

## VARC

**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.

Paul Romer made his name modelling the growth of economies. His latest contribution to economics includes a “meta-model” of himself. “For more than three decades,” he alleges, “macroeconomics has gone backwards.” Why, his meta-model asks, is he one of the few willing to say so?

What Mr Romer says is unusually brutal. After over 30 years of “intellectual regress”, the study of booms and busts now reminds him of a lipstick-wearing pig. The field is dominated by a tight-knit congregation unified by deference to authority, not facts. Their revered leaders rely on high-handed assumptions to make their models work. But they do not admit to these inadequacies, pretending their naked assumptions are clothed in fine theoretical robes. ...

The old scientific problem, i.e., identification, besets even the simplest blackboard model of demand and supply, represented in textbooks by two intersecting diagonal lines, one sloping upwards (because sellers supply more when prices are high), the other downwards (because buyers demand more when prices are low). But how do we know a curve’s true slope and position? The lines themselves are unobservable. One can only note their intersections, recording each combination of price and quantity, perhaps as dots on a graph. If supply (and only supply) moved randomly, the resulting dots would trace out the demand curve: they would show how much demand expands and contracts when prices fall and rise, thanks to variations in supply. The curve’s slope and position would be “identified”.

But that is not how the world typically works. Instead, the pattern of dots will probably reflect shifts in demand as well as supply. That makes it impossible to identify either curve from the dots alone. This identification problem is particularly severe in macroeconomics, which has a lot of moving parts, many of which move each other. To estimate one popular macroeconomic model, an economist must pin down the equivalent of 49 “slopes”, Mr Romer points out.

Solving this problem is fiendishly difficult. Economists can hunt for scraps of relevant microeconomic evidence, such as household surveys. They can wait for natural experiments. Or they can make flat assumptions: presuming, for example, that the monsoon affects food supply but not demand.

Alternatively, they can rely on theory. Through logical reasoning they can try to deduce some law of markets or behaviour (perhaps that pay reflects productivity or that markets clear). Whatever the merit of these deductions, they make it far easier to draw lines through dots.

Indeed, many economists cling to stark, crude theories about market efficiency or rational behaviour precisely because it helps them pin down all those slopes and other parameters. If they did not care about these defining

numbers, they could afford to entertain messy, finespun beliefs about human nature and market institutions. But then they would be called sociologists. The pressures of identification can thus lure macroeconomists into bad or narrow theories. But Mr Romer also accuses them of something worse: hypocrisy and obfuscation. They purport to solve the identification problem by relying on deep theory, but in fact resort to shallow assumptions. Indeed, economists used humbly to admit they had pinned down their models by assuming one thing or another. Now, they do so by theorising one thing or another. But these deductive proofs often rely on earlier, questionable assumptions. In between the assumptions and the proof is enough mathematical “blah blah blah” (as Mr Romer puts it) to hide the assumptions’ full role.

Mr Romer says these analytical habits flow from the top. If Nobel laureates indulge in them, others will follow suit. Even sceptics clever enough to spot what is going on will keep quiet.

But will they? Several prominent economists have voiced similar doubts about the field. One paper Mr Romer cites is entitled “back to square one”; another complains about “unappealing assumptions”. A third, uncited, even argues that macroeconomics has cultivated a “pretence of knowledge”: it acts as if it is better than it is. These contributions back up Mr Romer’s complaints about economics, but not his gibes about deferential economists.

In his meta-model of himself, Mr Romer explains that because he is now a practitioner, with no need to add to his research credentials, he faces an unusually low price of dissent. Other leading critics are also professionally secure. But their continued interest in research proves that you do not have to leave the ivory tower to criticise it. Mr Romer’s meta-model of himself can explain what he says, but not how he says it. ...

**Q1.** According to the passage, why is Mr. Paul Romer reminded of a “lipstick-wearing pig”?

- a) Economists have loosely knotted or superficial theories which are based on unreliable assumptions.
- b) Economists have perfectly constructed theories that may give rise to other superficial theories.
- c) Although the theories of the economists appear beautifully decorated with imperfect assumptions, they are in reality based on facts.
- d) Theories of disciplines other than economics are characterized by vague assumptions and distorted facts and this in turn will affect the theories of the economists.

**Q2.** According to the passage, when would economists be called sociologists?

- a) When they consider the pattern of dots of supply as well as demand and when they are diligent enough to pin down the equivalent of 49 “slopes” on a demand-supply curve.
- b) When they consider external market forces alone.
- c) When they entertain vague assumptions and do not focus on defining numbers or parameters at the intersection of curves.
- d) When they pay attention to the realities emerging from a consideration of the human aspects of things and not just theoretical problems.

**Q3.** What does the statement “You do not have to leave the ivory tower to criticize it.” (last para) imply?

- a) You have to sever all ties with the institution under question in order to criticize it as criticizing it while being a part of it is not ethically viable.
- b) One can voice one’s support or dissent while being a part of the group or practice.
- c) The author is raising his voice in internal economic circles but is not vociferously criticizing unsound economic assumptions publicly.
- d) The author wishes to stress that critics should begin their economic analysis with empirical evidence rather than ivory-tower theorizing.

**Q4.** According to the author, what does the pattern of dots in a typical economics based graph of price vs quantity reflects?

- a) The pattern of dots probably represents supply.
- b) The pattern of dots probably represents demand.
- c) The pattern of dots probably represents consumer spending pattern.
- d) The pattern of dots probably reflects shifts in demand as well as supply.

**Q5.** What are the different ways by which economists can successfully identify slopes/ curves (para 5)?

Identify all that apply and enter the corresponding number in the input box given below. You must enter your answer in increasing order only. For example, if you think (1) and (2) apply, then enter 12 (but not 21) in the input box.

1. Economists can rummage for fragments of relevant microeconomic evidence, such as household surveys.
2. Economists can depend on natural experiments.
3. Economists can make absolute assumptions.
4. Economists can rely on theory and ratiocinate laws of markets or behaviour.

5. Economists do not have to focus on the moving parts in a macroeconomics graph.

**Q6.** “In between the assumptions and the proof is enough mathematical “blah blah blah” (as Mr Romer puts it) to hide the assumptions’ full role.” This statement implies that

- a) the role of the assumptions cannot be completely deciphered because there are logical connectives built up on these assumptions in order to prove economic theories.
- b) economists profess to solve the identification problem by relying on theory but instead rely on unwarranted assumptions.
- c) macroeconomic theories contribute to hypocrisy and obfuscation because they are only theories and do not have practical applications.
- d) an arbitrary assumption in one part of the model can affect everything else in it.

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

For Hegel, the contradictions that drive history exist first of all in the realm of human consciousness, i.e. on the level of ideas – in the sense of large unifying world views that might best be understood under the rubric of ideology. Ideology in this sense is not restricted to the secular and explicit political doctrines we usually associate with the term, but can include religion, culture, and the complex of moral values underlying any society as well.

Hegel's view of the relationship between the ideal and the real or material worlds was an extremely complicated one, beginning with the fact that for him the distinction between the two was only apparent. He did not believe that the real world conformed or could be made to conform to ideological preconceptions of philosophy professors in any simpleminded way, or that the "material" world could not impinge on the ideal. While Hegel's writing and thinking could

be **stopped by a bullet from the material world, the hand on the trigger of the gun was motivated in turn by the ideas of liberty and equality** that had driven the French Revolution.

For Hegel, all human behavior in the material world, and hence all human history, is rooted in a prior state of consciousness. This consciousness may not be explicit and self-aware, as are modern political doctrines, but may rather take the form of religion or simple cultural or moral habits. And yet this realm of consciousness in the long run necessarily becomes manifest in the material world, indeed creates the material world in its own image.

Consciousness is cause and not effect, and can develop autonomously from the material world; hence the real subtext underlying the apparent jumble of current events is the history of ideology.

