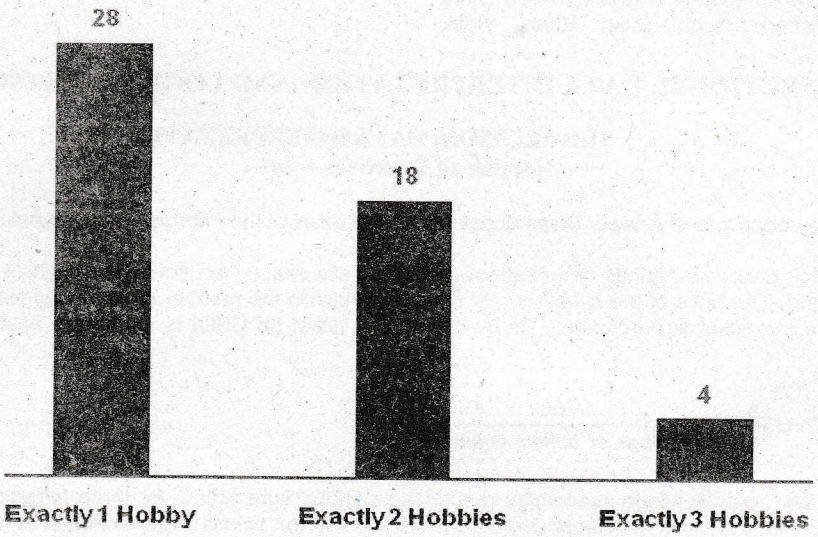
2. What is the maximum difference in the price of any two tickets purchased consecutively at the kiosk?
   (A) USD16.67 (B) USD20
   (C) USD30 (D) USD26.67

3. For which of the following intervals can it be said that, any customer who purchased his/her ticket during that interval paid more than USD75 but less than USD100?
   (A) 13:00 to 17:00 (B) 14:00 to 19:00
   (C) 15:00 to 17:30 (D) 12:00 to 17:00

4. What is the average price per ticket paid by the customers whose name starts with the letter E?
   (A) USD86.76 (B) USD84.13
   (C) USD91.33 (D) USD81.50

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

In a survey, a group of 50 persons were asked about their hobbies. Each person had at least one hobby among Drawing, Numismatics and Philately. No person had a hobby other than these three hobbies. The following chart provides the number of people with exactly one, exactly two and exactly three hobbies:



Further, it is also known that
(i) at least 18 people have Philately as their hobby.
(ii) at most 11 people have Numismatics and Drawing as their hobby.

DIRECTIONS *for questions 5 and 6:* Type in your answer in the input box provided below the question.

5. If the number of persons who have Drawing and Numismatics as their hobby is the same as the number of persons who have only Philately as their hobby, what is the maximum number of persons who have Drawing as their hobby?

6. If at least 13 people have Drawing as their hobby, then the number of people who have Numismatics as their hobby is at most

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

7. If the number of persons who have only Numismatics as their hobby is the same as the number of persons who have exactly two hobbies, which of the following can be the number of persons who have only Drawing as their hobby?
   (A) 25 (B) 17
   (C) 11 (D) 5

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

The table below presents the values of various financial indicators for eight companies – Company 1 through Company 8. However, only the second column, representing the Total Assets (in ₹ mn) of each company, is labelled accurately and the other seven columns (labelled A through G) represent the seven indicators (values rounded off to three decimal places) defined below, not necessarily in the same order:

- ***Net Sales*** - in ₹mn.
- ***Total Costs*** - in ₹mn.
- ***Shareholders' Equity*** - in ₹mn.
- ***Debt Equity Ratio*** - calculated as $\frac{\text{Total Debt}}{\text{Shareholders' Equity}}$
- ***Asset Turnover*** - calculated as $\frac{\text{Net Sales}}{\text{Total Assets}}$
- ***Leverage*** - calculated as $\frac{\text{Total Assets}}{\text{Shareholders' Equity}}$
- ***Return on Equity*** - calculated as $\frac{\text{Net Sales} - \text{Total Costs}}{\text{Shareholders' Equity}}$

