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

IN THE year 1000 the average person in western Europe was slightly poorer than his or her counterpart in China or India. By 1900, things were very different. Western Europe was five times richer. Explaining the reasons behind this “great divergence” has occupied many an economic historian. In a new book, Joel Mokyr of Northwestern University offers his own take. It is not a conventional economic history. The book contains few numbers, let alone regressions. This is because Mr Mokyr focuses on culture. For Mr Mokyr, “culture” means beliefs, values and preferences. And he argues that all three changed fundamentally in Europe after 1500.

To structure his argument, Mr Mokyr speaks of a “market for ideas”, a system in which people “try to persuade an audience of the correctness of their beliefs”. Like any market, it can “fail” – and, for most of history, it did. People in power stopped upstarts from challenging received wisdom. Manipulating nature was considered akin to defying God’s will. For potential intellectual innovators, the fear of being called a heretic (or worse) created a disincentive to think big.

Then, almost by accident, Europe stumbled into an arrangement whereby the “market for ideas” flourished. The Royal Society, a club for scientific exchange founded in London in 1660, started a journal in which everyone from Christopher Wren to Robert Boyle battled over ideas. Its motto was “nullius in verba” – roughly, “take nobody’s word for it”. A transnational community known as the “Republic of Letters” (*Respublica literaria*) sprang up. Many of its members never met in person, but with the printing press and improved postal networks, they could create knowledge more efficiently than ever before.

There were no sacred cows. When Leonhard Euler, a mathematician, thought that Isaac Newton had erred, the Royal Society asked a self-taught optician to see who was right. The greatest mathematical mind of his age, challenged by a nobody: what better example of what Mr Mokyr calls the “principle of contestability”?

This went along with a reassessment of what science was. Mr Mokyr sees the new approach encapsulated in the work of Francis Bacon (1561-1626). Bacon was a poor scientist and knew no mathematics, says Mr Mokyr. But he pushed scientific inquiry away from the mindless piling up of facts and towards making a difference to people’s lives. “The true and legitimate goal of the sciences is to endow human life with new discoveries and resources,” Bacon said. With this sort of science, useful, wealth-creating things were invented.

Why Europe, and not anywhere else, developed in this way is tricky to answer. Luck is surely part of it. Another explanation concerns Europe’s

geography. With Europe fragmented into lots of states, an intellectual who challenged received wisdom, and thus incurred the wrath of the authorities, could move elsewhere. Thomas Hobbes wrote “Leviathan” in Paris; for years René Descartes lived in the Netherlands. Rulers eventually came round to the idea that “progress” could not be stopped. ...

This book is not for someone looking for a general introduction to the “great divergence”. Mr Mokyr barely considers other theories of why Europe grew first – that its people were relatively immune from disease; or that it was the first region systematically to colonise others. And his arguments are often highly abstract.

Those familiar with the historiography will have their own grumbles. When Mr Mokyr asserts that Bacon “was of unique importance to the development of the West”, it is impossible to prove otherwise. He assigns monumental importance to the “Republic of Letters” (*Respublica literaria*) but offers frustratingly little detail on how it actually worked.

The sheer elegance of Mr Mokyr’s theory, however, has much to commend it. And it is refreshing that an economist is taking seriously the idea that ideas and culture make a difference to economic growth.

Q1. Which of the following, if true, will support the author's contention that Mr. Joel Mokyr's book about the “great divergence” is not “conventional economic history”. (para 2)?

- a) Mr. Mokyr focuses on culture which includes beliefs, values and preferences.
- b) Mr. Mokyr focuses on culture which is caught in a vicious cycle of newness and obsolescence.
- c) Specific cultural tools and the social milieu are best analyzed using the theories of modern economics as conventional economic models have become obsolete.
- d) Mr. Mokyr focuses on culture which cannot be easily quantified.

Q2. Which of the following situations correctly depicts an application of the motto “nullius in verba” and of the “principle of contestability” as can be inferred from the passage?

- a) Nobody believed in the theory of quantum physics as it went against all known teachings at that time.
- b) Geneticist Barbara McClintok's findings were replicated in the lab many times over and her theory was accepted though it went against prevalent knowledge.
- c) Einstein's theory of relativity was understood by very few people and was thus never challenged but readily accepted.
- d) People in power stopped upstarts from challenging received wisdom.

Q3. According to the passage, which of the following characterizes the “principle of contestability” employed by the “Republic of Letters”, a community formed by the Royal Society of London?

- a) No member or idea was above scrutiny; the club’s culture was to exhaustingly question methodologies to arrive at a single version of the truth.
- b) There were no pretenses that only those concepts ideated above a certain rung were of value: all that mattered was the truth, no matter from where it was derived.
- c) The open dialogue and willingness to search for the ultimate truth enabled innovation to happen faster as any inquisitive mind could contribute to the fact-gathering process.
- d) All of the above.

Q4. What, according to Mr Mokyr, is the reason that Europe developed and became richer than any other part of the world?

- a) The Europeans were relatively immune from disease.
- b) Europe was the first region to go on a colonizing spree.
- c) Ideas found a fertile soil to bear fruit in Europe; its thinkers who challenged accepted norms had more escape routes to other neighbouring European states.
- d) None of the above.

Q5. Which of the following would best serve as the central idea of the passage?

- a) Potential intellectual innovators should not be scared of being labelled a 'heretic' but should continue to think out of the box.
- b) Ideas and culture have a profound effect on societies. In the aggregate, they may also subtly influence economic growth rates for better or worse.
- c) Economic growth of a region influences the scientific temper and the cultural tempo of the same.
- d) Mr Mokyr's theory is, ironically, untestable and there are other theories that can explain the growth and rise of Europe in the 1900s.

Q6. Consider the statement given below:

Mr Mokyr has not fully explained the “great divergence”, but he has offered some tantalising insights.

Based on the passage, we can conclude that this statement is

- a) definitely true

- b) probably true
- c) probably false
- d) cannot be determined

Q7. DIRECTIONS *for question 7:* Given below is a paragraph with three blanks, numbered (i), (ii) and (iii). Below the paragraph is a collection of 9 numbered choices. For each blank choose one numbered word /phrase from among the choices that will best complete the text. Key in the appropriate numbers of the words /phrases for each blank, in the correct sequential order, in the input box given below the question. For example, if you think that words /phrases labelled (7), (4) and (1) can correctly complete the three blanks in the para, in that order, then enter 741 as your answer in the input box. (Note: Only one word /phrase from the common pool can fill each blank in the para correctly.)

Mocking economists is _____(i)_____. They try to predict the future yet missed the 2008 crash, and make bizarre assumptions that cannot hold true. Other offences on the checklist include their narrow academic _____(ii)_____ and lack of exposure to the “real world” of business. The _____(iii)_____ is common, and hard to refute. But economics is evolving, and in Silicon Valley, economists have a mission to solve firms’ real-life problems.

- | | |
|-----------------|----------------|
| 1) impugn | 6) outlook |
| 2) onslaught | 7) easy sport |
| 3) evolution | 8) privations |
| 4) cynicism | 9) implausible |
| 5) a tall order | |

Q8. DIRECTIONS *for question 8:* The sentences given below, 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 the correct sequence of five numbers as your answer in the input box given below the question.

1. It consists of a single cell – and a bacterial cell, to boot; but because it is a bacterium, this simplest possible eye is also an entire organism.
2. And now what is probably the simplest eye imaginable has been described.
3. Sceptics of evolution often point to the human eye and ask how such a complex object could have evolved when the imperfection of any part of it would cause the whole thing to be useless.
4. Simpler eyes than a human's can work perfectly well, even if they do not produce such sophisticated images.

5. It is a silly argument, confusing imperfection with simplicity.

Q9. DIRECTIONS *for question 9:* 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.

1. And just because something is bad for modern humans does not necessarily mean that it was bad for their hunting-and-gathering ancestors.
2. For most of Homo sapiens's 200000-year history, it shared the planet with several cousins.
3. Unless creatures such as yeti and Big-foot turn out to be real, the only kind of human in the modern world is Homo sapiens.
4. The most famous were the Neanderthals, who were larger and heavier and who lived in Europe and Central Asia.
5. But that is only recently true.

DIRECTIONS *for questions 10 to 12:* The short passage given below is followed by a set of three questions. Choose the best answer to each question.