Hegel's idealism has fared poorly at the hands of later thinkers. Marx reversed the priority of the real and the ideal completely, relegating the entire realm of consciousness – religion, art, culture, philosophy itself – to a "superstructure" that was determined entirely by the prevailing material mode of production. Yet another unfortunate legacy of Marxism is our tendency to retreat into materialist or utilitarian explanations of political or historical phenomena, and our disinclination to believe in the autonomous power of ideas. Paul Kennedy ascribed the decline of great powers to simple economic overextension. Obviously, this is true on some level: an empire whose economy is barely above the level of subsistence cannot bankrupt its treasury indefinitely. But whether a highly productive modern industrial society chooses to spend 3 or 7 percent of its GNP on defence rather than consumption is entirely a matter of that society's political priorities, which are in turn determined in the realm of consciousness.

The materialist bias of modern thought is characteristic not only of people on the Left who may be sympathetic to Marxism, but of many passionate anti-Marxists as well. Indeed, there is on the Right what one might label the Wall Street Journal school of deterministic materialism that discounts the importance of ideology and culture and sees man as essentially a rational, profit-maximizing individual. But one small example will illustrate the problematic character of such materialist views.

Max Weber begins his famous

book, *The Protestant Ethic and the Spirit of Capitalism*, by noting the different economic performance of Protestant and Catholic communities throughout Europe and America, summed up in the proverb that Protestants eat well while Catholics sleep well. Weber noted that in many traditional peasant communities, raising the piece-work rate had the opposite effect of *lowering* labor productivity: at the higher rate, a peasant accustomed to earning two and one-half marks per day found he could earn the same amount by working less, and did so because he valued leisure more than income. The choices of leisure over income, or of the militaristic life of the Spartan hoplite over the wealth of the Athenian trader, or even the ascetic life of the early capitalist entrepreneur over that of a traditional leisured aristocrat, cannot possibly be explained by the impersonal working of material forces, but come preeminently out of the sphere of consciousness. A central theme of Weber's work was to prove that contrary to Marx, the material mode of production, far from being the "base," was itself a "superstructure" with roots in religion and culture, and that to understand the emergence of modern capitalism and the profit motive one had to study their antecedents in the realm of the spirit.

**Q7.** According to the Hegelian view, the roots of all ideology lie in

- a) Religious doctrines.
- b) Cultural norms.
- c) Moral habits.
- d) Consciousness.

**Q8.** According to the passage, which of the following examples of decision choices can be said to be determined in the realm of consciousness? Identify all that apply and enter the corresponding number in the input box given below. You must enter your answer in increasing order only. For example, if you think (1) and (2) apply, then enter 12 (but not 21) in the input box.

- 1. Personal choice of leisure over income.
- 2. A country's choice to spend its money on defence instead of on consumption.
- 3. Choice of enlisting in the army instead of being a trader.
- 4. Choice of a Protestant to eat well and that of a Catholic to sleep well.

**Q9.** Which of the following correctly mentions the viewpoint(s) of Hegel, Karl Marx and Max Weber as discussed in the passage?

a) Hegel – Ideal world prevails over the material world.  
 Marx – Political and historical phenomena can be explained by the autonomous power of ideas and not by materialism or utilitarianism alone.  
 Weber – The material world is the base while religion and culture formed the superstructure.

b) Hegel – Material world prevails over the ideal world.  
 Marx – The material world is the base and consciousness is relegated to the superstructure.  
 Weber – The material mode of production is the base and consciousness needs to be included in the superstructure.

c) Hegel – All human behavior in the material world is rooted in consciousness.  
 Marx – The materialistic world determines the ideal world or superstructure.



Weber – The materialistic world is the superstructure and its base is in the conscious world.

d) Hegel and Weber were both opposed to Karl Marx who had reversed the priority of the real and the ideal worlds.

**Q10.** It can be inferred from the passage that people on the Right would

- a) subscribe to materialism, like the people on the Left.
- b) advocate the importance of consciousness, unlike the people on the Left.
- c) support the materialist bias of modern thought, as opposed to the people on the Left.
- d) endorse the importance of ideology and culture, just like the people on the Left.

**Q11.** What is the primary concern of the author in the passage?

- a) To dismiss the doctrine of idealism under the realm of materialism as the prevailing material mode of production in a given society controls its collective consciousness.
- b) To stress the deterministic role played by consciousness in shaping society.
- c) To demonstrate the complexity of relating the philosophy of the ideal world to that of the real world.
- d) To prove that societal consciousness assumes the form of religious, cultural and moral attributes.

**Q12.** All of the following can be understood from the passage EXCEPT?

- a) At least one materialist theory posits man as a rational, profit-maximising individual.
- b) The boldfaced part of the text implies that though Hegel's ideas could be stopped by materialist views, it was consciousness that ironically determined and motivated the material world.
- c) Paul Kennedy believes that empires made a mistake in considering economic activity to be the sole arbiter of their continued existence.
- d) Hegel believed that the material world perfectly adjusted to ideological concepts and the material world could not infringe on the conscious world that prevailed over it.

**DIRECTIONS** for questions 13 to 15: The passage given below is followed by a set of three questions. Choose the best answer to each question.

THE Kindai University Fisheries Laboratory might not be the most enticing name for a fancy restaurant, but its customers are undeterred. On weekdays they line up in Ginza, a ritzy shopping district in Tokyo, to sample the fish. Diners appear satisfied with the quality of the *sashimi*, including the juicy slices of bluefin tuna, one of the most prized species of all. But the tuna in the restaurant differs from that available elsewhere in one crucial respect: it was not caught in the wild, but farmed. ...

While demand for bluefin tuna is growing rapidly, Pacific bluefin stocks are down by 97% from their peak in the 1960s. .... Japan did agree to halve its catch of juvenile bluefin (fish too young to reproduce) in the northern Pacific last year. But it has resisted more stringent measures, including the complete ban on bluefin fishing advocated by America, among other countries. The Japanese government says that would not be warranted unless stocks drop for three years in a row – a hurdle that most conservationists consider too high.

Aquaculture might seem to offer a way out of this impasse. But the bluefin is hard to breed in captivity. In the open sea, it can roam for thousands of miles and grow to over 400kg. It is highly sensitive to light, temperature and noise. Early attempts to farm it fizzled, but Kindai University persisted long after an initial research grant from the government ran out in the early 1970s. In 2002, funding itself from sales of other fish, it managed to rear adult tuna from eggs for the first time, rather than simply fattening up juveniles caught at sea. Now the chefs in Ginza can have a tuna zapped with an electric prod and yanked out of the university's tanks on demand.

However, just 1% of the bluefin the university rears survive to adulthood.

"We expect this to improve but it will take time," predicts Shukei Masuma, the director of its Aquaculture Research Institute. Worse, the tuna gobble up lots of wild mackerel and squid. Scientists have experimented with soy-based meal and other alternatives. A company in south-western Japan said this month that it had managed to raise tuna using feed made of fishmeal, but it is costly and the fish are slow to thrive. Using wild fish for feed makes bluefin farming unsustainable, says Atsushi Ishii of Tohoku University. He sees aquaculture as a distraction from the thorny task of managing fisheries properly.

This debate is slowly seeping into the public consciousness. In 2014, the media made much of the decision of the International Union for Conservation of Nature, a conservation body, to put bluefin tuna on its "red list" of species threatened with extinction. Newspaper editorials have begun to criticise the government's stance. The popularity of Kindai's restaurant suggests that consumers are becoming aware of the problem too. But in the end, says Naotoshi Yamamoto of Nagasaki University, they may just have to eat fewer fish.



**Q13.** According to the passage, why are customers undeterred by the name of the restaurant?

- a) The restaurant is the front end of the laboratory.
- b) People working in the laboratory also worked as chefs in restaurants in Ginza.
- c) The laboratory provided the cherished farmed bluefin tuna required by the restaurant in Ginza.
- d) The laboratory supplied bluefin tuna illegally even though the Japanese government banned the fishing of the same.

