

Ref: AIMCAT1720

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 100 questions in three sections: (i) Verbal Ability and Reading Comprehension – 34 Questions (ii) Data Interpretation and Logical Reasoning – 32 Questions and (iii) Quantitative Ability – 34 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
Number of Questions = 34

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.

Welcome to higher education! If you want to be successful here, you need to know a few things about how this place works.

First, I am your professor, not your teacher. There is a difference. Up to now your instruction has been in the hands of teachers, and a teacher's job is to make sure that you learn. Teachers are evaluated on the basis of learning outcomes, generally as measured by standardized tests. If you don't learn, then your teacher is blamed. However, things are very different for a university professor. It is no part of my job to make you learn. At university, learning is your job – and yours alone. My job is to lead you to the fountain of knowledge. Whether you drink deeply or only gargle is entirely up to you.

Secondly, universities are ancient and tend to do things the old-fashioned way. In high school, your education was basically a test-preparation service. Your teachers were not allowed to teach, but were required to focus on preparing you for those all-important standardized tests. Though it galls ideologues, we university professors still enjoy a large degree of academic freedom. That means that the content and format of your courses is still mostly under your professor's control, and the format will probably include a good bit of lecture, some discussion and little or no test preparation.

Lecture has come under attack recently. "Flipped learning" is the current buzz term among higher-education reformers. We chalk-and-talk professors are told that we need to stop being the "sage on the stage," but should become the "guide on the side," helping students develop their problem-solving skills. Lecture, we are told, is an ineffective strategy for reaching today's young people, whose attention span is measured in nanoseconds. We should not foolishly expect them to listen to us, but instead cater to their conditioned craving for constant stimulation.

Hogwash. You need to learn to listen. The kind of listening you need to learn is not passive absorption, like watching TV; it is critical listening. Critical listening means that you are not just hearing but thinking about what you are hearing. Critical listening questions and evaluates what is being said and seeks key concepts and unifying themes. Your high school curriculum would have served you better had it focused more on developing your listening skills rather than drilling you on test-taking.

Finally, when you go to a university, you are in a sense going to another country, one with a different culture and different values. I have come to realize that the biggest gap between you and me is a cultural difference. I have absorbed deeply the norms and values of an ancient academic culture and they are now a part of me. You, on the other hand, come to my classes fresh from a culture with different values, one that finds academic ways strange and hard to understand.

Take the issue of documentation. For an academic, there is something sacred about a citation. The proper citation of a source is a small tribute to the hard work, diligence, intelligence and integrity of someone dedicated enough to make a contribution to knowledge. For you, citations and bibliographies are pointless hoops to jump through and you often treat these requirements carelessly. Further, our differences on the issue of giving or taking proper credit accounts for the fact that you so seldom take plagiarism as seriously as I do.

1. According to the author, which of the following is a difference between professors and teachers?
 - (A) Teachers are held responsible for students' performances in standardized tests while professors are held responsible for the grades that their students receive in their courses.
 - (B) Teachers have to ensure that their students learn whereas professors need not.
 - (C) Teachers are prone to be more pedantic whereas professors are usually dogmatic.
 - (D) Students cannot learn as much from professors as they can from teachers.

2. It can be inferred from the passage that the author
 - (A) wants to change his teaching style to become a "guide on the side" instead of acting like a "sage on the stage".
 - (B) believes that being a "guide on the side" will help the students to learn better.
 - (C) believes that, while he does not have to become a "guide on the side", the students should learn to listen.
 - (D) wants to become a "sage on the stage" and stop being a "guide on the side".

3. What, according to the author, is an old fashioned practice of universities when he states that "universities are ancient and tend to do things the old-fashioned way"?
 - (A) Allowing the professors to have freedom over the content and format of their courses.
 - (B) Not holding the professors responsible for their students' learning.
 - (C) Directing the professors to focus on test preparation.
 - (D) Recommending 'flipped learning' instead of lectures.

4. According to the author, critical listening involves
 - (A) being skeptical of everything that one hears.
 - (B) thinking about topics divergent to the topics that one hears.
 - (C) passively absorbing everything that one hears.
 - (D) thinking about what is being said and grasping the topics that one hears.

5. Which of the following is implied from the passage to be a feature of "flipped learning"?
 - (A) In "flipped learning", the professors learn from the students instead of the other way around.
 - (B) In "flipped learning", lectures are considered less effective in developing problem-solving skills of the students.
 - (C) In "flipped learning", listening skills of the students are enhanced.
 - (D) In "flipped learning", students do not listen to dogmatic professors.

6. Which of the following is mentioned in the passage as an example of the cultural difference between the author and his students?
 - (A) Students consider citations to be a tribute to the hard work of another person whereas the author does not.
 - (B) Citations are considered sacred by the author while bibliographies are considered sacred by students.
 - (C) Students usually plagiarise their work while the author never did.
 - (D) The author considers citations to be sacred while the students consider them only an inconvenience.

DIRECTIONS for questions 7 to 9: The passage given below is followed by a set of three questions. Choose the best answer to each question.

In 1979, a secret memo from the tobacco industry was revealed to the public. Called the Smoking and Health Proposal, and written a decade earlier by the Brown & Williamson tobacco company, it revealed many of the tactics employed by big tobacco to counter "anti-cigarette forces".

In one of the paper's most revealing sections, it looks at how to market cigarettes to the mass public: "Doubt is our product since it is the best means of competing with the 'body of fact' that exists in the mind of the general public. It is also the means of establishing a controversy."

This revelation piqued the interest of Robert Proctor, a science historian from Stanford University, who started delving into the practices of tobacco firms and how they had spread confusion about whether smoking caused cancer.

Proctor had found that the cigarette industry did not want consumers to know the harms of its product, and it spent billions obscuring the facts of the health effects of smoking. This search led him to create a word for the study of deliberate propagation of ignorance: agnotology. Agnotology is the study of wilful acts to spread confusion and deceit, usually to sell a product or win favour.

"I was exploring how powerful industries could promote ignorance to sell their wares. Ignorance is power... and agnotology is about the deliberate creation of ignorance. In looking into agnotology, I discovered the secret world of classified science, and thought historians should be giving this more attention."

The 1969 memo and the tactics used by the tobacco industry became the perfect example of agnotology, Proctor says. "Ignorance is not just the not-yet-known, it's also a political ploy, a deliberate creation by powerful agents who want you 'not to know'."

Agnotology is as important today as it was back when Proctor studied the tobacco industry's obfuscation of facts about cancer and smoking. For example, some political commentators in Australia attempted to stoke panic by likening the

country's credit rating to that of Greece, despite readily available public information from ratings agencies showing the two economies are very different. Proctor explains that ignorance can often be propagated under the guise of balanced debate. For example, the common idea that there will always be two opposing views does not always result in a rational conclusion. This was behind how tobacco firms used science to make their products look harmless, and is used today by climate change deniers to argue against the scientific evidence.

"This 'balance routine' has allowed the cigarette men, or climate deniers today, to claim that there are two sides to every story, that 'experts disagree' – creating a false picture of the truth, hence ignorance."