JUNE 29th, 2016 was judgment day in a case that has changed the face of corporate tax-planning. Antoine Deltour and Raphaël Halet, two ex-employees of PricewaterhouseCoopers, an accounting firm, and Edouard Perrin, a French journalist, had been tried in Luxembourg for their role in leaking documents that revealed sweetheart tax deals the Grand Duchy had offered to dozens of multinationals. Confidential information about Luxembourg's tax rulings set up by PricewaterhouseCoopers from 2002 to 2010 to the benefits of its clients was made public. The defendants denied the charges, which included theft of documents and violation of secrecy, arguing that their exposure of dodgy tax practices was in the public interest. Luxembourg insisted the deals were both legal and unremarkable. The "LuxLeaks" affair has highlighted the role played by certain European Union countries, including Ireland and the Netherlands as well as Luxembourg, in facilitating tax avoidance. Luxembourg is not a country levying no or minimal income tax; its statutory rate is 29%. But its tax authority in effect sold tax-avoidance services to large firms by rubber-stamping opaque arrangements that helped them to cut their tax bills dramatically in both their countries of residence and their countries of operation.

The leaks helped propel multilateral efforts to overhaul international corporate taxation, led by the OECD. Its mostly rich members and a dozen developing countries agreed last year to a raft of reforms. These include

increased country-by-country reporting by multinationals of profits, taxes paid and so on, and tighter rules on transferring intellectual property between subsidiaries as a means of parking profits in tax havens.

Governments are now expected to make these proposals law.

In June the European Union agreed on an anti-avoidance directive that incorporates parts of the OECD's agenda. The EU's executive, the European Commission, has launched numerous probes targeting cushy tax deals offered by the bloc's own members to firms such as Apple, Fiat and Starbucks. It argues these could amount to illegal state aid. The commission is expected to announce the results of its probe into Apple's tax arrangements in Ireland in July. The firm could be forced to pay billions of euros to Dublin.

Apple denies breaking any laws. It has a point when it says the problem is not corporate illegality or immorality but disparities between national tax systems, which invite gaming. Hence the need for a multilateral approach. But that is hard to achieve. Countries guard their tax sovereignty jealously, even as they rail against tax minimisation. And they still disagree about a lot. America is unhappy with the commission's investigations, which mostly target American companies. An American official complained recently that they are based on "expansive reinterpretations" of European competition law and have created an "extraordinary mess".

Q10. It can be inferred from a reading of the passage that Luxembourg

- a) was a kleptocracy riddled with malfeasance and graft.
- b) showed that it was the exposure, and not the activity, that created the perception of corruption.
- c) was a tax haven by administrative practice.
- d) was the first country to implement measures aimed at reducing tax dumping and regulating tax avoidance schemes beneficial to multinational companies.

Q11. According to the passage, what are the main reforms drafted by the OECD?

- a) Multinationals will have to report country-by-country profits, taxes paid and other details.
- b) There will be tighter scrutiny of the transfer of intellectual property between subsidiaries.
- c) Cosy deals with the taxman are under more scrutiny.
- d) All of the above.

Q12. Which of the following measures would have prevented Apple from making profits through its tax avoidance deals with other companies in Ireland?

- a) A dilution of the anti-avoidance tax measures.
- b) A new ruling that would result in an internationally accepted and implemented corporate tax structure.
- c) Reinterpretation of European competition law.
- d) None of the above.

Q13. DIRECTIONS *for question 13:* In the following question, there are sentences or fragments of sentences that form a paragraph. Identify the sentence(s) or fragments of sentence(s) that is /are correct in terms of grammar and usage, including spelling, punctuation and logical consistency. Enter the number(s) corresponding to the sentence(s) or fragment(s) of sentence(s) in the input box provided below the question. [Note: Enter your answer in increasing order only. For example, if you think that the fragments (2) and (4) are correct, then enter 24 (but not 42) in the input box.]

1. Honourable for his charitable works, Mervyn Barrett was ready for a change. He decided to
2. run with police commissioner of Lincolnshire, encouraged by a trusted new employee who offered to manage his campaign.
3. The man took to everything from pamphlets to social media, and swiftly delivered evidence of Mr. Barrett's rising popularity.
4. So no one raised an eyebrow when he asked for access to Mr Barrett's private bank account, to
5. cover up expenses. Alas, Mr Barrett suddenly had to end his candidacy, having discovered that his so-called campaign manager had drained up his account of \$135000.

Q14. DIRECTIONS *for question 14:* Given below is a paragraph with three blanks, numbered (i), (ii) and (iii). For each blank choose one numbered word /phrase from the corresponding column of choices that will best complete the text. Key in the appropriate numbers of the words /phrases for each blank, in the correct sequential order, in the input box given below the question. For example, if you think that words /phrases labelled (1), (4) and (7) can complete the text correctly, then enter 147 as your answer in the input box. (Note: Only one word /phrase in each column can fill the respective blank correctly.)

Far from being amoral and coldly logical, science actually generates values which include intellectual humility, an unusually _____(i)_____ for honesty, respect for the revolutionary and the apparent crank, and stress on the importance of co-operation. These are not _____(ii)_____ for the scientist; they arise directly out of the pursuit of science. Even the most _____(iii)_____ liar must cultivate a deep respect for the truth when he is about his work.

Blank (i)	Blank (ii)	Blank (iii)
(1) approbation	(4) vicarious responsibilities	(7) meretricious
(2) appositeness	(5) optional extras	(8) chicane
(3) acute regard	(6) contradistinct ideas	(9) inveterate

DIRECTIONS for questions 15 to 17: The short passage given below is followed by a set of three questions. Choose the best answer to each question.

Collective unconscious, a term coined by Carl Jung, refers to structures of the unconscious mind which are shared among beings of the same species. Jung considered the collective unconscious to underpin and surround the unconscious mind, distinguishing it from the personal unconscious of Freudian psychoanalysis. The collective unconscious had profound influence on the lives of individuals, who lived out its symbols and clothed them in meaning through their experiences. The psychotherapeutic practice of analytical psychology revolves around examining the patient's relationship to the collective unconscious.

Jung's 1916 essay, "The Structure of the Unconscious" criticizes the reductive monotony of Freudian dream interpretation. He distinguishes between "Freudian" unconscious, limited to sexual fantasies and repressed images, and the "collective" unconscious encompassing the soul of humanity at large.

And the essential thing, psychologically, is that in dreams, fantasies, and other exceptional states of mind the most far-fetched mythological motifs and symbols can appear autochthonously at any time, often, apparently, as the result of particular influences, traditions, and excitations working on the individual, but more often without any sign of them. These "primordial images" or "archetypes," belong to the basic stock of the unconscious psyche and cannot be explained as personal acquisitions. Together they make up that psychic stratum which has been called the collective unconscious.

The existence of the collective unconscious means that individual consciousness is anything but a *tabula rasa* and is not immune to predetermining influences. On the contrary, it is in the highest degree influenced by inherited presuppositions, quite apart from the unavoidable influences exerted upon it by the environment. The collective unconscious comprises in itself the psychic life of our ancestors right back to the earliest beginnings. It is the matrix of all conscious psychic occurrences, and hence it exerts an influence that compromises the freedom of consciousness in the highest degree, since it is continually striving to lead all conscious processes back into the old paths.

At a lecture titled "The Concept of the Collective Unconscious", Jung said: In addition to our immediate consciousness, which is of a thoroughly personal nature and which we believe to be the only empirical psyche (even if we tack on the personal unconscious as an appendix), there exists a second psychic system of a collective, universal, and impersonal nature which is identical in all individuals. This collective unconscious does not develop individually but is inherited. It consists of pre-existent forms, the archetypes, which can only become conscious secondarily and which give definite form to certain psychic contents.

Jung linked the collective unconscious to 'what Freud called "archaic remnants" – mental forms whose presence cannot be explained by anything in the individual's own life and which seem to be aboriginal, innate, and inherited shapes of the human mind'. He credited Freud for developing his "primal horde" theory in *Totem and Taboo* and continued further with the idea of an archaic ancestor maintaining its influence in the minds of present-day humans.

Q15. Which of the following is not true about Carl Jung's concept of "collective unconscious" as explained in the passage?

- a) The human collective unconscious is populated by archetypes.
- b) The collective unconscious exerts overwhelming influence on the minds of individuals.
- c) The collective unconscious is the receptacle of universal archetypal symbols which are common to all individuals.
- d) The collective unconscious contains material solely derived from individual experiences.