**Q14.** According to the passage, what is Atsushi Ishii's view on aquaculture?

- a) Aquaculture is the sole path for the survival of the tasty bluefin tuna as it may not be possible to restore the balance once we overexploit a resource.
- b) Atsushi Ishii supports the Japanese government for not completely banning the fishing of juvenile bluefin tuna, as they now grow to a large size and breed more often.
- c) He believes that the Japanese government should not be at loggerheads with the Japanese conservationists and the American government who advocate more stringent measures with reference to bluefin tuna fishing.
- d) He is sceptical of the perceived benefits of aquaculture and he feels that the Japanese should worry more about fishing methodologies employed and the overall administration of fisheries.

**Q15.** What does Naotoshi Yamamoto mean when he says that "But in the end, they may just have to eat fewer fish" (last para)?

- a) A successful application of scientific developments and an effective implementation of conservation policies notwithstanding, the Japanese will have to sacrifice their penchant for bluefin tuna.
- b) As the bluefin tuna is on the list of endangered species, consumers may have no option but to reduce consumption.
- c) As the Japanese government has reduced its catch of juvenile bluefin tuna by half, consumers may have no option but to reduce consumption to meet the supply.
- d) Naotoshi laments the step-motherly treatment meted out to bluefin tuna by conservationists and believes that it is upto the public who are now aware of the problem to eat less bluefin tuna fish.

**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.

Politics, in a sense, has always been a con game.

The American voter, insisting upon his belief in a higher order, clings to his religion, which promises another, better life; and defends passionately the illusion that the men he chooses to lead him are of finer nature than he.

It has been traditional that the successful politician honor this illusion. To succeed today, he must embellish it. Particularly if he wants to be President.

“Potential presidents are measured against an ideal that’s a combination of leading man, God, father, hero, pope, king, with maybe just a touch of the avenging Furies thrown in,” an adviser to Richard Nixon wrote in a memorandum late in 1967. Then, perhaps, aware that Nixon qualified only as father, he discussed improvements that would have to be made- not upon Nixon himself, but upon the image of him which was received by the voter. That there is a difference between the individual and his image is human nature. Or American nature, at least. That the difference is exaggerated and exploited electronically is the reason for this book.

Advertising, in many ways, is a con game, too. Human beings do not need new automobiles every third year; a color television set brings little enrichment of the human experience; a higher or lower hemline no expansion of consciousness, no increase in the capacity to love.

It is not surprising then, that politicians and advertising men should have discovered one another. And, once they recognized that the citizen did not so much vote for a candidate as make a psychological purchase of him, not surprising that they began to work together.

**Q16.** Why does the author call politics a con game?

- a) Politicians deceive the voters with empty promises and false hopes.
- b) The politician becomes the person that the voter expects him to be only after winning the elections.
- c) The voter is made to believe in an illusion that the person that he votes for is a better person than himself.
- d) Politics is closely allied with advertising, which is a con game.

**Q17.** The author states that it is not surprising that politicians and advertising “began to work together” because

- a) advertising and politics have the same objective, i.e., deceiving the voters/public.
- b) politicians are willing to splurge on advertising their virtues.
- c) advertising helps in publicizing the virtues and vices of the politicians.
- d) advertising helps in creating that which the politicians need – a false image in the minds of the voters.

**Q18.** Which of the following can be inferred about successful politicians?

- a) In the past, only those who were better than voters became politicians, but now, that is not the case.
- b) In the past, successful politicians tried to become the persons that the voters expected them to be but now, successful politicians only try to present themselves as those the voters should expect.
- c) The ideal successful politician would be a leading man, God, father, hero pope, king all rolled into one but, in actuality, the successful politician is merely a charlatan.
- d) In the past, a successful politician did not advertise himself, but now, they do.

**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.

American scholarship has always reflected the special, indeed central, part played by immigrants in the history of the United States. Since the first encounter between Amerindians (American Indian peoples) and the Spanish conquistadors, in the southern part of the continent (during the late fifteenth century), to the large-scale white settlement, the slave trade and massive population movements of the eighteenth, and particularly the nineteenth centuries, American culture and ethnicity have been drawn from the four corners of the globe. The opening lines of the historian's Oscar Handlin's classic

work, *The Uprooted: The Epic History of the Great Migrations that Made the American People* (1977 edn.), sum up the importance of this dimension of the history of the USA: 'Once I thought to write a history of the immigrants in America. Then I discovered that the immigrants were American history.' At various times, the USA has been called the 'melting pot' (immigrants blended into a new race of people) and the 'sugar bowl' (individual identities added richness, texture, variety and colour to the overall ethnic complexion) of the world.

The identity of most countries, like that of Britain, has always allowed room for the regional and local dimension of national life. At the same time, Europe's regions, small nations and languages look to the EU to protect and advance their precious cultural inheritance or what can be defined thus. Support for the small ethnic groups of Europe, from the Scottish Highlands, to Wales, to Catalonia, has resulted in increased funding opportunities for cultural activities, including native-tongue radio and television broadcasting and historical research.

The history of Britain over the past century or so has encouraged the study of ethnicity. Why? The primary reason is mass immigration. Since the 1840s, when Irish settlements in Britain reached major proportions due to the Great

Famine (1845-52) the scale, pace and diversity of immigration have been considerable. In the later 19th century, Irish settlers were matched by the arrival of Jews from eastern Europe, including those fleeing the Tsarist pogroms of the 1890s. In the late 20th century, these predominantly white movements were surpassed by what was dubbed 'New Commonwealth' immigration: settlers originating in Africa, the Indian subcontinent and West Indies. It would be misleading to see immigration as a purely modern development. In the early 18th century Defoe described England as a 'Mongrel Nation'. Recent history requires that scholars and students alike come to terms with the variety of our cultural and ethnic heritage. The idea of one history for one people (implicitly a white history for white people) has gone. Ethnicity, as much as class or nation, must be a part of the historian's project.

Britain is not a country largely made up of immigrants (unlike the USA) – not, that is, unless we go back to the first millennium and try to quantify the tribal movements across the Channel and the North and Irish seas, which dominate the demographic and thus cultural history of the period between the falls of Rome and the Battle of Hastings. Study of our clearly ethnically mixed recent history has been limited next to the American example. In fact, more words have been written on any one ethnic group in the USA – say Italian or Irish – than has been given over to all settlers in Britain since the 1840s.

The term 'ethnicity' questions dominant and received wisdoms. In a recent study, *German immigrants in 19th century Britain* (1995), Panikos Panayi trenchantly described it as the way in which members of a national, racial or religious grouping maintain an identity with people of the same community in a variety of official and unofficial ways. To talk of ethnic diversity in the United Kingdom, where ruling elites pride themselves on a unitary vision of one people, raises fear and excitement. The idea of a multicultural national curriculum is the subject of intense debate. So what is ethnicity? Dale T. Knobel,

in *Paddy and the Republic: Ethnicity and Nationality in Antebellum America* (1986), writes of ethnicity as 'socio-psychological rather than anthropological', taking ethnicity to be subjective and ascribed rather than objective and ideal.

There are tensions in defining ethnicity. Ethnicity, and ethnic group, like so many less scholarly terms of human identification, occupy one side of a duality, tacit or otherwise, of familiarity and strangeness. At the same time as ethnicity is a positive concept, concerned with the mutualistic identification of, say, migrant groups, it is also negative, because as much as being the creation of the ethnic group, it is also manufactured from without. In the case of, say, Jewish settlers in Britain, this means ethnicity is both the identity conferred by the group and the stereotypes imposed by the British or by wider European or Christian ideas of race and history.

**Q19.** Why does the passage indicate that England was described by Defoe as a ‘Mongrel Nation’ (para 3)?

- a) Britain has always been a collection of ethnically composite groups.
- b) There are no races but the human race in Britain.
- c) Like America which was called the ‘melting pot’ and the ‘sugar bowl’ of the world, Britain also needed to be described by a similar term.
- d) Britain’s cultural and ethnic heritage has been surpassed by the modern idea of a white history for white people.