7. What does Proctor imply when he states that "Ignorance is not just the not-yet-known"?
- (A) Ignorance includes things that we do not yet know and things that we think we know but actually do not know.
 - (B) Ignorance includes not only those which we do not know but also those which are deliberately obfuscated.
 - (C) Ignorance is only a political ploy meant to keep people in the dark.
 - (D) Ignorance includes things that we do not know and things which we should not know.
8. Which of the following, if true, will most support the claim that tobacco companies propagated ignorance "under the guise of balanced debate"?
- (A) The tobacco companies, using their political clout, lobbied against banning tobacco products.
 - (B) The tobacco companies came up with modified versions of cigarettes which were no longer harmful.
 - (C) The tobacco companies publicized dubious studies which concluded that cigarettes were
- harmless to create doubt in the minds of the general public.
9. Which of the following is the most apt definition of agnotology?
- (A) Agnotology is the doctrine concerning those things of which we are necessarily ignorant.
 - (B) Agnotology is the study of improving cognitive mechanisms which will thereby reduce ignorance.
 - (C) Agnotology is the study of ignorance or doubt, induced culturally or socially, and the acts that lead to its creation.
 - (D) Agnotology is the study of illegitimate distortion of the historical record and re-examination of existing knowledge.

DIRECTIONS for questions 10 to 15: The passage given below is followed by a set of six questions. Choose the best answer to each question.

North Richmond Street, being blind, was a quiet street except when the local school set the boys free. An uninhabited house of two storeys stood at the blind end, detached from its neighbours. The other houses of the street, conscious of decent lives within them, gazed at one another with brown imperturbable faces.

The former tenant of that uninhabited house (which was now our house), a priest, had died in the back drawing-room. Air, musty from having been long enclosed, hung in all the rooms. I found a few paper-covered books, the pages of which were curled: *The Abbot*, by Walter Scott and *The Devout Communicant*. I also found the late tenant's rusty bicycle-pump outside. He had been a very charitable priest; in his will he had left all his money to religious institutions and the furniture of his house to his nun sister.

When the short days of winter came, dusk fell before we had well eaten our dinners. When we met in the street, the houses had grown sombre. The career of our play brought us through the dark muddy lanes behind the houses, where we ran the gauntlet of the rough tribes from the cottages, to the back doors of the dark dripping gardens. When we returned to the street, light from the kitchen windows had filled the areas. If my uncle was seen turning the corner, we hid in the shadow until we had seen him safely housed. Or if Mangan's sister came out on the doorstep to call her brother in to tea, we watched her from our shadow peer up and down the street. She would wait for him, her figure defined by the light from the half-opened door. Her brother always teased her before he obeyed. Her dress swung as she moved her body, and the soft rope of her hair tossed from side to side.

Every morning I lay on the floor in the front parlour, hiding under a counterpane, watching her door. The blind was pulled down to within an inch of the sash so that I could not be seen. When she came out on the doorstep my heart leaped. I followed her. This happened every morning. I had never spoken to her, except for a few casual words, and yet her name was like a summons to all my foolish blood.

Her image accompanied me even in places the most hostile to romance. On Saturday evenings my aunt and I went marketing through the flaring streets; amid the shrill litanies of shop-boys, the nasal chanting of street-singers, who sang a ballad about the troubles in our native land. These noises converged in a single sensation of life for me: I imagined that I bore my chalice safely through a throng of foes. Her name sprang to my lips at moments in strange prayers and praises which I myself did not understand. My eyes were often full of tears (I could not tell why) and at times a flood from my heart seemed to pour itself out into my bosom. I did not know whether I would ever speak to her or not or how I could tell her of my confused adoration. But my body was like a harp and her words and gestures were like fingers running upon the wires.

One evening I went into the back drawing-room in which the priest had died. Through one of the broken panes I heard the rain impinge upon the earth. Some distant lamp or lighted window gleamed below me. All my senses seemed to desire to veil themselves and, feeling that I was about to slip from them, I pressed the palms of my hands together until they trembled, murmuring: "O love! O love!" many times.

10. Which of the following best describes the role of the first paragraph of the passage?
 - (A) The first para introduces the reader to the prose style of the author.
 - (B) The first para is a standalone para and helps create an element of suspense for the reader.
 - (C) The first para does not have any importance as the main characters are introduced in the next paragraph.
 - (D) The first para sets the scene of the passage by metaphorically describing the sights and the sounds.

11. As presented in the passage, the protagonist is, most likely
 - (A) an emotional young person, probably in the teens, who admires a girl.
 - (B) a conservative adult who has fallen in love with his childhood sweetheart next door.
 - (C) a small child who is in awe of a neighbour and the surroundings.
 - (D) a mischievous teenager throwing tantrums and playing the fool.

12. What does the sentence "I imagined that I bore my chalice safely through a throng of foes." in para 5 indicate about the narrator's attitude to love?
 - (A) Love is a big responsibility which bogs one down.
 - (B) The whole world around is inimical to love, seeking to destroy it before it blooms fully.
 - (C) Love is sacred and is to be pursued even in the face of adversity.
 - (D) The heart is capable of reflecting lesser emotions but not love.

13. What can be inferred from the narrator's statement "My eyes were often full of tears and at times a flood from my heart seemed to pour itself out into my bosom." (para 5)?
 - (A) The narrator feels apologetic about the fact that love's labour has been lost.
 - (B) The narrator has so many feelings unexpressed that the tears flow profusely.

DIRECTIONS for questions 16 to 18: The passage given below is followed by a set of three questions. Choose the best answer to each question.

"The opposite of courage in our society is not cowardice it is conformity," said Rollo May in *Man's Search for Himself*. Conformity in society is beneficial to keep us from descending into total chaos, but on the other hand, we should not be socialized to the point of living out of habit. Conformity is the jailer of freedom and the enemy of growth, noted the young idealist who inspired a whole generation. That was then, in the sobering 1960s, and long before the policy pundits ideated on economic growth and convergence in the community of nations. Fast-forward to the here and now, and the mavens at the International Monetary Fund have chosen to be seemingly non-conforming, in estimating a higher-than-consensus year-on-year growth figure of 9.4%, for the Indian economy in the present calendar.

But given the fact that growth did decelerate in the fourth-quarter in the last calendar year, the low-base effect would likely shore up the numbers in the like period this year. So, calendar-year growth this time around can be expected to be a bit of a statistical mirage.

But one would need to be much too sanguine to take for granted buoyant growth here, given the weak global recovery, considerable debt overhang in the ageing, mature economies and rising commodity prices generally. For an

- (C) The narrator harbours negative feelings for the girl as the love remains unreciprocated.
- (D) The narrator cries with tears of joy on experiencing the wonders of ephemeral love.

14. What is the importance of the recurring references to the "priest who had died" in the passage?
 - (A) It is a passing reference without any significance except to state that other griefs pale in comparison with love.
 - (B) It captures the change in mood of the protagonist from despair and darkness to hope and light.
 - (C) It reiterates that the force of love always ends up shattering the heart just as death of a loved one does.
 - (D) It heightens the sense of the bleakness of the setting.

15. Which of the following 'meanings' on the right hand side are correctly and contextually matched with 'words' or 'phrases' on the left-hand side?

	Words/ Phrases		Meanings
(i)	imperturbable	(a)	cover
(ii)	ballad	(b)	prolonged or tedious addressor recital
(iii)	litany	(c)	deal with people who are hostile
(iv)	counterpane	(d)	narrative song with a recurrent refrain
(v)	ran the gauntlet	(e)	aloof
		(f)	threw the glove

- (A) i – a, ii – b, iii – d, iv – e, v – c
- (B) i – c, ii – d, iii – b, iv – a, v – f
- (C) i – e, ii – d, iii – b, iv – a, v – c
- (D) i – e, ii – d, iii – c, iv – b, v – f

increasingly-globalising economy, the lacklustre external environment would tend to dampen investor sentiments and keep expectations range-bound. More pertinent seems to be policy influences on output growth, and not merely in the short term. Thus, the accumulation of social and physical overhead capital is deemed as important for growth. Also, macroeconomic policy aiming at stable, low inflation and sound public finances, generally speaking, results in better growth performance.