Company	Total Assets (₹ mn)	A	B	C	D	E	F	G
Company 1	2.000	0.600	1.200	0.167	0.700	3.000	0.667	0.700
Company 2	2.500	0.720	1.800	0.040	1.600	5.000	0.500	0.640
Company 3	1.400	2.429	3.400	0.050	3.200	4.000	0.350	0.450
Company 4	2.600	0.962	2.500	0.033	2.450	1.500	1.733	0.333
Company 5	3.100	0.613	1.900	0.056	1.700	3.600	0.861	0.861
Company 6	2.400	0.583	1.400	0.031	1.250	4.800	0.500	0.438
Company 7	1.200	2.917	3.500	0.088	3.050	5.100	0.235	0.235
Company 8	0.800	3.000	2.400	0.125	2.100	2.400	0.333	0.333

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

8. What is the Asset Turnover of Company 5?
(A) 1.9
(B) 0.613
(C) 0.861
(D) 3.6

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

9. If Net Profit is defined as Net Sales – Total Cost, the highest Net Profit for any company (in ₹) is

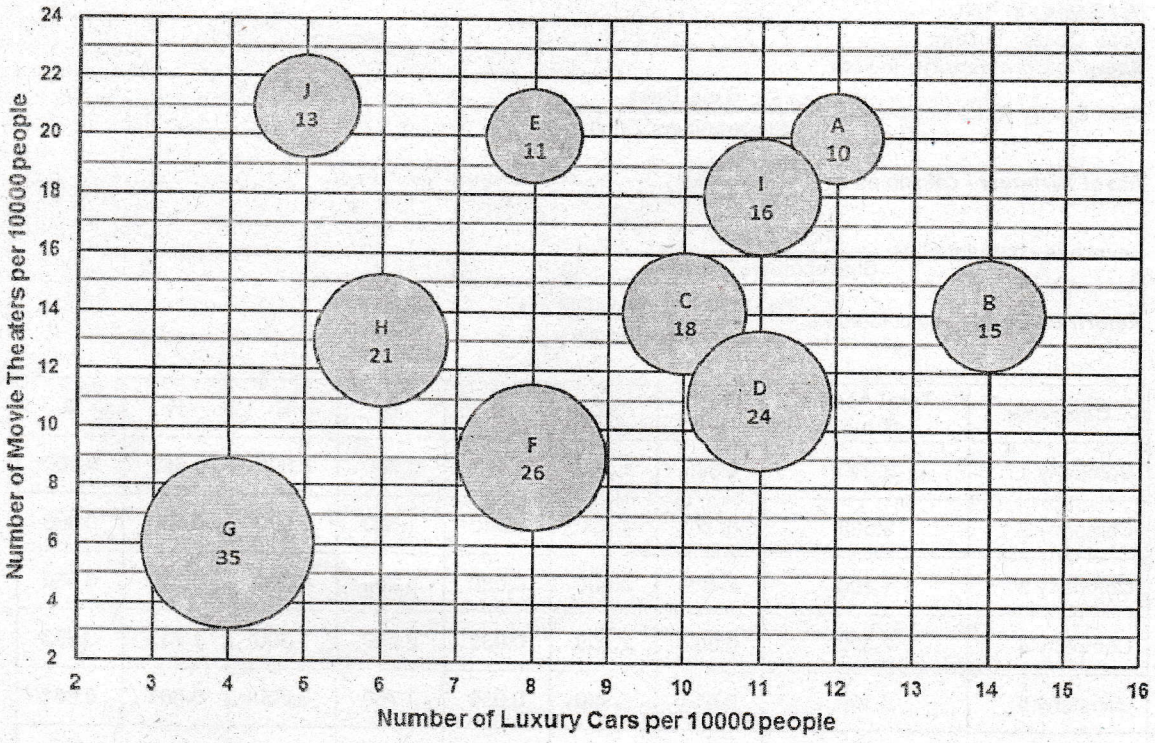
DIRECTIONS *for questions 10 and 11:* Select the correct alternative from the given choices.

10. The company which has the second highest value of Total Debt is
(A) Company 1.
(B) Company 2.
(C) Company 7.
(D) Company 5.

11. Which of the following statements is true?
(A) The company with the highest Net Sales also has the highest Total Cost.
(B) The company with the lowest Return on Equity also has the lowest Asset Turnover.
(C) The company with the highest Leverage also has the lowest Return on Equity.
(D) The company with the lowest Shareholders' Equity also has the lowest Debt Equity Ratio.