Q16. According to Jung, the Freudian theory of dream interpretation

- a) presents less than it could.
- b) involves autochthonous processes.
- c) overlaps with the "archaic ancestor" theory proposed by Jung.
- d) is to be credited.

Q17. Three of the following can be statements from Carl Jung's lectures or essays on the "collective unconscious". Pick the exception.

- a) Every human being, however high his conscious development, is still an archaic man at the deeper levels of his psyche.

- b) The human mind has innate characteristics “imprinted” on it as a result of evolution: these universal predispositions stem from our ancestral past.
- c) Psychological ill-health can be prevented by not focussing on the collective unconscious.
- d) There exists two elements of unconsciousness: the personal unconscious and the collective unconscious.

Q18. DIRECTIONS *for question 18:* The sentences given below, 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 the correct sequence of five numbers as your answer in the input box given below the question.

1. British troops possessed only a handful of bullets each, and volunteers – trained with broom handles as rifles – were in short supply.
2. Great Britain's most trying time, its darkest hour, occurred in the days following retreat of the British army across the English Channel at Dunkirk during World War II.
3. Only prime minister Winston Churchill knew the full extent of his nation's peril, and his private agony took a heavy emotional toll as he grew judgmental of well-intentioned ideas offered to help save the day.
4. Germany torpedoed a British ship with over 3000 lives lost, an incident not disclosed to the British people until after the war.
5. France lay defeated at Germany's hands, and England stood alone against Hitler, nearly defenseless to invasion.

Q19. DIRECTIONS *for question 19:* 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.

1. Till then, there will be a high velocity of change, of future shock, which can be traced to population growth, urbanization, the shifting proportions of young and old and other factors.
2. One powerful strategy in the battle to prevent mass future shock, therefore, involves the conscious regulation of technological advance.
3. No matter how individuals try to pace their lives, no matter what psychic crutches we offer them, no matter how we alter education, the society as a whole will still be caught on a runaway treadmill until we capture control of the accelerated thrust itself.

4. Yet, technological advance is clearly a critical node in the network of causes; indeed, it may be the node that activates the entire net.

5. Given that a majority of men still figuratively live in the twelfth century, who are we even to contemplate throwing away the key to economic advance?

DIRECTIONS for questions 20 to 25: The long passage given below is followed by a set of six questions. Choose the best answer to each question.

The nations of our time cannot prevent the conditions of men from becoming equal, but it depends upon themselves whether the principle of equality is to lead them to servitude or freedom, to knowledge or barbarism, to prosperity or wretchedness.

– (Alexis de Tocqueville, *Democracy in America*)

Most people today want to keep their engagements with the state and public affairs to the minimum. We enjoy the benefits of known and acceptable laws (unless very poor or otherwise discriminated against). The liberal state as it developed in the last two centuries in Europe and North America created a framework within which people could lead their private and commercial lives with a minimum of interference. Their interventions were limited in the main to voting in public elections. Relatively few people outside the labour movements were active in political parties; most were content to leave public affairs to a relatively small group of people under the scrutiny of the press and, to some extent at least, under the control of the courts. That political class consisted sometimes of democratic socialists representative of a majority working-class movement or sometimes of Conservatives or Christian democrats accepting or developing enough of a welfare state to defuse discontent with the system. Between them there were serious policy differences centering on attempts to redistribute income, somewhat – but never to kill the goose that laid the golden eggs, the capitalist market system. Business interests resented higher taxation for political or moral ends and often talked hysterically about the very system of private enterprise being near collapse, which was never so. But there came a time when the success of postwar capitalism had created a middle class larger than the old working class, in large part a new middle class able to spend money on consumer goods, cutting adrift from the old world of essentials, bare necessities, and hard saving against emergencies. In Britain, the cooperative stores were replaced by the supermarkets. This was the consumer society. Thatcherism and Reaganism did not create it. They were products of it. They could now win elections without bothering too much about the welfare of a

working class who were no longer, for the first time in history, the majority class; they were indeed rapidly becoming an under-class – depoliticized, unorganized and no longer protected by the competitive party systems of democracy.

Party leaders could conduct election campaigns by brushing aside difficult issues with nebulous sincerities but with no real serious debate. The parties concentrated their efforts on the middle ground: lower taxation replaced public expenditure as election cries. The new middle class was far more individualistic than the older middle class, more self-and-family centered with less feeling for public service, less belief that rights entail duties and responsibilities. Party leaders and managers became openly and unashamedly more interested in immediate election tactics, projection of personality, and in media presentation than in thinking through and advocating ideas and policies related to long term social needs. Many of those urban intellectuals who were once so influential in social democratic politics now take up big small causes such as 'Save the whale', 'Focus on animal rights' etc but not poverty or economic injustice. They will attack racism as, indeed, an affront to human dignity and any kind of democracy but not face up to the root cause of discrimination – stark poverty, economic disadvantage, and even relative deprivation. Political leaders in Britain who had been wont on platforms and in memoirs to ascribe British democracy and freedoms to the great traditions of service in local government and in voluntary bodies, suddenly began to downgrade and even rubbish local government as a wild card in national politics and election strategies, and make speeches aimed at reviving volunteering – good for the soul, certainly, but also for savings on government services and a further undercutting of local government which was not so long ago believed to be at the very roots of democracy.

Q20. What is the primary purpose of the passage?

- a) To analyse the reasons for apathy among citizens in democratic societies.
- b) To criticize the behaviour of politicians.
- c) To list the reasons for degradation in politics.
- d) To report a state of affairs in democratic societies.

Q21. All of the following are characteristics of the new middle class which emerged in the liberal states EXCEPT?

- a) Though micro in outlook, it was macro in significance.
- b) It did not abandon the old world concepts of essentials, bare necessities, and hard saving against emergencies.
- c) Social farsightedness was not among its priorities.
- d) It did not have a balanced view on social give and take.

Q22. According to the passage, 'Focus on animal rights' and 'Save the whale'

- a) are non-political big small campaigns which confront the scourges of indigence and intolerance.
- b) are social causes which are promoted by urban intellectuals with no political stakes.
- c) are among the popular causes to which urban intellectuals now lend their support.
- d) are among the big social campaigns promoted by small political parties.

Q23. It can be inferred from the passage that

- a) Margaret Thatcher and Ronald Reagan, with their focus on the middle class, faced few problems in winning elections.
- b) Margaret Thatcher and Ronald Reagan were responsible for replacing cooperative stores with supermarkets.
- c) Margaret Thatcher and Ronald Reagan paid little attention to the working class, in electioneering.
- d) Margaret Thatcher and Ronald Reagan did not have to woo the working class to win elections.

Q24. It can be inferred from the passage that the political parties in the liberal states of Europe and North America had near unanimity in which of the following policies?

- a) Building of a welfare state.
- b) Promotion of capitalism.
- c) Reduction of taxes.
- d) Encouragement of local governments.

Q25. According to the passage, election strategies in Britain included which of the following?

Identify all that apply and enter the corresponding number in the input box given below. You must enter your answer in increasing order only. For example, if you think (1) and (3) apply, then enter 13 (but not 31) in the input box.

- 1. The promise of lower taxation.
- 2. The focus on policies related to long term social needs.
- 3. The idea of promoting voluntary work.
- 4. The assurance of enhancing the importance of local government.
- 5. A relook at public expenditure.

Q26. DIRECTIONS for question 26: In the following question, there are sentences or fragments of sentences that form a paragraph. Identify the sentence(s) or fragments of sentence(s) that is /are correct in terms of grammar and usage, including spelling, punctuation and logical consistency. Enter the number(s) corresponding to the sentence(s) or fragment(s) of sentence(s) in the input box provided below the question. [Note: Enter your answer in increasing order only. For example, if you think that the fragments (2) and (4) are correct, then enter 24 (but not 42) in the input box.]

1. *Girl with a Pearl Earring* is an oil painting by 17th-century Dutch painter Johannes Vermeer. The painting is 'tronie', the 17th-century Dutch word
2. for a head that was not meant to be a portrait, and depicts a European girl wearing an exotic dress, an oriental turban, and an improbable large pearl earring.
3. In 2014, Dutch astrophysicist Vincent Icke raised doubts about the material of the earring and argued that
4. it looks more like polished tin than like pearl on the grounds of the specular reflection, pear shape and the large size of the earring.
5. After the most recent restoration of the painting in 1994, the subtle colour scheme and the intimacy of the girl's gaze toward the viewer has been greatly enhanced.