Further, public expenditure on health, education and research are clearly vital to rev up growth and sustain living standards in the long term. And a number of studies do suggest that policy and institutions affect the level of efficiency with which resources are allocated economy-wide, although there appears to be no agreement on the specific mechanisms and processes linking policy settings to actual growth outcomes.

The tool of choice for such analysis has been cross-country regressions, to assess the effectiveness of particular policies and their empirical relevance on growth. But the leading practitioners appear to remain sceptical of the formal correlations seen on the ground.

What's indicated is that in growth regressions, the methodology by which economic growth or any other performance indicator, such as inflation, is reverted or 'regressed' on policy tells us 'nothing on the effectiveness of policy'. After all, the objective of policy initiatives is to arrive at outcomes, for instance, of correcting market failure via more efficient market design. Yet, policy measures can well result in a panoply of heightened distortions, making it well-nigh impossible to objectively evaluate effectiveness of policy, particularly in the short-to-medium term. So, while the policy on special economic zones initiated circa 2005 has meant increase in exports, it has also led to much diversion of economic and export activity to cash in on questionable tax benefits on offer even for non-export activities, which is distortionary.

16. According to the passage, what is the reason for the annual economic growth in the past year to not be a true indicator of the actual economic progress of the country?
- (A) IMF has overestimated the growth of the economy for the calendar year.
 - (B) A lot of companies got export related benefits that made it difficult to monitor the actual growth.
 - (C) The growth in the last quarter of the previous year was slow, so the percentage increase of growth will be higher this year, whereas actual growth may not be that high.
 - (D) Auditing firms have made a gross error of judgements in estimating the projected growth of the economy.
17. What is the main objective of the policy initiatives, according to the passage?
- (A) To keep a check on the tax benefits that non-export related activities get in Special Economic Zones.
 - (B) To control inflation and facilitate sound public financing in an economy.
- (C) To iron out the distortions, so that the effectiveness of a policy can be measured with greater accuracy.
- (D) To provide efficient market designs which will help in correcting the failures which occur in the market.
18. Which of the following statements can be inferred to be true from the passage?
- (A) The lacklustre external environment has an effect on investor's sentiments and keeps his expectations within a periphery.
 - (B) Studies suggest that policy and institutions do not affect the level of efficiency with which resources are allocated economy wide.
 - (C) Effectiveness of policy can be measured using the performance indicators, such as inflation.
 - (D) Experts on policy related issues predicted about economic slowdown and convergence in the community of nations long before.

DIRECTIONS for questions 19 to 24: The passage given below is followed by a set of six questions. Choose the best answer to each question.

The notion of free will is under attack again, this time from the advance of neuroscience.

In 1769, in a curt dismissal of a philosophical problem, Dr Johnson silenced Boswell, who wanted to talk about fate and free will, by exclaiming: "Sir we know our will is free, and **there's an end on it.**" 250 years later, free will and responsibility are debated as much as ever, and the issue is taking some new twists.

Ancient Greeks believed that everything happened by necessity and Medieval Greeks grappled with foreknowledge or determinism or the notion of a universe subject to invariable laws of nature. Freud's theory of unconscious drives undermined "free will" and suggested that the causes of our actions are not what we think they are. Then neuroscience painted an even bleaker picture. The more we find out about the brain, the less room there is in it for any kind of autonomous, rational self. Conscious will is an "illusion". Sam Harris, American writer on neuroscience, wrote that free will "could not be squared with an understanding of the physical world", and that all our behaviour "can be traced to biological events about which we have no conscious knowledge".

Really? There are now hopeful signs of a backlash against the brain. The grey matter in our skulls underpins our thoughts and feelings i.e., a working brain is required for our mental life. But some neuroscientists realize that looking at

flickers of activity inside our heads can be a misleading way to see how our minds work. Many of the distinctively human things that people do, take place over time and outside their craniums. Perhaps the brain is the wrong place to look if you want to find free will.

The existence of fMRI and PET scanners, which let you peek inside brains while they are alive, has encouraged some neuroscientists to find various things in the gaudy images produced by brain scans. Although our mental lives depend on the brain, it doesn't necessarily follow that our behaviour is best understood by looking inside it. It's like the old joke about a drunk who drops his car keys at night and walks down the road to look for them under a distant streetlight – not because that's where they're likely to be, but because it's where he can see.

Today's scanners are still rather dim streetlights. Since they cannot see the activity of neurons, fMRI scanners make do with changes in blood oxygen levels, and PET scanners indirectly measure changes in blood flow, to spot where something is going on. These techniques can detect the trails only of large bursts of neural activity, and will miss anything involving less than many millions of brain cells. The art of neuro-imaging has been in full swing for about a decade. Two psychologists at the University of California at Santa Barbara concluded in 2010 that the discipline had emerged from infancy, but was still rather a mixed-up adolescent.

Brain scanners and our ability to interpret them will improve in due course. But the problem with trying to investigate aspects of our mental life via the workings of the brain is not just a practical one. Dr Tallis discusses a series of experiments that have been taken to undermine the notion of free will. In the 1980s, the late neurophysiologist Benjamin Libet wired up his subjects so that he could monitor the timing of some electrical events in their brains. He asked them to flex their wrists whenever they felt like it, and to register the exact time when they decided to do so. The results seemed to show that our actions can be triggered before we form an intention, rather than afterwards, thus leaving no time for conscious will to play a role in what we do. Similar tests have been refined many times, and appear to confirm that the feeling of deliberation can be a mirage. But, as Dr. Tallis points out, while twitches of the wrist may be simple to monitor, they're an odd place to search for free will. There are better examples of actions that can be regarded as free and rational than are twitches of the wrist. It would be crazy to think that conscious deliberation isn't really involved in them.

Stepping back from investigations of the brain, and looking at our daily actions and our interactions with others – does not in itself provide the knock-down demonstration of free will that Dr Johnson would have liked. But **it is at least a good beginning on it.**

19. What is the significance of the second paragraph of the passage?
 - (A) The second paragraph gives an example of when free will is attacked.
 - (B) The second paragraph supports the claim of the author that the notion of free will has been debated for a long time.
 - (C) The author introduces the idea of free will and equates the progresses made in the discipline of free will with the advances in the field of neuroscience.
 - (D) The author discusses a plan for investigation of a phenomenon that is not yet fully understood.
20. "Conscious will is an illusion" has been mentioned in para 3. Which of the following choices supports this viewpoint?
 - (A) Free will is actually the result of the sum of events happening in the brain.
 - (B) There is no involvement of the brain in the happenings related to the execution of free will.
 - (C) The brain orders one to take a decision and one is a mere participant.
 - (D) Free will involves extra events or factors outside the brain and in the physical world.
21. Why does the author make use of the metaphorical analogy "It's like the old joke about a drunk who drops his car keys at night and walks down the road to look for them under a distant streetlight." (para 5)?
 - (A) The author wishes to emphasize the futility of using fMRI and PET scanners for understanding human behaviour.
 - (B) The author states that looking for flickers of brain activity using fMRI and Pet scanners will help throw some light on how a drunk's mind works.
22. The conclusion of the two psychologists at the University of California at Santa Barbara state with reference to neuro-imaging, as given in para 6, can be best rephrased as?
 - (A) The technology has evolved to its fullest potential.
 - (B) Brain scans can only detect large bursts of neural activity and will miss anything short of it.
 - (C) The technology is still at the base level and requires a lot of improvement.
 - (D) There have been technological improvements but the future of the field is still unclear.
23. What does Dr. Tallis find wrong in the series of experiments conducted by Benjamin Libet to undermine the notion of free will?
 - (A) The monitoring of the timing of electrical events in the brains is highly impractical as they last only a fraction of seconds.
 - (B) Twitches of wrist are simple to monitor and are best to understand free will.
 - (C) Monitoring twitches of wrist is not the most pertinent way to study free will.
 - (D) The apparatus used for the experiment was not accurate and resulted in the wrong observations of Benjamin Libet.