DIRECTIONS *for questions 12 to 14:* Answer these questions on the basis of the information given below.

The bubble chart below presents, for ten countries, A through J, the number of Luxury Cars per 10000 people (along the horizontal axis) and the number of Movie Theatres per 10000 people (along the vertical axis). Further, the population (in mn) of each country, which is represented by the size of the corresponding bubble, is given within the respective bubble.



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

12. Which country has the highest number of Luxury Cars?
    (A) C (B) G
    (C) H (D) None of the above

13. The highest number of Movie Theatres in any country is
    (A) 29200. (B) 28800.
    (C) 27300. (D) 26400.

14. Among the countries which have less than 25000 Movie Theatres, what is the highest number of Luxury Cars in any country?
    (A) 20800 (B) 21000
    (C) 20000 (D) 26400

SUB-SECTION: LOGICAL REASONING
Number of Questions = 14

DIRECTIONS *for questions 1 to 3:* Answer these questions on the basis of the information given below.

Each of five movie personalities – Murray, Atkinson, Hepburn, Horner and Moore – belongs to a different category among Actor, Actress, Editor, Director and Writer. Each of them worked in a different film among *Breaking Bread, Game of Drones, Small Pop Theory, She Locks Homes* and *Prism Break*. Also, each of them was nominated for an award in their respective category for the film that they worked in (among the five films mentioned above).Further, it is also known that

(i) two among the five persons won an award and neither of them worked in *Breaking Bread*.
(ii) one of the persons who won an award, worked in *Game of Drones*.
(iii) Horner, the Actor, who worked in *Prism Break*, did not win an award and neither did the Director, who worked in *Breaking Bread*.
(iv) Atkinson, the Writer, won an award and he did not work in *She Locks Homes*.
(v) Moore was the only female to be nominated but she didn't work in *She Locks Homes*.

DIRECTIONS *for questions 1 to 3:* Select the correct alternative from the given choices.

1. If the only female in the group did not win an award, then the person who worked in which of the following films would definitely have won an award?
   (A) *She Locks Homes*
   (B) *Prism Break*
   (C) *Small Pop Theory*
   (D) *Breaking Bread*

2. Which of the following persons worked in *Breaking Bread*?
   (A) Hepburn
   (B) Murray
   (C) Horner
   (D) Cannot be determined

3. Which of the following conditions would be sufficient to completely determine the film in which each

person worked, the category in which he/she was nominated and whether he/she won an award or not?

I. Murray is the director of *Breaking Bread.*
II. No one from *Small Pop Theory* won any award.
III. Moore worked in *Small Pop Theory.*
IV. Hepburn did not win an award.

(A) I and II (B) III and IV
(C) II and III (D) I and IV

DIRECTIONS *for questions 4 to 7:* Answer these questions on the basis of the information given below.

Yesterday, each of five students – Naveen, Madhu, Piyush, Ravi and Steve – met five different professors, each a professor of a different subject among Advanced Mathematics, Digital Electronics, Signal Processing, Classical Mechanics and Structural Mechanics. Each of the five students met each professor for exactly five minutes, starting from 10:00 a.m., such that by 10:25 a.m., all the five students had met all the five professors. Each student met only one professor at a time and each professor met only one student at a time. Further, it is also known that

(i) Naveen met the Structural Mechanics professor immediately before meeting the Signal Processing professor and Steve was the third student to meet the Signal Processing professor.
(ii) Piyush was the first student to meet the Classical Mechanics professor but was not the last student to meet the Digital Electronics professor.
(iii) except for one professor, Piyush met all the five professors after Steve met them.
(iv) Madhu was the second student to meet the Signal Processing professor but he met him after meeting the Structural Mechanics professor.

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

4. At 10:18 a.m., Steve was meeting the
(A) Signal Processing professor.
(B) Advanced Mathematics professor.
(C) Structural Mechanics professor.
(D) Digital Electronics professor.

5. The first student to meet the Digital Electronics professor was the last student to meet the
(A) Advanced Mathematics professor.
(B) Signal Processing professor.
(C) Classical Mechanics professor.
(D) Structural Mechanics professor.