Q27. DIRECTIONS for question 27: The sentence given below has a single word missing and is followed by six numbered choices. Select the two answer choices that, when used to complete the sentence, fit the meaning of the sentence as a whole and produce completed sentences that are alike / equivalent in context and meaning. Enter the numbers alongside the two correct answers choices, in ascending order, in the input box given below the question.

When the doctor visited again in three hours, he found that the patient's breathing was _____ and the pulse almost imperceptible.

- (1) onerous
- (2) execrable
- (3) oppugnant
- (4) stertorous
- (5) convulsive
- (6) preternatural

Q28. DIRECTIONS *for question 28:* The sentences given below, 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 the correct sequence of five numbers as your answer in the input box given below the question.

1. Even then, you will want to review it regularly and make minor changes as the years bring additional insights or changing circumstances.
2. It may take you several weeks or even months before you feel really comfortable with it, before you feel it is a complete and concise expression of your innermost values and directions.
3. It takes deep introspection, careful analysis, thoughtful expression, and often many rewrites to produce it in final form.
4. But fundamentally, your mission statement becomes the solid expression of your vision and values, the criterion by which you measure everything else in your life.
5. A personal mission statement is a personal constitution but it is not something that you write overnight.

DIRECTIONS *for questions 29 to 34:* The long passage given below is followed by a set of six questions. Choose the best answer to each question. The most notable feature of inequality in Indian society from the past to the present is its visibility. Even though inequalities exist in all complex societies, they are in general more visible in agrarian as compared to industrial societies.

Social distinctions are not only more visible in India, they tend to be more rigid. Individuals tend to live and die in the station of life into which they are born; marriage also is fairly strictly regulated. There is little mobility, and the barriers between the classes and strata appear to be almost insurmountable. In such a society, an individual's personal qualities appear to be of less account than the group of which he is a part. This subordination of the individual to the group is a feature of our traditional social order; it does not harmonize very easily with our new legal order.

Inequalities are not only visible and rigid, they are also highly elaborate. The social distance between the top and the bottom of the hierarchy is very large, with numerous grades in between. The caste structure, that tradition that we claim to want to shrug off, has many divisions and subdivisions. When we look at our traditional agrarian hierarchy, we are struck equally by the number of intermediaries that stood between the landlord and the tiller of the land. The proliferation of invidious distinctions is a feature also of our modern social life. It has been said that many of these new distinctions are an artefact of colonial rule; even so, colonial rule found in our society a fertile soil for generating distinctions of rank.

For some people, the key to the problem of social inequality lies in the domain of material factors. They would say that there is pervasive inequality in India because of its all-round poverty, its general economic backwardness, and its slow rate of economic growth. Extremes of wealth and poverty are characteristic features of economically backward societies. A stagnant agrarian economy, long under colonial domination, has had very little scope for the loosening of its social rigidities. There are needs which cannot be met without some judgment being made on the merits of the rival claims. Where the opportunities for employment are few and there are many in need of employment, the claims of some individuals have to be sacrificed in order to meet those of others. This brings out a paradox inherent in the process of discrimination itself. For there is all the difference in the world between a form of protective discrimination from which a disprivileged community, class or section as a whole benefits, and one from which only a few of its individual members benefit. A great deal of what passes for protective discrimination or affirmative action is in fact of the latter rather than the former kind.

If it is true that discrimination is the essence of classification then a great deal will hinge around the classification which determines who the weaker sections are. It would be a mistake to assume that such a classification is self-evident or natural. We often use a geological metaphor and speak of social stratification, as if the whole of society were divided into layers or strata, arranged one on top of another in the way in which the layers of the earth are arranged. But this is only a metaphor which can never do full justice to the complex and fluid patterns in which groups, classes and categories are arranged in a real human society. Some classifications seem to be organic or natural because they have existed and been acknowledged for a very long time; such, for instance, is the classification of the Hindu population of India into its castes and subcastes. Other classifications appear to be rational rather than natural because they are based on the kinds of impersonal criteria we feel ought to be used for making significant distinctions among people; such, for instance, is the classification of people according to their occupation. There obviously is some correspondence between the two, but a problem of choice arises where the correspondence ceases to obtain.

Q29. According to the passage, all of the following are the different parameters used for the classification of people in the Indian society EXCEPT?

- a) Caste
- b) Subcaste
- c) Profession
- d) Real GDP

Q30. Why does the author think that the 'social stratification' metaphor does not do full justice in explaining inequality in a society?

- a) Because it is a geological metaphor and the passage deals with a social issue and there is no connection between geology and sociology.
- b) Because the categories in which the human society is arranged are more complex and fluid than how the earth is divided into separate layers.
- c) Because some categories are rational rather than natural and are based on impersonal criteria.
- d) Because unlike the 'geological stratification', the division of society based on inequality is neither self-evident nor natural.

Q31. The passage could be from any of the following sources EXCEPT?

- a) Encyclopedia
- b) Book
- c) Magazine
- d) Newspaper

Q32. According to the author, inequalities are more visible in India than in some other countries because

- a) of the colonial rule, the slow rate of economic growth and little mobility amongst Indians.
- b) the divisions have been there for a very long period.
- c) the social make-up reflects the hierarchial structure of its agrarian economy.
- d) in India, inequalities are known to inhibit economic growth, prevent social mobility, impair democracy, and run afoul of some standard of fairness.

Q33. According to the passage, which of the following can be concluded to be the feature of our new legal order?

- a) The focus on the individual rather than on the group to which he belongs.
- b) Acceptance of inter-caste marriage as a fait accompli.
- c) The insistence on subordinating an individual's aspirations to the group's objectives.
- d) The importance accorded to a group to which an individual belongs rather than to the individual himself.

Q34. What is the paradox referred to in the sentence "This brings out a paradox inherent in the process of discrimination itself." (para 4)?

- a) The necessity of sacrificing the interests of some to accommodate others when the opportunities are few.
- b) The need to satisfy the claims of some who are not disprivileged along with those of others who are disprivileged.
- c) The opportunities always being insufficient to meet certain needs of the disprivileged community.
- d) The policies framed to address the problems of discrimination often include discriminatory aspects themselves.

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

Five persons – Amar, Kishore, Praveen, Rajesh and Trived – had a certain number of books with them. The number of books with each of them was a distinct prime number less than 25 but the sum of the number of books with no two persons was a prime number. Further, the total number of books with the five of them was an even number. It is known that Kishore had more than double the number of books that Praveen had, while Rajesh had less than one-third the number of books that Trived had. Further, the number of books with Ankit was less than that with Kishore, while Rajesh had more number of books than Praveen.

Q1. DIRECTIONS for questions 1 to 4: Type in your answer in the input box provided below the question.

How many books does Ankit have?

Q2. DIRECTIONS for questions 1 to 4: Type in your answer in the input box provided below the question.

What is the total number of books with the five of them?

Q3. DIRECTIONS for questions 1 to 4: Type in your answer in the input box provided below the question.

For how many pairs of persons is the difference between the number of books with them a prime number?

Q4. DIRECTIONS for questions 1 to 4: Type in your answer in the input box provided below the question.

What is the difference between the number of books with Kishore and the number of books with Trived?

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

Exactly six students, A through F, wrote a test in which, for each question, the number of marks awarded for every correct answer was four times the number of marks deducted for every wrong answer. For any question left unattempted, no marks were either awarded or deducted. It is also known that the number of marks awarded for a correct answer was an integer. Further, for each of the six students, the number of wrong answers that they marked in the test was four-fifths the number of correct answers that they marked.

The following table provides the total marks scored by each of the six students in the test:

Student	Marks
A	256
B	128
C	224
D	192
E	288
F	160

Q5. DIRECTIONS for question 5: Select the correct alternative from the given choices.

What is the minimum possible number of questions in the test?

- a) 81
- b) **162**
- c) 108
- d) **324**

Q6. DIRECTIONS for question 6: Type in your answer in the input box provided below the question.

If at least one student attempted all the questions in the test, what is the maximum possible number of questions left unattempted by any student?