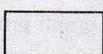
- 24.** The two portions given in boldface in the passage play which of the following roles?
- Both the first boldface, a comment of Dr. Johnson and the second boldface, a comment of the author imply the same thing.
 - In the first boldface, Dr. Johnson emphasizes that we do not know anything about free will apart from the fact that it exists while in the second boldface, the author points to a possibility of demonstrating "free will".
 - In the first boldface, Dr. Johnson dismisses Boswell's argument by countering it while in the second boldface, the author dismisses Dr. Johnson's argument.
 - In the first boldface, Dr. Johnson reinforces the existence of 'free will' while in the second boldface, the author denies the existence of human 'free will'.

DIRECTIONS for questions 25 to 28: 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 key in it.

- 25.**
- Jim Corbett hunted down tigers that had turned man-eaters in Kumaon, Uttarakhand, between 1907 to 1939.
 - Tourists visit Jim Corbett National Park mainly during the months of November to June to view India's precious predators.
 - The best thing about being in Corbett is that there is never a dull moment and you can head to many interesting places around Corbett.
 - The Corbett park also invites people for adventure activities like rock-climbing, rappelling and river-crossing.
 - During this time, visitors can explore the Indian wildlife through jungle safari, available from five different tourism zones.



- 26.**
- He also stressed that inadequate aggregate demand could lead to prolonged periods of high unemployment.
 - Neoclassical economics had held that free markets would automatically provide full employment as long as workers were flexible in their wage demands.
 - The global financial crisis of 2007–08 led to public scepticism about the free market consensus even from some on the economic right.
 - In the 1930s, John Maynard Keynes spearheaded a revolution in economic thinking, challenging the ideas of neoclassical economics.
 - Keynes instead argued that aggregate demand determined the overall level of economic activity.



- 27.**
- Henry David Thoreau once said, "I know of no more encouraging fact than the unquestionable ability of man to elevate his life by conscious endeavour."

- This is why almost every major change in your life will be associated with a change in the people you live or work with.
- In a few weeks, that person's attitude has completely changed.
- By continued association with optimistic, result-oriented, go-ahead people, the previously average individual begins to perform at extraordinary levels.
- There are countless examples where a person working at an average job, getting average results, and earning average pay has gone to work with a highly progressive company.



- 28.**
- On one hand, he fashions the tools with which he builds for himself heavenly mansions of joy, strength and peace.
 - Act is the blossom of thought, and joy and suffering are its fruits.
 - Man is made or unmade by himself.
 - By the true application of thought, man ascends to divine perfection but by the wrong application of thought, man descends below the level of a beast.
 - On the other hand, in the armoury of thought he forges the weapons by which he destroys himself.



DIRECTIONS for questions 29 and 30: The following question has a paragraph from which the last sentence has been deleted. From the given options, choose the one that completes the paragraph in the most appropriate way.

- 29.** Few would have the leisure to ponder about anything, leave alone "arcane" matters like consciousness, spirituality and the universe. Most of those who do would prefer to acquire their beliefs/belief-systems, rather than arrive at them through a process of logical rigour and self-criticism. Whether the issue is one of ethics, politics, physics or metaphysics, the beliefs professed are usually a function of conditioned aesthetics – many people subscribe to those views that are closest to their sense of fashion, not reason. Scientism is thought or expression characteristic of scientists – an excessive belief in the power of scientific knowledge and techniques – and its proponents dismiss any idea/theory that does not square with their "scientific" world-view.

- So, scientifically speaking, reality is far stranger than common sense would either let us imagine or have us believe.
- This is contradictory, for, science and closed-mindedness are, by definition, mutually exclusive.
- Once this threshold was crossed, scientific theories would begin to flow backwards.
- Hence scientism is different from philosophical areas like ethics and metaphysics.

- 30.** Every work of art is the child of its age and, in many cases, the mother of our emotions. It follows that

each period of culture produces an art of its own which can never be repeated. Efforts to revive the art-principles of the past will at best produce an art that is still-born. It is impossible for us to live and feel, as did the ancient Greeks. In the same way those who strive to follow the Greek methods in sculpture achieve only a similarity of form, the work remaining soulless for all time.

- (A) The art of today is a hollow entity which resembles the art of bygone eras but does not evoke any emotion in the observer.
- (B) There is, however, in art, another kind of external similarity which is founded on a fundamental truth.
- (C) A work of art is the product of the emotions that are prevalent while creating the work.
- (D) Such imitation is mere aping.

DIRECTIONS for questions 31 to 34: The five sentences (labelled 1, 2, 3, 4 and 5) given in the following question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of five numbers as your answer.

31. (1) Your ancestors couldn't.
(2) Now children could manage it without becoming ill, but it was only when we turned to dairy farming that adults acquired the ability to properly digest milk.
(3) It is only in the last 9,000 years that human adults have gained that ability without becoming ill.
(4) It turns out that cultures with a history of dairy farming and milk drinking have a much higher frequency of lactose tolerance – and its associated gene – than those who don't.
(5) You shouldn't be able to drink milk.

32. (1) Since 2007, the virus has caused several outbreaks in the Pacific, and since 2015 it further spread in the Americas.
(2) The virus is now considered an emerging infectious disease with the potential to spread to

new areas where the *Aedes* mosquito vector is present.

- (3) Zika virus belongs to the Flaviviridae family and is transmitted to humans by mosquitoes.
- (4) These were the first documented transmissions outside of its traditional endemic areas in Africa and Asia.
- (5) It is related to other pathogenic vector borne flaviviruses including dengue viruses but produces a comparatively mild disease in humans.

33. (1) Their desire to obtain European trade goods drove the Ojibwe to expand westward into Lake Superior to find richer fur-bearing lands and they came into contact with the Dakota.
(2) Like other Indian tribes, the Ojibwe allied themselves to the French militarily.
(3) In 1730, the Ojibwe and the Dakota began to fight over the region between Lake Superior and the Mississippi River in Minnesota and this war lasted until the 1850s.
(4) They traded with the French who entered the Great Lakes in the 1660s.
(5) The Ojibwe were generally successful, and they managed to push the Dakota farther west into Minnesota and North and South Dakota.

34. (1) Set aside a time, perhaps after dinner, to sit down and concentrate fully on the music.
(2) Jazz music also works wonders and provides a lift to your spirit keeping it soaring and inspired.
(3) Pieces such as Pachelbel's Canon are incredibly soothing and will transport you to another world.
(4) When you wish to enter a state of tranquillity, classical music works best.
(5) Let it enter your soul and work its charm.