6. Who was the fourth student to meet the Signal Processing professor?
(A) Ravi (B) Madhu
(C) Naveen (D) Piyush

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

7. How many students met the Classical Mechanics professor before Madhu met him?

[ ]

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

Seven persons – Alex, Hugh, Jack, Kenny, Lennox, Robert and Stan – are standing in a queue. In front of the first person in the queue, there is a switchboard with three switches – Switch 1, Switch 2 and Switch 3. Each switch can be either ON or OFF and the initial positions of the switches are not known. Starting with the first person in the queue, each person flips (i.e., turns the switch ON, if it is OFF, and vice versa) exactly one switch exactly once, in the same sequence in which they are standing in the queue, and leaves the queue after flipping the switch. Further, it is also known that

(i) all the switches were OFF when Kenny approached the switchboard and he was neither the first nor the last in the queue.
(ii) when Stan approached the switchboard, all the switches were ON and he was the first person to flip Switch 1.
(iii) each of Switch 1 and Switch 2 were flipped exactly twice and no two persons standing next to each other in the queue flipped the same switch.
(iv) Lennox, who was standing immediately in front of Jack, flipped Switch 2 ON and was not the first person in the queue.
(v) Robert was the only person who flipped Switch 3 OFF, while Hugh, who was standing immediately behind Stan, flipped Switch 2 OFF.
(vi) the last person in the queue did not flip Switch 1.

DIRECTIONS *for questions 8 to 11:* Select the correct alternative from the given choices.

8. How many switches were ON after the first person in the queue flipped a switch?
(A) 0 (B) 1 (C) 2 (D) 3

9. After which of the following persons flipped a switch were all the switches OFF?
(A) Alex (B) Robert
(C) Lennox (D) Hugh

10. What was the initial position of the three switches?
(A) Switch 1: ON; Switch 2: OFF; Switch 3: OFF
(B) Switch 1: ON; Switch 2: ON; Switch 3: ON
(C) Switch 1: ON; Switch 2: ON; Switch 3: OFF
(D) Cannot be determined

11. Which switch did Kenny flip?
(A) Switch 1
(B) Switch 2
(C) Switch 3
(D) Cannot be determined

DIRECTIONS *for questions 12 to 14:* Answer these questions on the basis of the information given below.

In a college mess, a cook prepared 40 rasgullas for eight students, Amar, Balu, Chitrak, Dev, Ehsaan, Farhan, Gautam, and Hari, estimating that each student will eat an equal number of rasgullas.

However, none of the students ate the exact number of rasgullas estimated by the cook, but each student ate a whole number of rasgullas. Further, it is also known that

(i) Farhan ate the highest number of rasgullas, which was eight more than the least number of rasgullas that any student had.

(ii) Amar ate one rasgulla more than what Dev ate, and Balu ate the second lowest number of rasgullas.
(iii) each student ate a distinct number of rasgullas and every student ate at least one rasgulla.
(iv) the average of the number of rasgullas that Ehsaan and Gautam ate was exactly the same as the number of rasgullas that the cook estimated each student would eat.

DIRECTIONS *for question 12:* Type in your answer in the input box provided below the question.

12. How many rasgullas did Amar eat?

DIRECTIONS *for questions 13 and 14:* Select the correct alternative from the given choices.

13. Which group of three students given in the following options ate the maximum total number of rasgullas?
(A) Ehsaan, Gautam, Amar
(B) Ehsaan, Dev, Hari
(C) Chitrak, Ehsaan, Dev
(D) Chitrak, Farhan, Hari

14. Which of the following statements will be sufficient to determine the exact number of rasgullas that each student ate?
(A) Ehsaan ate three rasgullas more than what Chitrak ate.
(B) Gautam ate one rasgulla more than what Hari ate.
(C) Hari ate the lowest number of rasgullas.
(D) Gautam ate exactly four rasgullas.