Q7. DIRECTIONS for question 7: Select the correct alternative from the given choices.

If, for any student, the difference between the number of questions attempted correctly and those attempted incorrectly was not greater than 10, how many marks were awarded for each question answered correctly?

- a) 8
- b) 4
- c) 2
- d) Cannot be determined

Q8. DIRECTIONS for question 8: Type in your answer in the input box provided below the question.

If, for one of the six students, the total number of questions in the test and the number of questions left unattempted were in the ratio 5 : 2, what is the minimum possible number of questions in the test?

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

Paul is the manager of a railway company, which runs exactly five trains, Train A, Train B, Train C, Train D and Train E, with each train connecting exactly two cities. None of the trains stop at any city other than the origin and the destination. The total cost for each trip of a train, i.e., for the train to reach the destination from origin, comprises three types of costs – Fixed Cost, Variable Cost per Passenger and Variable Cost per km.

For any train, the Fixed Cost remains constant for each trip of the train; Variable cost per passenger varies directly with the number of passengers who board the train at the origin; Variable Cost per km varies directly with the distance covered (in km) by the train in that trip.

The table below provides, for Train A through Train E, the Fixed Cost (in USD), Variable Cost (in USD) per Passenger and Variable Cost (in USD) per km for each trip. It is known that the distances travelled by Train A through Train E in each trip are in the ratio 1 : 2 : 3 : 4 : 5 respectively.

Train	Fixed Cost	Variable Cost per Passenger	Variable Cost per km
Train A	600	5	8
Train B	500	7	2
Train C	450	2.5	6
Train D	650	8.5	4.5
Train E	750	6.5	3.5

Q9. DIRECTIONS for questions 9 to 12: Select the correct alternative from the given choices.

If the total cost of a trip for Train A and that for a trip of Train C was the same and exactly 100 passengers travelled in each train on that trip, what is the total distance (in km) travelled by Train A in that trip?

- a) 50
- b) 40
- c) 30
- d) **10**

Q10. DIRECTIONS for questions 9 to 12: Select the correct alternative from the given choices.

If the total cost of a trip for Train C and Train D was the same and exactly 50 passengers travelled in Train D, how many passengers travelled in Train C?

- a) 50
- b) **150**
- c) 250
- d) Cannot be determined

Q11. If an equal number of passengers travelled in the five trains and the total cost of a trip for Train E was the highest, the number of passengers that travelled in any train must be

- a) less than 40.
- b) at least 40.
- c) less than 50.
- d) at least 50.

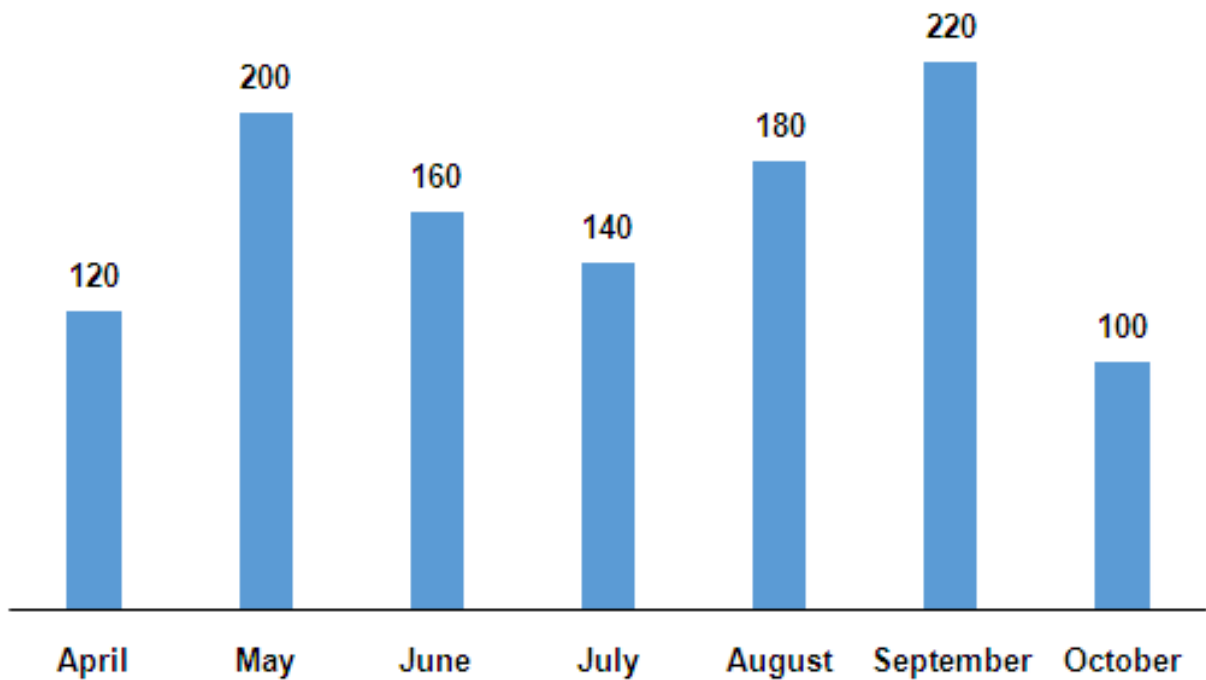
Q12. If the total cost of a trip for Train B was greater than that for Train D, which of the following is definitely true regarding the number of passengers in Train B and Train D?

- a) The number of passengers in Train B was greater than the number of passengers in Train D.
- b) The number of passengers in Train D was greater than the number of passengers in Train B.
- c) The number of passengers in Train B was the same as the number of passengers in Train D.
- d) None of the above

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

At the beginning of the year 2016, Tarun started a wellness institute which conducts yoga classes every day. Anyone who joins for yoga classes at the institute, joins at the beginning of any month for a period of exactly three months. During 2016, all the persons who joined at the beginning of a particular month attended the classes every day during that month. On each day of the next month, exactly 50% of the persons who joined at the beginning of the previous month attended the classes. On each day of the third month, exactly 25% of the persons who joined at the beginning of the first month attended the classes.

The following table provides the number of persons who joined at the beginning of each month from April to October in the year 2016:



Q13. DIRECTIONS for questions 13 to 16: Select the correct alternative from the given choices.

In which of the following months did the highest number of persons attend the classes?

- a) June
- b) July
- c) August
- d) September

Q14. DIRECTIONS for questions 13 to 16: Select the correct alternative from the given choices.

If an equal number of persons attended the classes in each month from January to April, how many persons joined in January?

- a) 144

- b) **256**
- c) **192**
- d) Cannot be determined

Q15. DIRECTIONS for questions 13 to 16: Select the correct alternative from the given choices.

In which of the following months was the percentage decrease in the number of persons who attended the classes in that month as compared to the previous month the highest?

- a) July
- b) August
- c) September
- d) October

Q16. DIRECTIONS for questions 13 to 16: Select the correct alternative from the given choices.

If, starting from October till December, the number of persons who attended the classes increased by at least 10% and at most 20% every month as compared to the previous month, what is the maximum number of persons who could have joined the class in December?

Assume that the number of persons who joined the classes at the beginning of each month in 2016 is a multiple of four.

- a) **148**
- b) **240**
- c) **252**
- d) **188**

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

Seven persons, Pavan, Mahi, Lokesh, Rahul, Yusuf, Karan and Gaurav, were standing in a line from left to right, all facing the same direction. Further, the weight of each person was distinct.

It is also known that

1. Mahi was to the right of the fourth heaviest person with exactly three persons between them.
2. Yusuf was to the right of the third heaviest person with exactly two persons between them.
3. Karan was to the right of the heaviest person with exactly four persons between them.
4. Rahul was to the left of the second heaviest person with exactly three persons between them.
5. Pavan was to the left of the sixth heaviest person with exactly four persons between them.

6. Gaurav was to the left of the seventh heaviest person with exactly two persons between them.

7. Gaurav was to the right of the fourth heaviest person with at least one person between them.

Q17. DIRECTIONS for questions 17 to 20: Select the correct alternative from the given choices.

How many persons are standing to the left of Lokesh?

- a) 3
- b) 4
- c) 5
- d) 6

Q18. DIRECTIONS for questions 17 to 20: Select the correct alternative from the given choices.

Who is the heaviest person among the seven?