SECTION – II

Number of Questions = 32

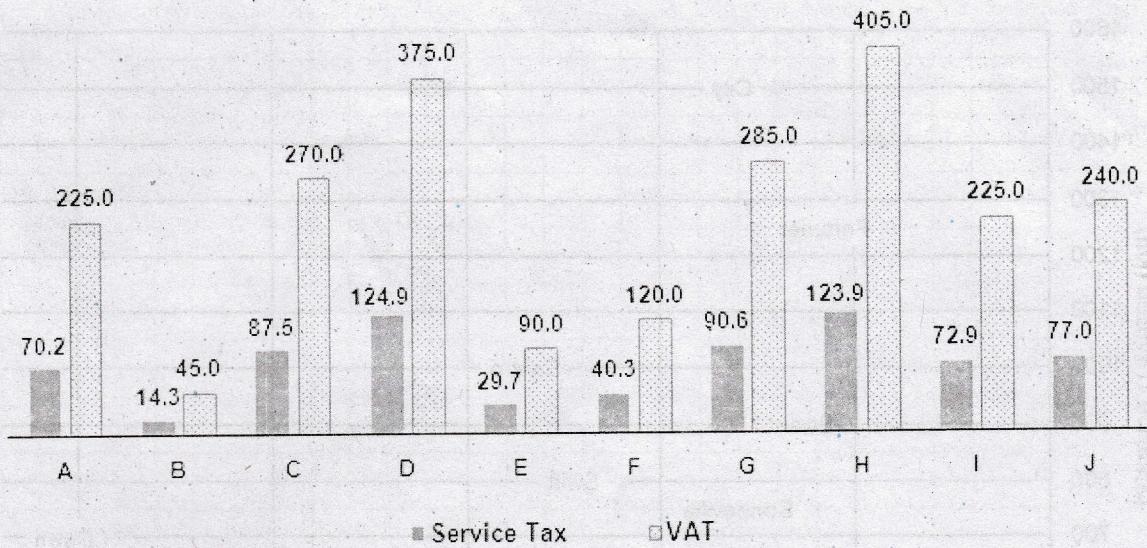
DIRECTIONS for questions 1 to 4: Answer these questions on the basis of the information given below.

In a restaurant, the final value of the bill for a customer comprises four components – the Food Cost, Gratuity Fee, Service Tax and Value Added Tax (VAT). The Service Tax and VAT are levied in the following manner for any customer who dines at the restaurant:

- Service Tax: 12% of 37.5% of the sum of Food Cost and Gratuity Fee
- Value Added Tax: 15% of Food Cost

However, the amount of Gratuity Fee paid by a customer is independent of the Food Cost and is up to his discretion.

On a particular day, ten customers – A through J – had dinner in the restaurant. The following bar graph provides the Service Tax (in ₹) and the Value Added Tax (in ₹) paid by each customer:



DIRECTIONS for question 1: Select the correct alternative from the given choices.

1. Which customer paid the highest Gratuity Fee?
 - (A) C
 - (B) D
 - (C) I
 - (D) None of the above

DIRECTIONS for questions 2 and 3: Type in your answer in the input box provided below the question.

2. What is the total Food Cost (in ₹) paid by all the ten customers combined?

3. How many customers paid a Gratuity Fee of more than ₹70?

DIRECTIONS for question 4: Select the correct alternative from the given choices.

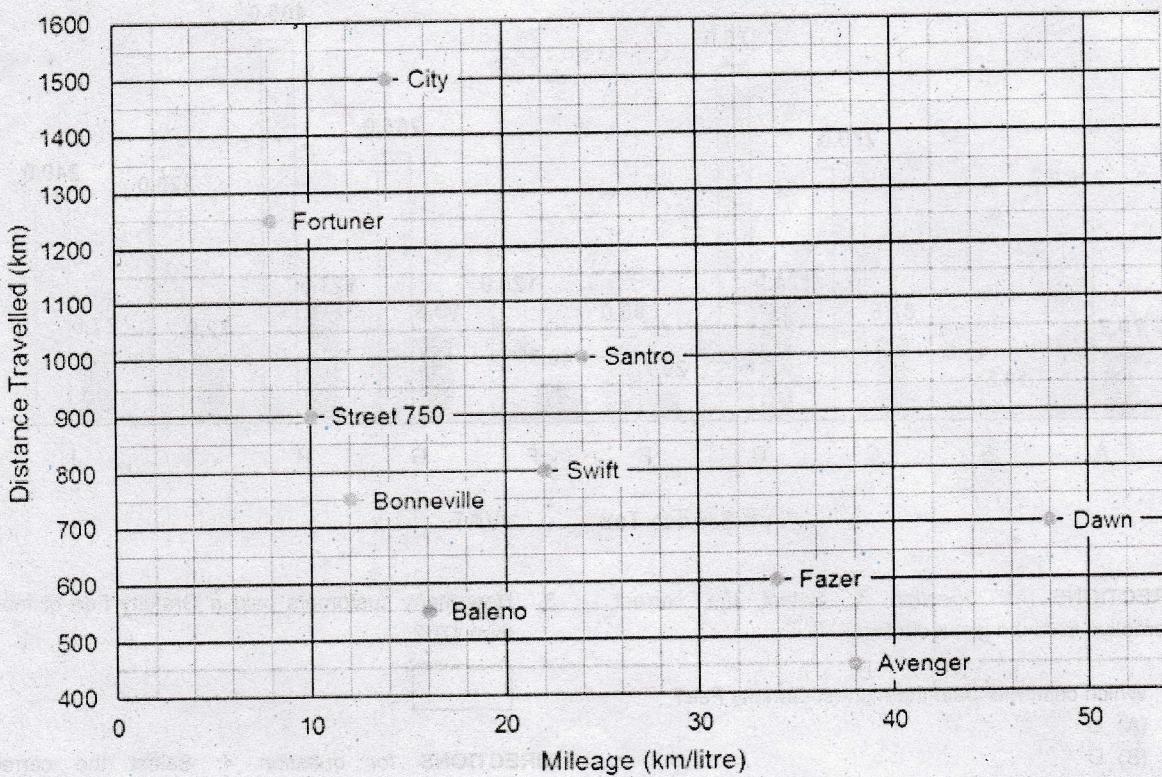
4. The Gratuity Fee paid by any customer as a percentage of his Food Cost was at most (approximately)
 - (A) 13%.
 - (B) 12%.
 - (C) 11%.
 - (D) 10%.

DIRECTIONS for questions 5 to 8: Answer these questions on the basis of the information given below.

Raghu owns five cars – Baleno, City, Fortuner, Santro and Swift – and five motorcycles – Avenger, Bonneville, Dawn, Fazer and Street 750. Each vehicle has a different mileage, which is measured as the distance that the vehicle can travel using one litre of petrol.

During a particular year, Raghu travelled different distances using each of the ten vehicles. The scatter chart below provides for each vehicle, the mileage (in km/litre) of the vehicle and the distance travelled (in km) by Raghu using that vehicle during that year.





DIRECTIONS for questions 5 to 8: Select the correct alternative from the given choices.

5. Which vehicle consumed the maximum quantity of petrol?
 (A) Fortuner
 (B) City
 (C) Fazer
 (D) Avenger
6. The total petrol consumed by all the motorcycles combined is
 (A) 206.6 liters.
 (B) 196.6 liters.
 (C) 186.6 liters.
 (D) 176.6 liters.