**Q20.** What can be inferred from the historian’s comment given in para 1 of the passage?

- a) We are unable to predict the future of immigrants to America because we are ignorant of their past.
- b) Immigration is an abidingly important, maybe the most important, aspect of America’s past and no American history would be complete without its study.
- c) The reflective glow of Handlin's words point to the fact that there are more immigrants than Americans in America.
- d) Immigration to America has been a misunderstood process and immigrants have been neglected, marginalized and no longer welcome in present day America.

**Q21.** Why, according to the author, has the idea of “one history for one people (implicitly a white history for white people)” in Britain been displaced?

- a) Less words have been written on all settlers in Britain since the 1840s than on any single ethnic group in the USA.
- b) The Great Famine (1845-52) affected others as well and not just the Whites, so there was now a history that was common to all.
- c) Immigration has resulted in the expansion of Britain’s cultural and ethnic heritage.
- d) Support for the small ethnic groups of Europe resulted in increased funding opportunities for cultural activities.

**Q22.** Which of the following, if true, would strengthen the reasoning behind Dale T. Knobel’s classification of ethnicity as ‘socio-psychological rather than anthropological’?

- a) Ethno-racial groups pursue social inclusion, identifying and engaging with community, irrespective of formal status.

- b) The socio-mobility patterns of people are a better deciding factor in community formation rather than human identification factors and the need to identify with people of a community.
- c) Immigrants are supposed to blend into a new race of people and add texture, variety and colour to the republic's ethnic complexion, thereby enabling a unitary vision for a common people.
- d) Ethnic factors are natural laws to human kind's spatial development and cultural evolution and assimilation of new immigrant members requires the forced abandonment of their authentic national roots.

**Q23.** When the author says, "Ethnicity, as much as class or nation, must be a part of the historian's project." in para 3,

- a) he highlights the importance of knowing immigration patterns in understanding the evolution and psyche of a nation.
- b) he emphasizes that ethnicity should be considered as the only conceptual tool while analyzing the history of a nation.
- c) he implies that there cannot be a common history of a nation as manifold histories of its immigrant groups must be taken into account.
- d) he asserts that nations should have a strong tradition of promoting ethnicity and national diversity.

**Q24.** According to the passage, the positive and negative characteristics of ethnicity include:

- a) the fact that immigrants are at once welcome and unwelcome, they are woven into the economic fabric of the nation, but as labour that is cheap and disposable.
- b) a socio-psychological as well as an anthropological identity, an inbuilt duality of strangeness as well as familiarity, a tendency for ethnicity to be objective and ideal as well as subjective and ascribed.
- c) the mobilization of "cultural citizenship" by subordinate ethnic groups which contributes to a multicultural society, and the lack of an overall national culture combined with the weakening of white hegemony.
- d) a self-identification process by the ethnic group itself and the conventionalized images imposed on it from without by the preponderant community.



**Q25. DIRECTIONS** *for questions 25 to 29:* Five sentences (labelled 1, 2, 3, 4, 5) are given in the following question. Four of them can be put together to form a meaningful and coherent short paragraph and **one sentence is the odd one out**. Decide on the proper logical order for the sentences and key in the sequence of **four** numbers as your answer, even as you omit the contextually unrelated sentence.

1. Bjorn Borg beat John McEnroe for the 1980 Wimbledon title.
2. But the term is heard most often after athletic contests referring to the losing side of a close result against an opponent perceived as superior.
3. Still, the term is often rejected by athletes and coaches, perhaps because it may be a misnomer.
4. The term 'moral victory' is not exclusive to sports – it has been used to describe everything from Al Gore's disputed defeat in the presidential election of 2000 to the battle at the Alamo in 1836.
5. The boxer Joe Frazier's reputation was enhanced in 1975 when he lost his heavyweight title bout to the champion Muhammad Ali in the Thrilla in Manila.

**Q26. DIRECTIONS** *for questions 25 to 29:* Five sentences (labelled 1, 2, 3, 4, 5) are given in the following question. Four of them can be put together to form a meaningful and coherent short paragraph and **one sentence is the odd one out**. Decide on the proper logical order for the sentences and key in the sequence of **four** numbers as your answer, even as you omit the contextually unrelated sentence.

1. For example, when a child comes to them with a problem, their paradigm will be, "Here is a great opportunity for me to really help my child and to invest in our relationship."
2. Creating the unity necessary to run an effective business or a family or a marriage requires great personal strength and courage.
3. When parents see their children's problems as opportunities to build the relationship instead of as negative, burdensome irritations, it totally changes the nature of parent-child interaction.
4. Many interactions change from transactional to transformational, and strong bonds of trust are created as children sense the value parents give to them as individuals.
5. Parents become more willing, even excited, about deeply understanding and helping their children.

**Q27. DIRECTIONS** *for questions 25 to 29:* Five sentences (labelled 1, 2, 3, 4, 5) are given in the following question. Four of them can be put together to form a meaningful and coherent short paragraph and **one sentence is the odd one out**. Decide on the proper logical order for the sentences and key in the sequence of **four** numbers as your answer, even as you omit the contextually unrelated sentence.

1. But their interest was in the present day. Was it possible to find remnants of the culture of honour in the modern era?
2. They knew what happened in places like Harlan in the nineteenth century was a product of patterns laid down in the English borderlands centuries before.
3. So they decided to gather together a group of young men and insult them, with a view to figure out the insult that would go to the heart of a 18 year old's brain.
4. It's just the beginning, though, because upon closer examination, cultural legacies turn out to be even stranger and more powerful than that.
5. In the early 1990s, two psychologists at the University of Michigan – Dov Cohen and Richard Nisbett – decided to conduct an experiment on the culture of honour.

**Q28. DIRECTIONS** *for questions 25 to 29:* Five sentences (labelled 1, 2, 3, 4, 5) are given in the following question. Four of them can be put together to form a meaningful and coherent short paragraph and **one sentence is the odd one out**. Decide on the proper logical order for the sentences and key in the sequence of **four** numbers as your answer, even as you omit the contextually unrelated sentence.

1. And the official claim is that in the 29 years the prison operated, from 1934 to 1963, no prisoner successfully escaped, though many attempted and were caught or killed in the act.
2. Alcatraz Federal Penitentiary was built in 1860 as a military citadel and prison and was once among the most dreaded prisons in America.
3. The original builders of the prison were sure that the bay was the best guarantee that nobody would successfully escape.
4. It is a veritable fortress, perched on a rocky Island in San Francisco Bay and it is surrounded on all sides by ice-cold water and rimmed in jagged, dangerous rocks.
5. Investigators have collated revealing clues to try and reveal the secrets behind the impossible escape.

**Q29. DIRECTIONS** *for questions 25 to 29:* Five sentences (labelled 1, 2, 3, 4, 5) are given in the following question. Four of them can be put together to form a meaningful and coherent short paragraph and **one sentence is the odd one out**. Decide on the proper logical order for the sentences and key in the sequence of **four** numbers as your answer, even as you omit the contextually unrelated sentence.

1. Mitigated speech refers to any attempt to downplay or sugarcoat the meaning of what is being said.
2. In a situation like that, mitigation is entirely appropriate; however mitigated speech in other situations, like that in a cockpit of a commercial airliner on a stormy night can be detrimental.
3. You mitigate as you tell the boss, "Don't bother, if it's too much trouble, but if you have a chance to look at this over the weekend, it would be wonderful."
4. We mitigate when we're being polite, or when we're ashamed or embarrassed, or when we're being deferential to authority.
5. But historically, crashes have been far more likely to happen when the captain is in the flying seat.