SECTION III: QUANTITATIVE ABILITY
Number of Questions = 28

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

1. Find the ratio of x and y, if $2x - 7y + t = 0$ and $5x - 3y - 2t = 0$.
(A) $\frac{3}{5}$ (B) $\frac{17}{9}$
(C) $\frac{10}{7}$ (D) Cannot be determined

2. The reduction in the length of cloth that a weaver will weave on a day is directly proportional to the square root of the number of days for which he has already worked since his last break (i.e., day off from work). If the only break that the weaver took in the month of August was on 1st of August and the length of cloth that he wove on the 18th and the 27th of August was 14 m and 10 m respectively, find the length of cloth (in m) that he wove on the 2nd of August.
(A) 24 (B) 20
(C) 30 (D) 48

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

3. A cake is cut into three pieces, whose weights are in the ratio 1 : 2 : 3. The heaviest piece is then further cut into four pieces, whose weights are in the ratio 1 : 2 : 3 : 4. If at the end of this process, the lightest piece obtained weights 24 gm, find the weight (in gm) of the original cake.

DIRECTIONS *for questions 4 and 5:* Select the correct alternative from the given choices.

4. If the cost price, the selling price and the marked price of an article are in arithmetic progression and it is known that a profit was registered by selling the article, then which of the following statements is true?
(A) The percentage profit was less than the percentage discount.
(B) The percentage profit was equal to the percentage discount.
(C) The mark up percentage was double the percentage profit.
(D) The percentage profit when calculated on the selling price was more than the actual profit percentage (calculated on the cost price).

5. If in a certain race, the distance by which A beats B is the same as that by which B beats C, then which of the following is true regarding the speeds of A, B and C.
(A) Speed of B is the A.M. of the speeds of A and C.
(B) Speed of B is the H.M. of the speeds of A and C.
(C) Speed of B is the G.M. of the speeds of A and C.
(D) None of the above.

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

6. Arif, Bill and Chetan were classmates and wanted to watch a movie at South City Mall right after their class got over. Bill had an Activa bike which could accommodate a maximum of two persons at a time and they wanted to reach the mall in the minimum time possible. They started simultaneously from their college, Bill and Arif on the bike and Chetan on foot. Bill dropped Arif at a certain point along the route to the mall, turned back and on his way met Chetan. He picked up Chetan and then traveled towards the mall such that all three of them reached the mall simultaneously. What is the total time (in minutes) taken by them to reach the mall from their college, if the speed of the bike was 30 km/hr, the walking speed of each of them was 6 km/hr and the distance between their college and the mall was 22.5 km?

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

7. M and N are two candles cylindrical in shape and of equal length. M burns out completely in six hours, whereas N burns out completely in ten hours. If both

the candles are lit simultaneously, after how many minutes will the length of N be three times that of M?

(A) 330 (B) 270
(C) 300 (D) 290

DIRECTIONS *for questions 8 and 9:* Type in your answer in the input box provided below the question.

8. A milkman purchased milk at a certain price, diluted it by adding water and then sold the mixture at $33\frac{1}{3}\%$ above his cost price and thereby made a profit of 40%. Find the quantity (in ml) of water he added for every litre of milk purchased.

9. If k is a natural number, find the minimum value of k such that $\frac{50!}{12^k}$ is not an integer.

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

10. Which of the following numbers given in the octal system is divisible by 7?

(A) $(23765)_8$
(B) $(24625)_8$
(C) $(45326)_8$
(D) $(36453)_8$

11. If the length and breadth of a cuboidal room are decreased by 20% and 25% respectively, find the percentage increase required in the height of the room to maintain its volume at the same level.

(A) $33\frac{1}{3}\%$ (B) $66\frac{2}{3}\%$
(C) 50% (D) 55%

DIRECTIONS *for question 12:* Type in your answer in the input box provided below the question.

12. Find the area (in sq. cm) of the triangle formed by joining the centres of three circles of radii 6 cm, 14 cm and 15 cm, if the three circles touch each other externally.

DIRECTIONS *for questions 13 to 17:* Select the correct alternative from the given choices.

13. Find the distance between the lines $5x + 12y + 21 = 0$ and $15x + 36y + 297 = 0$.

(A) 3 (B) 6
(C) 13 (D) 39

14. In an Arithmetic Progression, if the sum of the first 53 terms is equal to the sum of the first 119 terms, then find the ratio of the sum of the first 103 terms to the sum of the first 69 terms.