7. The total petrol consumed by all the vehicles that travelled more than 600 km is

- (A) 438.5 liters.
- (B) 458.5 liters.
- (C) 478.5 liters.
- (D) 508.5 liters.

8. What is the minimum quantity of petrol consumed by any vehicle for travelling 1 km?

- (A) 21.3 ml
- (B) 20.8 ml
- (C) 19.9 ml
- (D) 22.4 ml

DIRECTIONS for questions 9 to 12: Answer these questions on the basis of the information given below.

Gulliver, an analyst, prepared a presentation regarding the GDP (in USD bn) and population (in mn) of five countries – Balnibarbi, Brobdingnag, Glubbdubdrib, Houyhnhnms and Luggnagg. He also calculated the GDP per capita of each country, i.e., the GDP of the country divided by its population. In the presentation, he plotted the GDP in a bar graph, reproduced below, but he forgot to add the labels (i.e., the names of the countries) for each bar. Further, he tabulated the populations of the five countries, which is presented below the bar graph:



Country	Balnibarbi	Broddingnag	Glubbdubdrib	Houyhnhnms	Luggnagg
Population (in mn)	450	500	900	800	700

However, Gulliver managed to recollect the following information:

- (i) The per capita GDP of Luggnagg is more than the per capita GDP of each of Broddingnag and Balnibarbi.
- (ii) Glubbdubdrib has a higher GDP but a lower per capita GDP when compared to Balnibarbi.
- (iii) Houyhnhnms has the highest per capita GDP among the five countries.
- (iv) In the bar graph, Glubbdubdrib and Balnibarbi are not next to each other.

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

9. What is the per capita GDP of Houyhnhnms?
 (A) USD 82.25
 (B) USD 48.125
 (C) USD 29.25
 (D) Cannot be determined

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

10. How many countries have a per capita GDP more than USD 38?

DIRECTIONS for questions 11 and 12: Select the correct alternative from the given choices.

11. Which of the following pairs of countries are adjacent each other in the bar graph given above?
 (A) Balnibarbi and Houyhnhnms
 (B) Luggnagg and Broddingnag
 (C) Glubbdubdrib and Luggnagg
 (D) Glubbdubdrib and Houyhnhnms
12. What is the maximum possible difference between the per capita GDP of any two countries?
 (A) USD 127.89
 (B) USD 63.92
 (C) USD 125.60
 (D) USD 56.25

DIRECTIONS for questions 13 to 16: Answer these questions on the basis of the information given below.

The following tables give the export quantities and the export values for five crops for five years:

	Export Quantity (in '000 kg)				
Crop	2008-09	2009-10	2010-11	2011-12	2012-13
Tomato	25.6	28.9	31.5	32.4	32.7
Potato	124.5	141.0	129.6	134.5	167.5
Capsicum	10.6	15.4	11.6	11.7	8.7
Onion	114.9	167.8	157.2	168.7	157.4
Carrot	15.7	18.9	16.7	21.4	25.7

	Export Value (in ₹ '000)				
Crop	2008-09	2009-10	2010-11	2011-12	2012-13
Tomato	358.40	254.32	362.25	243.00	539.55
Potato	560.25	705.00	712.80	712.85	670.00
Capsicum	254.40	361.90	357.28	169.65	369.75
Onion	356.19	453.06	691.68	1062.81	550.90
Carrot	573.05	368.55	943.55	847.44	745.30

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

13. What was the highest average export price per kg for any crop during 2010-11?
(A) ₹30.8 (B) ₹11.5
(C) ₹56.5 (D) ₹45.7

14. If the *Export Index Price* is defined as the sum of the average export prices of one kg of each of the five crops, during which year was the *Export Index Price* the lowest?
(A) 2008-09 (B) 2009-10
(C) 2010-11 (D) 2011-12

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

- 15.** For how many crops did the export quantity increase by at least 25% over any two consecutive years?

1

16. If the average export price for any crop increased for two consecutive years or decreased for two consecutive years, it is called a *trending crop*. How many of the given crops do not qualify as a *trending crop* based on the data given?

100

DIRECTIONS for questions 17 to 20: Answer these questions on the basis of the information given below.

In a country called Capricia, every person alternates between telling the truth and a lie in any order. Han, who is from this country, had four friends – Luke, Boba, Leia and Yoda – each of whom was of a different profession among plumber, carpenter, locksmith and mechanic. In addition to this, the four friends own a different pet.

among a dog, a cat, a bat and a rat. Han made the following statements, in the same order as mentioned below:

- (i) Luke is a plumber.
 - (ii) The locksmith owns a dog.
 - (iii) Leia is not a locksmith.
 - (iv) Yoda owns a bat.
 - (v) Luke does not own a dog.
 - (vi) Boba is not a locksmith.
 - (vii) The plumber owns a rat.
 - (viii) Yoda is a mechanic.
 - (ix) The carpenter owns a cat.

DIRECTIONS for questions 17 to 20: Select the correct alternative from the given choices.

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

Five students – Kiran, Sai, Praveen, Bhaskar and Vijay – participated in an innovative quiz show. At the beginning of the quiz, the five students were asked to stand in a queue, one behind the other, facing the same direction. Whenever a question is asked, the student who wants to answer the question has to move to the front of the queue (irrespective of whether his answer is correct or not) and the others are moved back in the queue, without any other rearrangement. For example, if the third student in the queue wants to answer the question, he has to move to the first position and the students who were earlier in the first and second positions move to the second and third positions respectively, while the students in the fourth and fifth positions do not move. Also, exactly one student answered each question.

The quiz had a total of six questions, and every correct answer was awarded 10 points and an incorrect answer carried a penalty of 5 points. It is known that no two students had the same number of points at the end of the quiz. Further, the following information is known about their positions in the queue at various stages of the quiz:

- (i) Kiran was the only student to answer two questions consecutively and he did not answer the first question.
- (ii) During the fourth question, Sai moved from a position behind Vijay to a position in front of him and during the fifth question, Praveen moved from a position behind Kiran to a position in front of him.
- (iii) Bhaskar who was initially (i.e., before the first question of the quiz) at the beginning of the queue moved to the last position in the queue by the end of the quiz.
- (iv) The sum of the points received by the five students is zero and the student who answered the last question won the quiz.
- (v) The student who answered the first question scored the least number of points in the quiz.
- (vi) Kiran was further ahead in the queue at the end of the quiz than at the beginning.

DIRECTIONS for questions 21 to 24: Select the correct alternative from the given choices.

21. Who stood first in the quiz?

- (A) Praveen
- (B) Kiran
- (C) Sai
- (D) Vijay

22. Which of the following questions was definitely answered incorrectly?

- (A) Question 2
- (B) Question 3
- (C) Question 1
- (D) Question 6

23. Who was in the fourth position at the end of the third question?

- (A) Sai
- (B) Vijay
- (C) Bhaskar
- (D) Cannot be determined

24. If Praveen's position at the beginning of the quiz was the same as his position at the end of the quiz,

who was standing in the third position at the beginning of the quiz?

- (A) Sai
- (B) Vijay
- (C) Praveen
- (D) Kiran

DIRECTIONS for questions 25 to 28: Answer these questions on the basis of the information given below.