**Q30. DIRECTIONS** *for questions 30 to 32:* 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 corresponding to the sentence(s) or fragments 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. Several hundred people gathered at Canada's national war memorial at sunset on Saturday to mark the 100th anniversary
2. of the Battle of Vimy Ridge, a fierce World War I fight in northern France that large looms in Canada's national identity.
3. For a country not generally given to national chest thumping the battle at Vimy where Canadian troops overtook German lines
4. has been cast by many Canadians for a pivotal moment in their nation's formation. The crowd stood largely silent for the opening of an overnight vigil,

5. listening to choral music and placing candles on the steps of the monument quietly for each of the Canadians who died.

**Q31. DIRECTIONS** *for questions 30 to 32:* 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 corresponding to the sentence(s) or fragments 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. Tottori, a remote outpost on the west coast of Japan, has sand in abundance. The golden sand dunes undulating are so majestic
2. as they have been turned into a national park. For the past decade, sand sculpture artists have gathered here every year for two weeks
3. at only the world's indoor sand museum to mount an exhibit of intricate tableaux improbably, all crafted from about 3,000 tons of sand.
4. This year, 19 artists have sculpt scenes on the theme of the United States. Working nine hours a day, the artists built,
5. among other things, Mount Rushmore, the New York skyline, scenes from the Gold Rush and the signing of the Declaration of Independence.

**Q32. DIRECTIONS** *for questions 30 to 32:* 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 corresponding to the sentence(s) or fragments 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. Damien Hirst is staring in the eyes of a jade Buddha, its face seemingly abraded by the vestiges of time.
2. After years of uncharacteristic silence, this artist known for his love-it-or-hate-it artworks are orchestrating his own comeback.
3. On a recent morning, Mr. Hirst could have been found, dressed in black, at the soaring entrance of the museum Palazzo Grassi, watching his crew

4. put the finishing touches on an extravaganza called “Treasures From the Wreck of the Unbelievable,” which is underwater fantasy,
5. with sculptures as the Buddha and hundreds of other objects fashioned to look as though they were antiquities dredged up from the bottom of the sea.

**Q33. DIRECTIONS** for questions 33 and 34: The following question consists of a highlighted sentence and a paragraph or two from which the sentence may have been taken. The paragraph(s) has/ have a total of four numbered blanks. Choose the number of the blank where the highlighted sentence can best be reinserted and key in that number in the input box provided below the question paragraph. If you think that the highlighted sentence is contextually unrelated or does not belong to the given paragraph, then key in the number 5 as your answer in the input box. But even so it is a shadow of its former self.

In its pomp, Goldman Sachs was in a class of its own.

\_\_\_\_\_ (1) \_\_\_\_\_ No Wall Street investment bank was as well-connected, as arrogant, as influential – nor as feared and derided: the “Great Vampire Squid” of *Rolling Stone* legend. It still has the best brand name in the business. But like the rest of its industry, it has not fully recovered from the near-death experience of 2008.

\_\_\_\_\_ (2) \_\_\_\_\_ Banks are the untouchables of global stockmarkets. Even the boss of one, Credit Suisse, has described them as “not really investable”, and, sure enough, shares in many of the most prominent firms – Deutsche Bank, Citigroup, Bank of America – trade well below book value, suggesting they would be better off liquidated. Goldman’s shares trade virtually at book value. \_\_\_\_\_ (3) \_\_\_\_\_

Goldman, however, did not become a byword for financial acumen without acquiring some acute self-diagnosis skills. It is now turning into an industry leader in another way: as an exemplar of the wrenching transformation banks need to undertake in order to survive and prosper.

\_\_\_\_\_ (4) \_\_\_\_\_

**Q34. DIRECTIONS** for questions 33 and 34: The following question consists of a highlighted sentence and a paragraph or two from which the sentence may have been taken. The paragraph(s) has/ have a total of four numbered blanks. Choose the number of the blank where the highlighted

sentence can best be reinserted and key in that number in the input box provided below the question paragraph. If you think that the highlighted sentence is contextually unrelated or does not belong to the given paragraph, then key in the number 5 as your answer in the input box.

Which is all well and good as strategies go.

\_\_\_\_\_ (1) \_\_\_\_\_ The lexicon of oncology is filled with military metaphors: the war on cancer, aggressive tumours, magic bullets. And although these are indeed only metaphors, they do reflect an underlying attitude – that it is the clinician’s job to attack and destroy his patient’s tumour directly, with whatever weapons are to hand.

\_\_\_\_\_ (2) \_\_\_\_\_ As in real warfare, those weapons may be conventional (surgery), chemical (cancer-killing drugs) or nuclear (radiation therapy). There is even talk of biological agents, in the form of viruses specifically tailored to seek out and eliminate their tumorous targets.

\_\_\_\_\_ (3) \_\_\_\_\_ But as Sun Tzu observed, the wisest general is not one who wins one hundred victories in one hundred battles, but rather one who overcomes the armies of his enemies without having to fight them himself. \_\_\_\_\_ (4) \_\_\_\_\_ And one way to do that is to get someone else to do your fighting for you. That, in an oncological context, is where immunotherapy comes in: it recruits a patient’s immune system to do the attacking.

## DILR

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

On a particular day, exactly twelve customers visited a beauty salon and each customer availed of exactly one service at the salon. Of the twelve, four availed of a haircut, four availed of a massage and four availed of a facial. The twelve customers entered the salon at the same time and each customer left immediately after he had availed of his respective service. In the salon, each of the three services was provided by a different beautician – John gives haircuts, Jack gives massages and Gary gives facials. Each beautician can service only one customer at any time. The times taken by John, Jack and Gary to service one customer is between 11 minutes to 15 minutes (both inclusive), between 16 minutes to 20 minutes (both inclusive) and between 21 minutes to 25 minutes (both inclusive) respectively.

A beautician always starts servicing a customer waiting to avail of his services without delay, unless he is already servicing another customer. The time spent by any customer in the salon is the sum of the time spent by him



waiting to be serviced and the time spent by the corresponding beautician in servicing him.

Given below is the total time spent by each of the twelve customers in the salon (in the alphabetical order of their names).

Person	Time spent (minutes)
Akhil	13
Anant	52
Das	36
Gautam	67

Person	Time spent (minutes)
Govind	22
Hardip	17
Jayant	43
Narendra	24

Person	Time spent (minutes)
Neeraj	50
Nitin	69
Ram	33
Shiv	90

**Q1. DIRECTIONS** for questions 1 to 4: Select the correct alternative from the given choices.

Who among the following was serviced by Jack?

- a) **Das**
- b) Anant
- c) Neeraj
- d) Gautam

**Q2. DIRECTIONS** for questions 1 to 4: Select the correct alternative from the given choices.

What is the maximum time (in minutes) that John took to service any customer?

- a) **12**
- b) **13**
- c) 14
- d) **15**

**Q3. DIRECTIONS** for questions 1 to 4: Select the correct alternative from the given choices.

Who among the following was not serviced by John?

- a) Akhil
- b) Neeraj
- c) **Das**
- d) Ram

**Q4. DIRECTIONS** for questions 1 to 4: Select the correct alternative from the given choices.

Who among the following spent the maximum time waiting to get serviced in the salon?

- a) Neeraj
- b) Anant
- c) Jayant
- d) **Das**

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

The following graph provides the revenue (in Rs. lakh) and costs (in Rs. lakh) for six companies – Company A through Company F – for two years, 2015 and 2016:



Note: Profit = Revenue – Cost

$$\text{Profit Percentage} = \frac{\text{Profit}}{\text{Cost}} \times 100$$

**Q5. DIRECTIONS** for questions 5 to 8: Select the correct alternative from the given choices.

For which company is the profit percentage the lowest in 2015?

- a) Company A
- b) Company B
- c) Company C
- d) **Company D**

**Q6. DIRECTIONS** for questions 5 to 8: Select the correct alternative from the given choices.

What is the approximate maximum difference (in Rs. lakh) between the profit in 2015 and that in 2016 for any company?

- a) 80
- b) 90
- c) 100
- d) 120

**Q7. DIRECTIONS** for questions 5 to 8: Select the correct alternative from the given choices.

For how many companies is the profit percentage greater than 30% in both 2015 and 2016?