- a) Pavan
- b) Gaurav
- c) Rahul
- d) Cannot be determined

Q19. DIRECTIONS for questions 17 to 20: Select the correct alternative from the given choices.

How many persons lighter than Mahi are standing to his left?

- a) 0
- b) 1
- c) 3
- d) 4

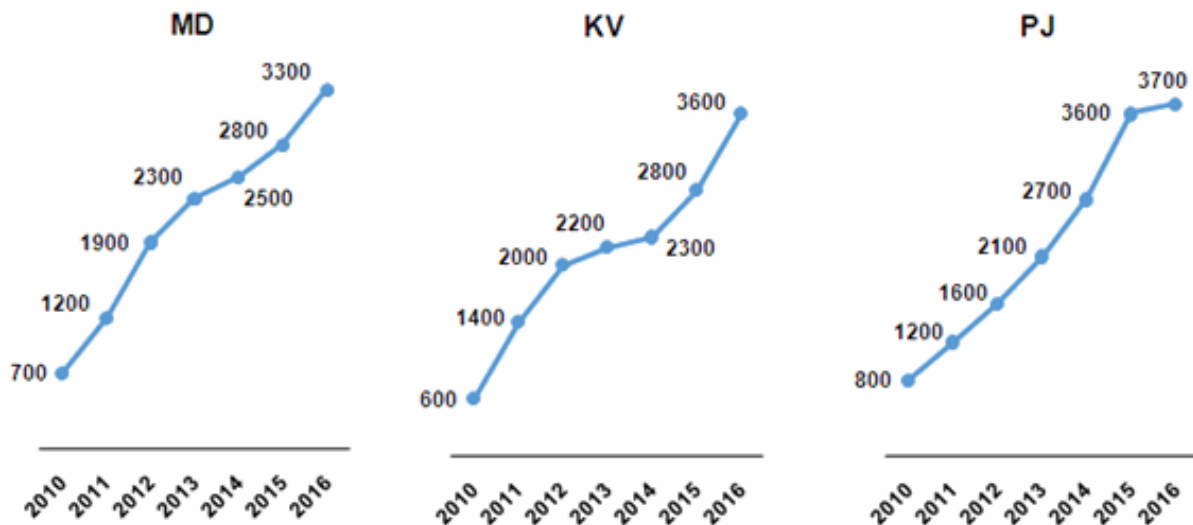
Q20. DIRECTIONS for questions 17 to 20: Select the correct alternative from the given choices.

For how many persons is the number of persons standing to their left the same as the number of persons heavier than them?

- a) 0
- b) 1
- c) 2
- d) More than 2

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

The graph below provides the cumulative number of runs scored in international matches by three cricketers – MD, KV and PJ – as recorded at the end of each year, from 2010 to 2016. The three cricketers started playing in international matches in 2010.



Q21. DIRECTIONS for questions 21 to 24: Select the correct alternative from the given choices.

In how many of the given years did MD score more number of runs than each of KV and PJ?

- a) 0
- b) 1
- c) 2
- d) More than 2

Q22. DIRECTIONS for questions 21 to 24: Select the correct alternative from the given choices.

In which year were the total runs scored by the three players the least?

- a) 2014
- b) 2013
- c) 2016
- d) 2015

Q23. DIRECTIONS for questions 21 to 24: Select the correct alternative from the given choices.

For any player, what is the highest percentage increase in the number of runs scored by him in an year as compared to that in the previous year?

- a) 200%
- b) 300%

- c) 400%
- d) 500%

Q24. DIRECTIONS for questions 21 to 24: Select the correct alternative from the given choices.

Every year, the cricketer who scores the highest number of runs is given the 'Cricketer of the Year' award. If during the given period, the three players won the award a total of six times, who won the award the maximum number of times?

- a) PJ
- b) **KV**
- c) **MD**
- d) Cannot be determined

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

Exactly five persons, A through E, were sitting around a rectangular table, which had a total of exactly eight seats around it, with four seats along its length on each side. All the chairs were placed facing the table and for any chair at the table, there was exactly one chair opposite it. Further, each person was wearing a hat of a different colour among Red, Green, Yellow, Black and Orange.

It is known that

1. for at least two persons, the chairs opposite the one in which they were sitting were empty.
2. on one of the sides of the table, the two chairs which were not at either end were both empty and there was at least one empty chair on each side of the table.
3. D, who was wearing the Red hat, was sitting opposite the person wearing the Black hat and to the left of the person wearing the Green hat.
4. the two chairs opposite E and the person wearing the Yellow Hat were both empty.
5. B, who was not wearing the Orange hat, was sitting to the immediate left of the person wearing the Yellow hat.

Q25. DIRECTIONS for questions 25 to 28: Select the correct alternative from the given choices.

What is the colour of the hat that E was wearing?

- a) Yellow
- b) Orange
- c) Green
- d) Black

Q26. DIRECTIONS for questions 25 to 28: Select the correct alternative from the given choices.

Who among the following is sitting opposite the person wearing the Green hat?

- a) **A**
- b) **B**
- c) **C**
- d) None of the above

Q27. DIRECTIONS for questions 25 to 28: Select the correct alternative from the given choices.

Who among the following is definitely not sitting opposite an empty chair?

- a) The person wearing an Orange hat
- b) **A**
- c) The person wearing a Green hat
- d) None of the above

Q28. DIRECTIONS for questions 25 to 28: Select the correct alternative from the given choices.

If the chair to the immediate left of A was empty, what is the colour of the hat of the person sitting to the immediate left of C?

- a) Yellow
- b) Green
- c) **Red**
- d) Black

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

Gaurav, a botanist, was studying the properties of six different flowers – Flower A through Flower F. Each flower was of a different colour among Red, Blue, Green, Yellow, Orange and Black. Further, each flower had a different number of petals among 2, 3, 4, 5, 6 and 7.

It is also known that

1. the number of petals in Flower A, which is not Red, is two more than the number of petals in the Blue flower.
2. the Red flower has four petals, while Flower D has three petals more than the Green flower.
3. the Yellow flower has one petal more than Flower E.
4. Flower C is not Red, while Flower B, which is not Black, has three petals more than the Yellow flower.

Q29. DIRECTIONS *for questions 29 to 32:* Select the correct alternative from the given choices.

What is the colour of Flower A?

- a) Orange
- b) Black
- c) Yellow
- d) Cannot be determined

Q30. DIRECTIONS *for questions 29 to 32:* Select the correct alternative from the given choices.

Which of the following is the Red flower?

- a) Flower D
- b) Flower B
- c) Flower C
- d) Flower F

Q31. DIRECTIONS *for questions 29 to 32:* Select the correct alternative from the given choices.

How many petals does the Orange flower have?

- a) 7
- b) 6
- c) 5
- d) Cannot be determined

Q32. DIRECTIONS *for questions 29 to 32:* Select the correct alternative from the given choices.

What is the difference between the number of petals that the Yellow flower has and the number of petals that Flower D has?

- a) 0
- b) 1
- c) 2
- d) 3

QA

Q1. DIRECTIONS for questions 1 and 2: Select the correct alternative from the given choices.

The set P is defined as the set of the first ten odd natural numbers. How many distinct pairs of numbers can be selected from the set P such that their sum is not less than 20?

- a) 25
- b) 20
- c) 15
- d) 45

Q2. DIRECTIONS for questions 1 and 2: Select the correct alternative from the given choices.

The number of real roots of $3^{-x} + x = 4$ is

- a) 0.
- b) 1.
- c) 2.
- d) More than two.

Q3. DIRECTIONS for question 3: Type in your answer in the input box provided below the question.

$$\frac{4^{57} + 5^{57} + 6^{57} + 7^{57} + 8^{57}}{15} \text{ leaves a remainder of}$$

Q4. DIRECTIONS for question 4: Select the correct alternative from the given choices.

In a parallelogram ABCD, E is a point on AB, such that CE bisects \angle BCD. If ED = AE and BC = 4 cm, find BE.

- a) 2 cm
- b) 4 cm
- c) 8 cm
- d) Cannot be determined

Q5. DIRECTIONS for question 5: Type in your answer in the input box provided below the question.

A company manufacturing plastic bottles incurs a cost of Rs.40 per bottle. The number of bottles sold in a month decreases by 20 for every Rs.4 increase in the selling price. If when the selling price of each bottle is Rs.48,

the number of bottles sold in a month is 600, find the maximum profit that the company can make in a month?