Ramya, a ten-year-old girl, received exactly six gifts – a Toy Gun, a Barbie Doll, a Bean Bag, a set of Crayons, a Toy Dog and a Toy Car – from her father on her birthdays during various years. She received the first gift on her second birthday and the last gift on her tenth birthday. However, she lost three of the six gifts by her tenth birthday. Further, it is also known that

- (i) she lost one of her gifts during the same year that she was gifted the Toy Car, which she did not lose.
- (ii) she lost the gifts that her father gave her on her third and sixth birthdays.
- (iii) she was gifted the Bean Bag two years after she was gifted the Toy Car.
- (iv) she received at least one gift from her father every two years and she did not lose the gift that her father gave her on her second birthday.
- (v) she was gifted the set of Crayons three years after she was gifted the Barbie Doll and she lost exactly one of these two gifts.

DIRECTIONS for questions 25 to 28: Select the correct alternative from the given choices.

25. Which of the following gifts did Ramya lose?

- (A) Toy Gun
- (B) Barbie Doll
- (C) Toy Dog
- (D) More than one of the above

26. On which birthday was Ramya gifted the Toy Car?

- (A) Second
- (B) Fourth
- (C) Eighth
- (D) Cannot be determined

27. If Ramya was gifted the Toy Gun after she was gifted the set of Crayon, on which birthday was she gifted the Toy Dog?

- (A) Second
- (B) Third
- (C) Sixth
- (D) Eighth

28. Which of the following gifts did Ramya lose during the year she was gifted the Toy Car?

- (A) Toy Dog
- (B) Barbie Doll
- (C) Bean Bag
- (D) Cannot be determined

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

A college coach took with him ten players – A through J – to a sports meet. He formed four teams with 4, 5, 6 and 7 players to play Badminton, Basketball, Dodgeball and Volleyball respectively. Further, it is also known that

- (i) no player who is part of the Badminton team can be a part of the Basketball team.

- (ii) there are four players who are part of exactly three teams, four players who are part of exactly two teams and every player is part of at least one team.
- (iii) A will be in any team if and only if E is also in that team.
- (iv) J and H are not part of the Volleyball team and they are not together in any team.
- (v) neither B nor C is in either the Badminton team or the Dodgeball team, but both of them are part of the other two teams.
- (vi) G will always be in a team in which E is not present and vice versa.
- (vii) both D and H are part of the Basketball team.

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

29. In how many ways can the coach select the four teams?

SECTION - III

Number of Questions = 34

DIRECTIONS for question 1: Select the correct alternative from the given choices.

1. If $x^{1/5} > x^{1/3}$, then how many of the following statements are definitely true about x ?
- | | |
|-------------------------|----------------------|
| I. $x^2 > x^3$ | II. $x^{1/3} > x^4$ |
| III. $x^{1/3} > x^{-3}$ | IV. $x^{-1/3} > x^3$ |
| (A) 1 | (B) 2 |
| (C) 3 | (D) 4 |

DIRECTIONS for question 2: Type in your answer in the input box provided below the question.

2. Find the real value of k , for which the sum of the squares of the roots of the quadratic equation $x^2 - (k+1)x + 2k - 1 = 0$, is minimum?

DIRECTIONS for question 3: Select the correct alternative from the given choices.

3. If $f(x) = \frac{1}{1+x}$, then $f(3x)$, when expressed in terms of $f(x)$, will be
- | | |
|----------------------------|----------------------------|
| (A) $3f(x)$ | (B) $\frac{f(x)}{3+2f(x)}$ |
| (C) $\frac{f(x)}{3-2f(x)}$ | (D) $\frac{f(x)}{2-3f(x)}$ |

DIRECTIONS for questions 4 to 6: Type in your answer in the input box provided below the question.

4. When the ratio of the ages of a man and his wife was $4 : 3$, they were blessed with a son. Four years later, when the ratio of their ages was $9 : 7$, they were blessed with a daughter. How many years after the birth of the daughter is the average age of the man, his wife and two children 18 years?

DIRECTIONS for questions 30 and 31: Select the correct alternative from the given choices.

30. Who among the following is definitely part of three teams?
 (A) D (B) F
 (C) G (D) J
31. If everyone who is part of the Badminton team is also in the Dodgeball team, who among the following was part of exactly one team?
 (A) J (B) H
 (C) I (D) None of the above

DIRECTIONS for question 32: Type in your answer in the input box provided below the question.

32. How many players are part of both the Basketball team and the Volleyball team?

5. Find the number of digits in 3^{74} .

6. There are exactly 5984 balls, stocked in a pile, such that the top layer of the pile has one ball, the layer below it has three balls, the layer below which has six balls, the layer below which has ten balls and so on. Find the number of layers in the pile.

DIRECTIONS for questions 7 to 9: Select the correct alternative from the given choices.

7. A and B, working together, can build a wall, 221 m long, in $11\frac{1}{9}$ days. If they work on alternate days, with A starting the work, it takes $22\frac{1}{4}$ days to build the same wall. If A and B work together and build a similar wall but of twice the length and earn a total of ₹1800 for it, then B's share of the earnings will be
 (A) ₹750 (B) ₹800
 (C) ₹1000 (D) ₹1050

8. In a laboratory, three containers, A, B and C, have equal volumes of different mixtures of liquid oxygen and liquid nitrogen. The concentration (by volume) of liquid oxygen in the three mixtures is 20%, 40% and 80% respectively. First, one-fifth of the contents of A are poured into B and then two-fifths of the contents of B are poured into C. The final concentration (by volume) of liquid oxygen in C is approximately
 (A) 62.4% (B) 61.7%
 (C) 68.6% (D) 65.9%

9. If $4^{|3x+1|} = 16^{2x-4}$, find the sum of all the possible values of x.
 (A) 9 (B) 10
 (C) 11 (D) 12

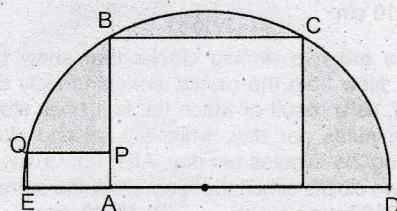
DIRECTIONS for questions 10 and 11: Type in your answer in the input box provided below the question.

10. Sethi and Wilson play a snooker match consisting of nine games. The winner is decided by the method of 'Race to 5', i.e., the first person to win five games is declared the winner and the match ends the moment the winner is declared. In how many ways can the match conclude?

11. Ramu had some currency notes of denominations ₹50, ₹20 and ₹10; such that at least two notes of each denomination were present with him. He had to pay a bill of ₹200 in a shop and when he counted all the money he had, he realized that he was short of ₹30. How many notes did Ramu have?

DIRECTIONS for questions 12 to 17: Select the correct alternative from the given choices.

12. In the figure below, ABCD is a square inscribed in a semicircle, such that both A and D lie on the diameter of the semicircle. Now, by taking a point P on AB, one more square EAPQ is drawn, such that Q lies on the semicircle and E lies on the diameter of the semicircle. Find the area of the shaded region, given that the radius of the semicircle is 14 cm. (Assume $\pi = \frac{22}{7}$)



- (A) 88 sq.cm (B) 108 sq.cm
(C) 112 sq.cm (D) 154 sq.cm

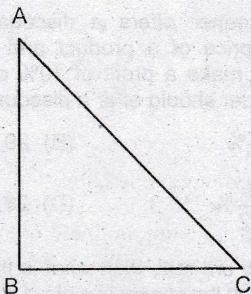
13. In how many ways can five girls and four boys, including Rahul, stand in a queue such that Rahul is at the end of the queue and no two boys are adjacent to each other?