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

**Q8. DIRECTIONS** for questions 5 to 8: Select the correct alternative from the given choices.

Across the two years combined, which company has the highest profit percentage?

- a) Company A
- b) Company B
- c) Company D
- d) Company E

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

Each of six friends, Ankit, Balu, Cary, David, Ghosh and Hari, owns a different pet among a rat, a cat, a dog, a snake, an eagle and a pigeon.

On a particular day, they decided to have a photograph taken and planned to stand in a line from left to right with their pets exactly in front of them, all facing the same direction. However, neither the cat nor the snake can be adjacent to either the rat or the eagle. The cat cannot be adjacent to the dog. The six persons stood in a line such that the above conditions are satisfied.

The following information is known about the order in which they stood:

1. Ankit, who owns a dog, was standing to the immediate left of Ghosh.
2. Cary was standing to the left of the person who owns the pigeon.

3. Balu, who owns the snake, was standing two places to the right of the person who owns the cat. Further, he was not standing at either end.
4. Hari was standing to the right of the person who owns the rat.

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

Who owns the eagle?

- a) Ghosh
- b) Hari
- c) David
- d) Cary

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

How many persons are standing to the left of the person who owns the cat?

- a) 0
- b) **1**
- c) **2**
- d) Cannot be determined

**Q11. DIRECTIONS** *for questions 9 to 12:* Select the correct alternative from the given choices.

Who among the following is standing adjacent to David?

- a) Cary
- b) Ankit
- c) Ghosh
- d) More than one of the above

**Q12. DIRECTIONS** *for questions 9 to 12:* Select the correct alternative from the given choices.

Which of the following pets is at an extreme end?

- a) **Cat**
- b) Eagle
- c) **Rat**
- d) More than one of the above

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

Kalyan, the Managing Director of a company, wanted to set up a new office. He shortlisted three cities – Bendakaaluru, Kalikata and Karnavati – for setting up the new office. He asked all the employees in the company to vote for at least one city and at most three cities and decided to choose the city which obtained the maximum votes.

After all the employees voted, he observed the following:

1. The number of employees who voted only for Kalikata was the same as the number of employees who voted for Karnavati but not Bendakaaluru.
2. The number of employees who voted for exactly two cities is 28 and the number of employees who voted for at least two cities is 47.
3. The number of employees who voted for Kalikata but not Karnavati is 8 more than the number of employees who voted for all the three cities.
4. The number of employees who voted for Bendakaaluru but not Kaalikata is 31, while the number of employees who voted for Karnavati is 47.
5. The number of employees who voted for both Karnavati and Bendakaaluru is 33.

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

How many employees voted for both Kaalikata and Bendakaaluru but not Karnavati?

- a) 12
- b) 13
- c) 14
- d) 15

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

How many employees voted for the city which received the highest number of votes?

- a) 63
- b) 47
- c) 57

d) 43

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

The number of employees who voted for only Kaalikata is the same as the number of employees who voted for

- a) Bendakaaluru but not Karnavati.
- b) both Karnavati and Kaalikata.
- c) Karnavati but not Kaalikata.
- d) Karnavati and Bendakaaluru but not Kaalikata.

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

What is the difference between the number of employees who voted for Karnavati and the number of employees who voted for Kaalikata?

- a) 11
- b) 12
- c) 5
- d) None of the above

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

The following table provides the breakup of the total cost (in Rs. mn) incurred by a company which sells tires for five years, from 2012 to 2016:

Cost Head (Rs. mn)	2012	2013	2014	2015	2016
Raw Material Cost	254.0	268.0	274.0	291.0	321.0
Rent	16.2	15.8	17.2	18.9	19.6
Administrative Costs	123.0	129.0	141.0	146.0	153.0
Interest	21.5	23.9	24.8	27.3	31.8
Other Finance Costs	52.8	58.3	64.8	66.4	69.2

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

What is the highest total cost incurred by the company in any year?

- a) Rs.495 mn
- b) Rs.521.8 mn



- c) Rs.594.6 mn
- d) Rs.604.2 mn

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

In 2013, which of the following costs showed the highest percentage increase as compared to the previous year?

- a) Raw Material Cost
- b) Administrative Costs
- c) Interest
- d) Other Finance Costs

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

If the Administrative Costs incurred by the company in any year are directly proportional to the number of tires manufactured in that year, then the raw material cost per tire manufactured is the highest in the year

- a) 2012.
- b) 2013.
- c) 2015.
- d) 2016.

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

In how many years did each of Raw Material Cost, Rent and Interest increase by more than 5% as compared to the previous year?

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

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

There are 25 unit cubes (of dimensions  $1 \times 1 \times 1$ ) in each of the five colours, Red, Blue, Brown, Yellow and Green (each unit cube being painted on all faces in the respective colour). All these 125 unit cubes are arranged into a large  $5 \times 5 \times 5$  cube on a table. All the unit cubes in the bottom most horizontal layer of the large cube are Red; all the cubes in the layer above the bottom most layer are Green; all the cubes in the layer above that are Blue; all the cubes in the layer above that are Yellow and all the cubes in the top

most layer are Brown. After forming the  $5 \times 5 \times 5$  cube, all the six faces of the large cube are painted over in Black.

**Q21. DIRECTIONS** for questions 21 to 24: Type in your answer in the input box provided below the question.

How many cubes have at least one face touching the face of another cube which is painted Green on all its faces?

**Q22. DIRECTIONS** for questions 21 to 24: Type in your answer in the input box provided below the question.

How many cubes have at least two faces painted Black and at least one face painted Red?

**Q23. DIRECTIONS** for questions 21 to 24: Type in your answer in the input box provided below the question.

How many cubes with at least one face painted Black also have exactly one face touching the face of a cube that is painted Brown on at least one face?

**Q24. DIRECTIONS** for questions 21 to 24: Type in your answer in the input box provided below the question.

How many cubes with exactly two faces painted Black also have exactly one face touching the face of a cube which is painted Yellow on at least one of its faces?

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

In a distant galaxy, a planetary system, comprising six planets – Planet 1A, Planet 1B, Planet 1C, Planet 1D, Planet 1E and Planet 1F – was discovered. Each of the six planets in the planetary system has a different density and a different size.

The following information is known about the density and the size of the six planets:

1. The densest planet is not the largest and the planet with the least density is the third smallest.
2. Planet 1B, which is not the fourth largest, is less dense than Planet 1D.
3. Planet 1E is the third densest planet and is smaller than Planet 1B.
4. Planet 1A, which is denser than exactly two other planets, is larger than at least two planets.
5. Planet 1D is the third largest planet and the second densest planet.
6. Planet 1C is denser than at least one planet and larger than at least two planets.

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

For how many planets is the number of planets denser than it the same as the number of planets larger than it?

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

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

How many planets are smaller than the densest planet?

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

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

Which of the following planets is denser but smaller than Planet 1F?

- a) Planet 1B
- b) Planet 1C
- c) Planet 1D
- d) Planet 1A

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

How many planets are larger than the planet which is denser than exactly three other planets?

- a) 5
- b) 4
- c) 3
- d) Less than 3

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

Hari has an ATM card of HSFC Bank which he uses for withdrawing cash. However, every time he withdraws less than Rs.5000, a Withdrawal Charge of Rs.10 is levied. Every time he withdraws at least Rs.5000 and less than Rs.10000, a Withdrawal Charge of Rs.25 is levied. Every time he withdraws Rs.10000 or more, a Withdrawal Charge of Rs.50 is levied.

The following table provides the total cash that he withdrew in each month for four months, from January to April and the total Withdrawal Charge that was levied in each month:

Month	Total Cash Withdrawn (Rs.)	Withdrawal Charge (Rs.)
January	5,50,000	600
February	37,000	225
March	64,500	350
April	1,80,000	300

**Q29. DIRECTIONS** for questions 29 and 30: Type in your answer in the input box provided below the question.

What is the minimum number of times that Hari withdrew cash in February?