Q6. DIRECTIONS for question 6: Select the correct alternative from the given choices.

If $a = \sqrt[2]{b} = \sqrt[3]{c} = \sqrt[4]{d} = \sqrt[5]{e} = \sqrt[6]{6}$, find the number of digits in the number $(a \times b \times c \times d \times e)^{20}$, given that $\log 2 = 0.3010$ and $\log 3 = 0.4771$.

- a) 116
- b) 117
- c) 118
- d) 115

DIRECTIONS for questions 7 to 9: Answer the questions on the basis of the information given below.

Two statements are considered to be inconsistent with each other, if the data given in one statement contradicts the data given in the other statement or if it is possible to arrive at conclusions that contradict each other using the two statements.

In each of the following questions, there is a main statement (MS) followed by two additional statements, I and II. Study whether the MS is inconsistent or not inconsistent with each of the two statements and then mark your answer as per the instructions given below:

Q7. MS: For the natural numbers N and D, the remainder when 2N is divided by D is 10.

1. The remainder when N is divided by 2D is 26.
2. The remainder when N is divided by D is 17.

- a) if MS is inconsistent with I but is not inconsistent with II.
- b) if MS is inconsistent with II but is not inconsistent with I.
- c) if MS is inconsistent with I and also inconsistent with II.
- d) if MS is inconsistent with neither I nor II.

Q8. MS: AB and EF are the chords of the circle C(1). The perpendicular bisectors of AB and EF intersect at P. The length of the chords AB and EF are 14 cm and 6 cm respectively.

1. The distance of the point P from the chords AB and EF are 9 cm and 11 cm respectively.
2. The distance of the point P from the chords AB and EF are 6 cm and 7 cm respectively.

- a) if MS is inconsistent with I but is not inconsistent with II.
- b) if MS is inconsistent with II but is not inconsistent with I.
- c) if MS is inconsistent with I and also inconsistent with II.
- d) if MS is inconsistent with neither I nor II.

Q9. MS: In a certain management entrance, there were a total of 75 questions, spread across 3 sections. Four marks were awarded for each correct answer and one mark was deducted for each wrong answer. No marks were awarded or deducted for any unanswered questions. A student is free to attempt any number of questions. Bunty got a total of 124 marks in the exam.

1. Bunty attempted a total 49 questions in the exam.
2. Twenty of Bunty's answers were wrong.

- a) if MS is inconsistent with I but is not inconsistent with II.
- b) if MS is inconsistent with II but is not inconsistent with I.
- c) if MS is inconsistent with I and also inconsistent with II.
- d) if MS is inconsistent with neither I nor II.

Q10. DIRECTIONS for questions 10 to 13: Select the correct alternative from the given choices.

In a geometric progression, the sum of the first n terms is 3069 and the first term is 3. If the n th term in the progression is 1536, find the common ratio.

- a) $\frac{1}{2}$
- b) $\frac{2}{3}$
- c) 2
- d) 4

Q11. DIRECTIONS for questions 10 to 13: Select the correct alternative from the given choices.

Two classmates P and Q have a conversation as below.

P: $\frac{7}{11}$ th of my classmates are females.

Q: That is interesting, because $\frac{12}{19}$ th of my classmates are females.

Assuming that both P and Q speak the truth, which of the following statements are true?

- I. Q is a female.
- II. P is a female.
- III. There are a total of 209 students in the class.

- a) Only II and III
- b) Only I
- c) Only I and III
- d) None of the above

Q12. DIRECTIONS for questions 10 to 13: Select the correct alternative from the given choices.

Find the area of the region bounded by the graph $|x - 7| + |y - 9| =$

- a) 200 sq.units
- b) 100 sq.units
- c) 144 sq.units
- d) 288 sq.units

Q13. DIRECTIONS for questions 10 to 13: Select the correct alternative from the given choices.

Akhil was multiplying two 2-digit numbers AB and CD. He accidentally interchanged the digits of one of the numbers and the product he obtained differed from the correct product by a value d . Which of the following is a possible value of d ?

- a) 1234
- b) 2345
- c) 3456
- d) 9495

Q14. DIRECTIONS for question 14: The question is followed by two statements. You have to decide whether the information provided in the statements is sufficient for answering the question or not.

In a B-school, 30% of the students in a batch were male. If 10% of the females students have work experience, what percent of males have work experience?

- I. 20% of all the students in the batch have work experience.
- II. The number of males having work experience is 25% more than the number of females having work experience.

- a) if the question cannot be answered even by using both the statements given.

- b) if the question can be answered using both the statements together but not by using either statement alone.
- c) if the question can be answered using either statement alone.
- d) if the question can be answered using any one of the statements alone but not the other.

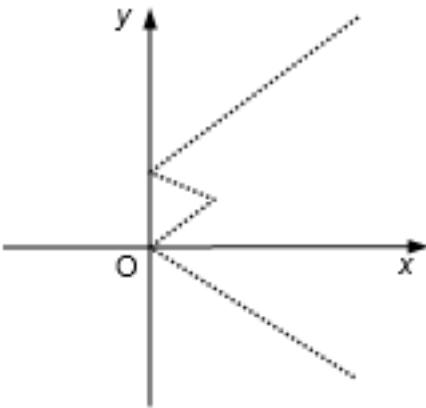
Q15. DIRECTIONS for question 15: Type in your answer in the input box provided below the question.

If n and p are integers, with $0 \leq p \leq 9$, and $\frac{n}{540} = \overline{0.8p1}$, find the value of $n + p$.

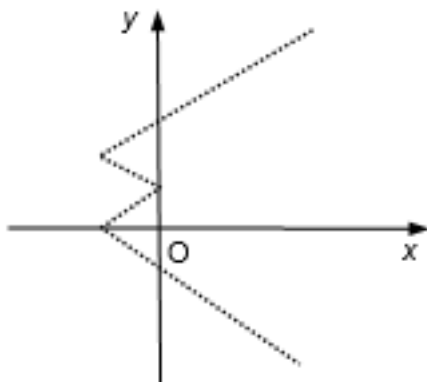
Q16. DIRECTIONS for questions 16 and 17: Select the correct alternative from the given choices.

Which of the following graphs best represents the function $x = ||y - 1| - 1| + 1$?

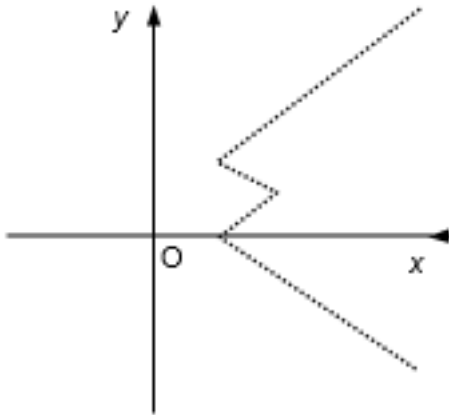
a)



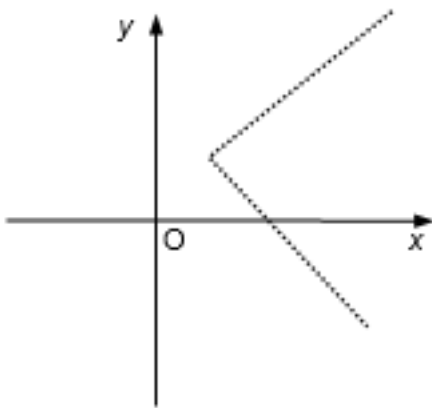
b)



c)



d)



Q17. DIRECTIONS for questions 16 and 17: Select the correct alternative from the given choices.

A real valued function $f(x)$ is such that $f(x + y) = f(x) + f(y) + 6xy + 3$ for all real values of x and y . Find the value of $f(3)$ if $f(-1) = 6$.

- a) 0
- b) -6
- c) 6
- d) -3

Q18. DIRECTIONS for questions 18 and 19: Type in your answer in the input box provided below the question.

A cuboid whose base is a square of side 4 inches and height 6 inches is placed in a cylinder whose radius is $2\sqrt{2}$ inches and height is 6 inches. The

gap between the cylinder and cuboid is filled with n spheres of radius 0.4 inches. What could be the maximum value of n ?