- (A) 2880 (B) 480
(C) 7200 (D) 3600

14. A thief escaped from a jail and started running at a speed of 10 kmph. Half an hour later, the police started chasing him. If the police brought the thief back to the jail in exactly one hour from the moment they started chasing him, then the distance run by the thief before he was caught is

- (A) 7.5 km. (B) 9 km.
(C) 10 km. (D) 12 km.

15. In the right angled triangle given below, $AB = BC = 6\sqrt{2}$ cm. The side AB is divided into 13 equal parts by drawing 12 line segments, each parallel to BC, from AB to AC. Find the sum of the lengths of these 12 line segments.



- (A) $36\sqrt{2}$ cm (B) $39\sqrt{2}$ cm
(C) $42\sqrt{2}$ cm (D) $72\sqrt{2}$ cm

16. If I purchase two chocolates and three biscuits instead of three chocolates and two biscuits, I would be left with one rupee more. If I purchase one biscuit and two ice creams instead of one chocolate and two biscuits, I will need to spend five rupees more. The cost of six chocolates, seven biscuits and five ice creams is equal to that of

- (A) 10 chocolates, 5 biscuits and 3 ice creams.
(B) 15 chocolates and 3 biscuits.
(C) 9 chocolates, 4 biscuits and 5 ice creams.
(D) 12 chocolates, 3 biscuits and 3 ice creams.

17. A cuboidal aquarium, of base dimensions $100 \text{ cm} \times 80 \text{ cm}$ and height 60 cm, is filled with water to its brim. The aquarium is now tilted along one of the 80 cm edges and the water begins to spill. The tilting is continued till the water surface touches a line on the base at a distance of one-third of the length from (and parallel to) the edge on which the aquarium is being tilted. Now the box is returned to its original position. By how many centimetres has the height of water reduced?

- (A) 50 (B) 40
(C) 20 (D) 10

DIRECTIONS for question 18: Type in your answer in the input box provided below the question.

18. Dennis boarded an open elevator, that was going up, at a certain floor from where he could see a fire hydrant (on the ground) which was at an angle of depression of 30° . After he had gone up by 10 floors he could see that the fire hydrant was at an angle of depression of 60° . On which floor was he when the angle of depression was 60° ?

DIRECTIONS for questions 19 to 24: Select the correct alternative from the given choices.

19. The sum $\frac{3}{2} + \frac{5}{4} + \frac{9}{8} + \frac{17}{16} + \dots$ to 99 terms is

- (A) $100 - \frac{1}{2^{99}}$.
(B) $101 - \frac{1}{2^{99}}$.
(C) $100 + \frac{1}{2^{99}}$.
(D) $100 + \frac{1}{2^{100}}$.

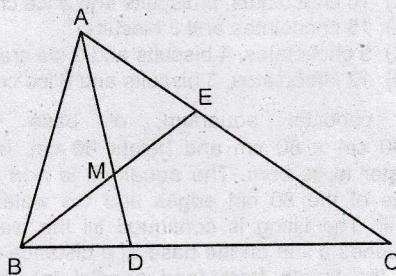
20. A shopkeeper offers a discount of 20% on the marked price of a product and makes a profit of 25%. To make a profit of 10% on the product, the shopkeeper should offer a discount of

(A) $25\frac{3}{5}\%$ (B) $29\frac{3}{5}\%$
 (C) $42\frac{1}{22}\%$ (D) $26\frac{2}{5}\%$

21. If a and b are real, then what is the area (in sq.units) bounded by the curves $|x + a| = 1$ and $|y - b| = 2$?
 (A) $4|(a+1)(b-2)|$ (B) $4|(a-1)(b+2)|$
 (C) 8 (D) 4

22. If $g(x) = p|x| - qx^2$, where p and q are constants, then at $x = 0$, $g(x)$ will be
 (A) maximum when $p > 0, q > 0$.
 (B) minimum when $p < 0, q < 0$.
 (C) minimum when $p > 0, q < 0$.
 (D) maximum when $p > 0, q < 0$.

23.



- In the figure above, $AM : MD = CD : DB = 3 : 2$. Find $AE : EC$.
 (A) 2 : 5 (B) 3 : 5
 (C) 1 : 2 (D) 5 : 8

24. Two cars P and Q start from two points A and B towards each other simultaneously. They meet for the first time 40 km from B. After meeting they exchange their speeds as well as directions and proceed to their respective starting points. On reaching their starting points, they turn back with the same speeds and meet at a point 20 km from A. Find the distance between A and B.
 (A) 130 km (B) 100 km
 (C) 120 km (D) 110 km

DIRECTIONS for questions 25 and 26: Type in your answer in the input box provided below the question.

25. How many terms are common to the following two arithmetic progressions. 6, 9, 12, 15.....up to 180 terms and 8, 13, 18, 23,up to 150 terms?

26. 16 identical fruits are to be distributed among three identical boxes in such a way that no two boxes get the same number of fruits. If each box gets at most half the total number of fruits and at least one fruit, in how many ways can the fruits be distributed?

DIRECTIONS for question 27: Select the correct alternative from the given choices.

27. The ratio of the earnings of A, B and C is $2 : 3 : 5$. If A increases his earnings by a certain amount, B by double that amount and C by triple that amount, which of the following could be the ratio of the earnings of A and C after the increase?
 (A) 7 : 17 (B) 9 : 22
 (C) 13 : 40 (D) 16 : 45

DIRECTIONS for question 28: Type in your answer in the input box provided below the question.

28. What is the hundreds digit of the number 5^{5678} ?

DIRECTIONS for questions 29 to 31: Select the correct alternative from the given choices.

29. The value of (t, u) for which the lines $4x + 5y = t$ and $ux + 3y = 22$ have an infinite number of solutions is
 (A) $\left(\frac{12}{5}, \frac{110}{3}\right)$ (B) $\left(\frac{110}{3}, \frac{12}{5}\right)$
 (C) $\left(\frac{66}{5}, \frac{110}{3}\right)$ (D) $\left(\frac{20}{3}, \frac{110}{3}\right)$

30. Two cylinders have equal height and the difference in their curved surface areas is 440 sq.cm. What is the greatest possible difference in their radii, given that their height (in cm) is a multiple of 5?
 (A) 14 cm (B) 7 cm
 (C) 10 cm (D) 12 cm

31. There are two analog clocks that show the exact time. Now both the clocks simultaneously develop a snag, as a result of which the first clock starts losing $1\frac{1}{2}$ minutes per day, while the second clock starts gaining $2\frac{1}{2}$ minutes per day. After how many days will the two clocks simultaneously show the correct time?
 (A) 2160 days (B) 1440 days
 (C) 1800 days (D) 1080 days

DIRECTIONS for questions 32 to 34: Type in your answer in the input box provided below the question.

32. Piyush, a primary school teacher, has written all the natural numbers starting from 1 to 100 (both inclusive) on the board. The number of digits written an odd number of times in this process is

33. If for all real numbers, a and b , $a * b = 2 - ab$, then how many of the following statements are true?
 I: $(3 * 2) * (2 * 3) = -14$
 II: $(4 * 2) * (2 * 3) = (1 * 6) * (8 * 1)$
 III: $(-1 * 2) * (-2 * 1) = (2 * 8)$
 IV: $(6 * 1) * (3 * 2) = (7 * 3) * (1 * 2)$

34. Find the 288^{th} digit of the number 1222333344444455555555.... 121212131313.....