**Q30. DIRECTIONS** for questions 29 and 30: Type in your answer in the input box provided below the question.

What is the maximum number of times that Hari withdrew cash in January?

**Q31. DIRECTIONS** for question 31: Select the correct alternative from the given choices.

If the number of times that Hari withdrew cash in March was the same as that in April, which of the following can be the number of times he withdrew cash in March?

- a) 30
- b) 27
- c) 16
- d) 10

**Q32. DIRECTIONS** for question 32: Type in your answer in the input box provided below the question.

If the number of times that Hari withdrew cash in February was the same as that in March, what is the minimum number of times that he would have withdrawn cash in February?

QA

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

In a certain number system, the product of two numbers in that number system, 53 and 22, is equal to 1276. The number 4221 in this system when converted to the decimal system will be

**Q2. DIRECTIONS** for questions 2 to 12: Select the correct alternative from the given choices.

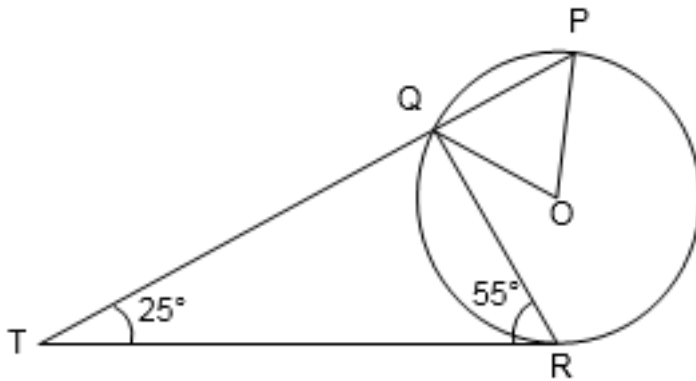
Two persons A and B work on a certain job on alternate days. If A works on Day 1, the job gets completed in 17 days. If B works on Day 1, the job gets

completed in  $17\frac{3}{4}$  days. If both of them work together on the job, then the job will be completed in

- a)  $8\frac{4}{7}$  days.
- b)  $5\frac{4}{5}$  days.
- c)  $8\frac{4}{5}$  days.
- d)  $6\frac{3}{7}$  days.

**Q3. DIRECTIONS** for questions 2 to 12: Select the correct alternative from the given choices.

In the figure below, P, Q and R are points on a circle with centre O. The tangent to the circle at R intersects the secant PQ at T. If  $\angle QRT = 55^\circ$  and  $\angle QTR = 25^\circ$ , find  $\angle POQ$ .



- a)  $110^\circ$
- b)  $100^\circ$
- c)  $90^\circ$
- d)  $50^\circ$

**Q4. DIRECTIONS** for questions 2 to 12: Select the correct alternative from the given choices.

Ram and Shyam invested Rs.36,000 and Rs.54,000 respectively to start a business together. At the end of every year, Ram got a fixed amount as annual salary from out of the year's profit, for managing the business. After Ram was paid his salary, the remaining profit was distributed to both of them in the ratio of their investments. If at the end of the first year, the total amounts received by Ram and Shyam were in the ratio of 3 : 2, then what percent of profit did Ram receive as salary?

- a) 25%
- b)  $33\frac{1}{3}\%$
- c) 20%
- d) 50%

**Q5. DIRECTIONS** for questions 2 to 12: Select the correct alternative from the given choices.

Find the sum  $\frac{1}{2} + \frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \dots + \frac{1}{9702}$ .

- a)  $\frac{95}{96}$
- b)  $\frac{99}{97}$
- c)  $\frac{99}{99}$



98

d)  $\frac{98}{99}$

**Q6. DIRECTIONS** for questions 2 to 12: Select the correct alternative from the given choices.

All the two-digit numbers are written in a row in increasing order with a vertical line drawn separating every two consecutive numbers. How many vertical lines are drawn such that the digit immediately to the left of the line is the same as the digit immediately to the right of the line?

- a) 8
- b) 9
- c) 10
- d) 11

**Q7. DIRECTIONS** for questions 2 to 12: Select the correct alternative from the given choices.

Consider a rectangular grid of lines formed by  $m$  parallel lines intersecting  $n$  parallel lines running perpendicular to them. How many different paths along the grid are possible from the top right corner of the grid to the bottom left corner of the grid, if only downward and leftward motion is allowed?

- a)  $\frac{(m+n-2)!}{(m-1)!(n-1)!}$
- b)  $\frac{m!n!}{(m+n)!}$
- c) 2
- d)  $m! n!$

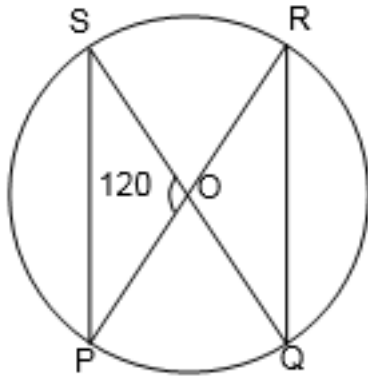
**Q8. DIRECTIONS** for questions 2 to 12: Select the correct alternative from the given choices.

If  $y = \log_2 x$  and  $z = |y|2 + 3|y| - 10$ , for which of the following ranges of  $x$  is  $z \geq 0$ ?

- a)  $[1/32, 1/4] \cup [4, 32]$
- b)  $(0, 1/32) \cup [4, \infty)$
- c)  $[1/32, 1/4] \cup [2, \infty)$
- d)  $(0, 1/4] \cup [4, \infty)$

**Q9. DIRECTIONS** for questions 2 to 12: Select the correct alternative from the given choices.

Given below is a circle with centre O and four points, P, Q, R and S, on the circle. If the chords SQ and PR intersect each other at O and the radius of the circle is  $8\sqrt{3}$  cm, find area (in sq.cm) of triangle PSQ.



- a)  $108\sqrt{3}$
- b)  $54\sqrt{3}$
- c)  $81\sqrt{3}$
- d)  $96\sqrt{3}$

**Q10. DIRECTIONS** for questions 2 to 12: Select the correct alternative from the given choices.

A shopkeeper bought an article at Rs.1000 and marked up its price by  $x\%$ . If he then gave a discount of  $\frac{2x}{5}\%$  and still got a profit percentage of  $\frac{2x}{5}\%$ , find the amount of discount given.

- a) Rs.200
- b) Rs.300
- c) Rs.500
- d) Rs.600

**Q11. DIRECTIONS** for questions 2 to 12: Select the correct alternative from the given choices.

Given that  $a$  and  $b$  are two prime numbers, while  $n$  is a natural number, such

that  $\frac{1}{a} + \frac{1}{b} + \frac{1}{ab} = \frac{1}{n}$ ,

find the value of  $||a - b| - n|$ .

- a) 4
- b) 0
- c) 2
- d) 1

**Q12. DIRECTIONS** for questions 2 to 12: Select the correct alternative from the given choices.

$$\frac{1}{6 + \frac{1}{2 + \frac{1}{6 + \frac{1}{2 + \dots}}}}$$

Find the value of

- a)  $\frac{-1 + \sqrt{165}}{12}$
- b)  $\frac{-9 + \sqrt{105}}{12}$
- c)  $\frac{-9 + \sqrt{93}}{6}$
- d)  $\frac{-3 + 2\sqrt{3}}{3}$

**Q13. DIRECTIONS** for question 13: Type in your answer in the input box provided below the question.

What is the remainder when 853853853..... up to 100 digits is divided by 1001?

**Q14. DIRECTIONS** for questions 14 and 15: Select the correct alternative from the given choices.

Two circles, with centers at points (3, 7) and (−1, 4) and with radii 2 units and 7 units respectively, are drawn in the x – y plane. The number of common tangents that the circles have is

- a) four.
- b) one.
- c) zero.
- d) three.