Q19. DIRECTIONS for questions 18 and 19: Type in your answer in the input box provided below the question.
Consider the expression

$$\left(1 - \frac{1}{4}\right)\left(1 - \frac{1}{9}\right)\left(1 - \frac{1}{16}\right) \dots \left(1 - \frac{1}{n^2}\right)$$

The largest value of n for which the value of the expression is not less than 0.51 is

Q20. DIRECTIONS for questions 20 to 22: Select the correct alternative from the given choices.

If $\log_4(3)$, $\log_4(3x - 2)$ and $\log_4\left(3^x - \frac{8}{3}\right)$ are in arithmetic progression, then the value of x could be

- a) 1.
- b) 2.
- c) 3.
- d) 4.

Q21. DIRECTIONS for questions 20 to 22: Select the correct alternative from the given choices.

How many nine-digit numbers exist such that when a single digit is crossed out, a given telephone number, comprising eight digits is obtained?

- a) 90
- b) 89
- c) 72
- d) 99

Q22. DIRECTIONS for questions 20 to 22: Select the correct alternative from the given choices.

Bakul and Manohar start from two points P and Q respectively on a river and head towards each other. Had they been travelling in still water, they would have met at a point R, which is twice as distant from P as it is from Q. If Bakul had been travelling along the current and Manohar against it, then they

would have met in 24 minutes. Find the time they would take to meet, if Bakul were to travel against the current and Manohar along the current.

- a) 12 minutes
- b) 24 minutes
- c) 36 minutes
- d) 48 minutes

DIRECTIONS for questions 23 and 24: Answer the questions on the basis of the information given below.

A jar of capacity 120 ounces is filled with milk to the brim. On the first day x ounces of milk is replaced with water. Then on the second day $(120 - x)$ ounces of milk is replaced with water. Again on the third day x ounces of milk is replaced with water followed by replacement of $(120 - x)$ ounces on the fourth day and so on, i.e., on the odd days (x) ounces are replaced with water where as on the even days $(120 - x)$ ounces are replaced with water.

Q23. DIRECTIONS for question 23: Select the correct alternative from the given choices.

Find the maximum possible concentration of milk in the jar at the end of day 2.

- a) 6.25%
- b) 12.5%
- c) **25%**
- d) 50%

Q24. DIRECTIONS for question 24: Type in your answer in the input box provided below the question.

If the concentration of milk in the jar at the end of day five is maximum, then find the value of x (in ounces).

Q25. DIRECTIONS for questions 25 to 27: Select the correct alternative from the given choices.

On planet OZ the people use a certain number system to the base n ($n > 2$) and the monetary unit of the planet is Ozon. Gork, a resident of the planet, one day received twice his daily wage because the digits of his wage (in Ozons), which was a two-digit number, were accidentally reversed. If the value of n is the least possible, then what is the decimal representation of the excess wage (in Ozons) paid to Gork on that day?

- a) 8
- b) **26**

c) 14

d) 16

Q26. DIRECTIONS for questions 25 to 27: Select the correct alternative from the given choices.

The equation $\ell x + my + n = 0$ represents a family of straight lines passing through a fixed point R. If 1 and -2 are two of the three roots of the equation $\ell x^3 + mx^2 + nx + p = 0$, what are the coordinates of the point R?

a) (1, -2)

b) (-2, 1)

c) (3, 1)

d) (3, -1)

Q27. DIRECTIONS for questions 25 to 27: Select the correct alternative from the given choices.

A trapezium DECB is formed by folding triangle ABC such that vertex A lies on side BC and the fold line is DE. If $BC = 10\sqrt{5}$ and area of the trapezium DEBC is 45 square units, find the area of triangle ABC.

a) $135\sqrt{5}$ b) $75\sqrt{5}$

c) 90

d) 60

Q28. DIRECTIONS for questions 28 and 29: Type in your answer in the input box provided below the question.

Consider a number Y defined as Y = The sum of the products of all the possible pairs of numbers from a set of n odd numbers (not necessarily distinct).

Which of the following statements is/are necessarily true?

I. Y is even.

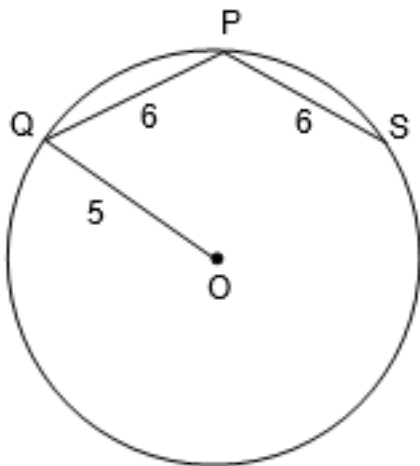
II. Y is odd, when n is odd.III. Y is even, when n is a multiple of four.IV. Y is odd, when $(n + 1)$ is a multiple of four.

Enter your answer in the input box below by indicating each statement that is necessarily true with a '1' and each statement that is not necessarily true with a '2'. Indicate your response in the same order in which the statements appear. For example, if you think that only statements II and IV are necessarily true, enter your answer as '2121'.

Q29.

DIRECTIONS for questions 28 and 29: Type in your answer in the input box provided below the question. A pipe, P, can fill an empty tank in 12 minutes and another pipe, Q, can empty the same tank completely in 20 minutes. Pipe P closes automatically when the water level in the tank reaches $\frac{3}{4}$ th of the height of the tank and simultaneously the pipe Q opens and operates until the water level falls to exactly $\frac{1}{4}$ th of the height of the tank, after which Q closes and simultaneously P opens. If the pipe P is opened first and this process continues indefinitely, what fraction of the tank is filled after exactly one hour? (assume that the tank is initially empty)
Enter your answer rounded off and accurate upto two decimal places.

Q30. DIRECTIONS for questions 30 and 31: Select the correct alternative from the given choices.



The chords PQ and PS of a circle of radius 5 cm, measure 6 cm each. Find the length of the chord QS.

- a) 9.6 cm
- b) 4.8 cm
- c) 7.2 cm
- d) $4\sqrt{2}$ cm

Q31. DIRECTIONS for questions 30 and 31: Select the correct alternative from the given choices.

At the farewell party of a certain class, having n students, if each student of the class gave one gift each to exactly k other students of the class, the number of students in the class who received at least one gift each cannot be less than

- a) k .
- b) $k + 1$.

- c) $n - k$.
- d) $n - 1$.

DIRECTIONS for questions 32 and 33: Answer the questions on the basis of the information given below.

A and B start swimming simultaneously from two opposite ends, P and Q, of a swimming pool respectively. Each of them swims to the opposite end and then immediately turns back and repeats the process continually. The length of the swimming pool is 100 m and the respective speeds of A and B are 30 m/minute and 70 m/minute.

Q32. DIRECTIONS for questions 32 and 33: Select the correct alternative from the given choices.

Where will A and B meet for the second time?

- a) 10 m from P
- b) 15 m from P
- c) 25 m from Q
- d) 10 m from Q

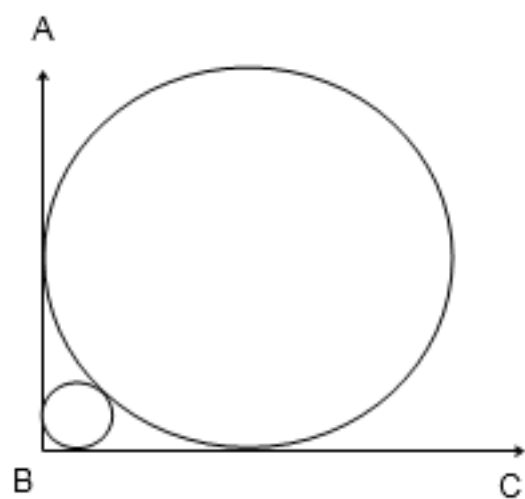
Q33. DIRECTIONS for questions 32 and 33: Select the correct alternative from the given choices.

How much time after they start will they meet for the third time?

- a) 4 minutes
- b) 5 minutes
- c) 2 minutes
- d) 3 minutes

Q34. DIRECTIONS for question 34: Select the correct alternative from the given choices.

In the figure below, R is the radius of the bigger circle and r is the radius of the smaller circle. Find $r : R$, if $\angle ABC = 90^\circ$.



- a) $3 - 2\sqrt{2}$
- b) $4 - 2\sqrt{2}$
- c) $5 - 2\sqrt{2}$
- d) $5 - 3\sqrt{2}$