(A) 1 (B) 2
(C) $\frac{3}{2}$ (D) Cannot be determined

15. If $p = \log_c ab$, $q = \log_a bc$ and $r = \log_b ac$, then the value of $\frac{1}{p+1} + \frac{1}{q+1} + \frac{1}{r+1}$ is

(A) 1 (B) 2
(C) $\frac{1}{3}$ (D) $\frac{1}{6}$

16. A country wanted to select four mixed-doubles tennis teams for the upcoming Rio Olympics from 6 female players and 6 male players available for selection. If the selection panel chose the players at random, then in how many ways they could have done that? (A mixed doubles tennis team comprises one male and one female player)

(A) 129600 (B) 64800
(C) 5400 (D) 1800

17. The odds in favour of A being selected in an interview are 2 : 1, whereas the odds against B are 2 : 3. What is the probability that of the two candidates, A and B, exactly one person is selected in the interview?

(A) $\frac{3}{7}$ (B) $\frac{7}{15}$
(C) $\frac{2}{7}$ (D) $\frac{8}{15}$

DIRECTIONS *for questions 18 to 20:* Type in your answer in the input box provided below the question.

18. $f(x)$ is a polynomial of degree four such that $f(1) = 1$, $f(2) = 2$, $f(3) = 3$, and $f(4) = 4$. If $f(0) = 24$, then find $f(5)$.

19. A grid of lines comprises 21 equidistant lines parallel to the x axis and 31 equidistant lines parallel to the y axis. A straight line is now drawn from one corner of the grid to the diagonally opposite corner. At how many distinct points does the diagonal line intersect the lines in the grid?

20. If A and B are two sets such that $n(A \cap B) = 0$, and the difference between the number of proper subsets of A and the number of proper subsets of B is 496, then find the number of proper subsets of $A \cup B$.

DIRECTIONS *for questions 21 and 22:* Select the correct alternative from the given choices.

21. Find the sum of the series

$$S = \frac{6}{1^4+1^2+1} + \frac{12}{2^4+2^2+1} + \frac{18}{3^4+3^2+1} + \ldots + \frac{162}{27^4+27^2+1} + \frac{168}{28^4+28^2+1}.$$

(A) $3\frac{7}{813}$ (B) $2\frac{270}{271}$ (C) $3\frac{1}{813}$ (D) $2\frac{250}{813}$

22. Find the number of solution to the equation $6x^2 + 5x - 6 - e^x = 0$.

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

DIRECTIONS *for questions 23 and 24:* Type in your answer in the input box provided below the question.

23. If set A = $\{4\sqrt{2}, 8\sqrt{2}, 12\sqrt{2}, 16\sqrt{2}, 20\sqrt{2}, 24\sqrt{2}, 28\sqrt{2}\}$ then the median of the elements in set A is how many times their standard deviation?

24. If $a \phi b = a^2b - b^2a$ and $a \psi b = (b - a)^2$, where a, b are distinct integers, what is the value of $a^3 + b^2$, given that $a \phi b = a \psi b$?

DIRECTIONS *for questions 25 and 26:* Select the correct alternative from the given choices.

25. The angles subtended by two flagstaffs, of heights 10 m and 15 m respectively, at a certain point P, on the ground between them, are complementary. If the distance of P from the foot of the flagstaff of height 10 m is 5 m, find the distance (in m) between the two flagstaffs.

(A) 30 (B) 24
(C) 35 (D) 40

26. Two points A (4, –2) and B (5, 5) lie on the circumference of a circle of radius 5 units. If P is another point lying on the circumference of the same circle, find the maximum possible area (in sq. units) of triangle PAB.

(A) $\frac{25}{4}(\sqrt{2}+1)$ (B) $\frac{25}{2}(\sqrt{2}+1)$
(C) $\frac{25}{4}(\sqrt{2}-1)$ (D) $\frac{25}{2}(\sqrt{2}-1)$

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

27. If *abcde* is a five-digit number, with distinct non-zero digits such that $a + b + c = 2(d + e)$, $a + b + d = 3(c + e)$ and $b + d = a + c + e$, how many possible values exist for the five-digit number *abcde*?

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

28. If a, b, c, d and e are positive integers, such that $a : b : c = 2 : 3 : 4$ and $b : d : e = 2 : 3 : 5$, find the minimum possible sum of $d + e$.

(A) 8 (B) 16
(C) 24 (D) 48