**Q15. DIRECTIONS** for questions 14 and 15: Select the correct alternative from the given choices.

For real numbers  $x$  and  $y$ , let

$$f(x, y) = (x + y)^2, \text{ if } x + y \geq 0 \\ = -(x + y), \text{ if } x + y < 0$$

$$g(x, y) = \sqrt{x + y} \text{ if } x + y \geq 0 \\ = (x + y)^2, \text{ if } x + y < 0$$

Which of the following expressions is necessarily positive for non-zero real numbers  $x$  and  $y$ ?

- a)  $(f(x, y))^2 - (g(x, y))^2$
- b)  $(f(x, y))^2 - g(x, y)$
- c)  $f(x, y) + g(x, y)$
- d)  $f(x, y) - g(x, y)$

**Q16. DIRECTIONS** for question 16: Type in your answer in the input box provided below the question.

A circle and a regular hexagon are drawn in a plane. Find the maximum possible number of points of their intersection.

**Q17. DIRECTIONS** for question 17: Select the correct alternative from the given choices.

If the highest power of 20 in  $n!$  is  $x$ , then  $x$  can take all the following values except

- a) 27.
- b) 28.
- c) 30.
- d) 31.

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

In a theatre there are 300 seats. The price of each ticket, when the theatre is houseful, is Rs.60. For every Rs.1 increase in the price of the ticket, the number of tickets sold goes down by 2. Find the price of the ticket (in Rs.) for which the theatre owner would earn the maximum possible revenue.

**Q19. DIRECTIONS** for question 19: Select the correct alternative from the given choices.

If the area of the triangle with its vertices at  $(a, 0)$ ,  $(2a, 0)$  and  $(a, a)$ , where  $a$  is positive, is 16 sq.units, what is the value of  $a$ ?

- a)  $2\sqrt{2}$
- b) 4
- c)  $4\sqrt{2}$
- d) 8

**Q20. DIRECTIONS** for question 20: Type in your answer in the input box provided below the question.

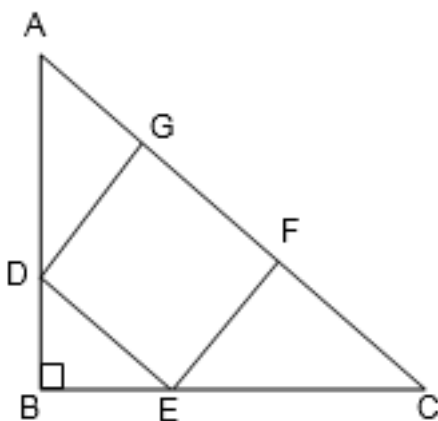
If  $A = \{1, 2, 3, 4, \dots, 19, 20\}$ , how many subsets of  $A$  are possible such that the product of all the elements of the subset is even?

**Q21. DIRECTIONS** for questions 21 to 28: Select the correct alternative from the given choices.

If the sum of the second, ninth and eighteenth terms of an arithmetic progression is equal to the sum of the eighth and sixteenth terms of the same progression, which term of the series must necessarily be equal to zero?

- a) No term of the progression can be equal to zero.
- b) Third term
- c) Fifth term
- d) None of the above

**Q22. DIRECTIONS** for questions 21 to 28: Select the correct alternative from the given choices.



In the figure above, triangle ABC is right-angled at B. Further, G and F are points on AC, while D and E are points on AB and BC respectively, such that DEFG is a square. If  $DG = 6$  cm, find the minimum possible length of AC.

- a) 14 cm
- b) 16 cm

- c) 20 cm
- d) 18 cm

**Q23. DIRECTIONS** for questions 21 to 28: Select the correct alternative from the given choices.

The road connecting two towns, A and B, goes only uphill or downhill, i.e., there is no stretch of road that is level. Vijay's car does a constant 40 kmph uphill and 80 kmph downhill. Find the distance between A and B, if it takes exactly nine hours for Vijay to make one round trip from A to B and back.

- a) 360 km
- b) 270 km
- c) 240 km
- d) Cannot be determined

**Q24. DIRECTIONS** for questions 21 to 28: Select the correct alternative from the given choices.

R is a recurring decimal of the form  $p_1.\overline{p_2p_3}$ , where  $p_1, p_2$  and  $p_3$  are single digits. If not more than one of  $p_1, p_2$  and  $p_3$  can be zero, then which of the following always assumes an integer value?

- a) 54R
- b) 396R
- c) 324R
- d) 144R

**Q25. DIRECTIONS** for questions 21 to 28: Select the correct alternative from the given choices.

If each of A, B, C, D is a three-digit natural number such that  $A > B > C > D$  and  $x$  is a negative integer, which of the following is the least?

- a)  $(A - x)(B - x)CD$
- b)  $AD(B - x)(C - x)$
- c)  $(A - x)BC(D - x)$
- d)  $AB(C - x)(D - x)$

**Q26. DIRECTIONS** for questions 21 to 28: Select the correct alternative from the given choices.

In how many ways is it possible to choose two black squares on a  $8 \times 8$  chessboard such that the squares do not lie in the same row or same column?

- a) 400
- b) 100
- c) 200

d) 800

**Q27. DIRECTIONS** for questions 21 to 28: Select the correct alternative from the given choices.

Shyam, who is standing on a beach, observes that the angle of elevation of the top of a lighthouse is  $45^\circ$ . When he moves a distance of 5 m towards the lighthouse, he finds that the angle of elevation increases to  $60^\circ$ . Find the height (in m) of the lighthouse.

- a)  $15 - 5\sqrt{3}$   
 $\frac{15 + 5\sqrt{3}}{2}$   
 b)  $\frac{15 + 5\sqrt{3}}{2}$   
 c)  $15\sqrt{3} - \sqrt{6}$   
 d) 15

**Q28. DIRECTIONS** for questions 21 to 28: Select the correct alternative from the given choices.

The reflection of the point  $\left(\frac{10}{3}, -\frac{10}{3}\right)$  with respect to a line is  $\left(\frac{-4}{3}, \frac{16}{3}\right)$ . What is the foot of the perpendicular drawn to the line from the point  $\left(\frac{-4}{3}, \frac{16}{3}\right)$ ?

- a) (1, 1)  
 b) (2, 2)  
 c)  $\left(\frac{7}{3}, -\frac{13}{3}\right)$   
 d) (3, -4)

**Q29. DIRECTIONS** for question 29: Type in your answer in the input box provided below the question.

In an examination there are  $x$  questions. If the number of students who answered  $y$  or more questions wrongly, where  $1 \leq y \leq x$ , is given by  $2x - y$ , and the total number of wrong answers is 8191, find  $x$ .



**Q30. DIRECTIONS** for question 30: Select the correct alternative from the given choices.

Ganesh and Sarath were given a quadratic equation in  $x$  to solve. Ganesh made a mistake in copying the constant term of the equation and got a root as 12. Sarath made a mistake in copying the coefficient of  $x$  as well as the constant term and got a root as 2. If later, they realized that the mistakes they committed were only in copying the signs, find the difference between the roots of the original equation.

- a) 2
- b) 10
- c) 4
- d) Cannot be determined

**Q31. DIRECTIONS** for questions 31 and 32: Type in your answer in the input box provided below the question.

How many values of  $x$  satisfy the equation  $9\{x\} = 2x + [x]$ , where  $[x]$  denotes the greatest integer less than or equal to  $x$  and  $\{x\}$  denotes the fractional part of  $x$ ?

**Q32. DIRECTIONS** for questions 31 and 32: Type in your answer in the input box provided below the question.

At time  $t = 0$  minutes, two bodies, A and B, start travelling simultaneously. The distance (in m) covered by A in the  $n$ th minute is  $189 + 0.15n$ . The distance (in m) covered by B in the  $n$ th minute is  $200 + 0.1n$  for the first 100 minutes, and then remains constant and equal to that covered in the 100th minute. If B covers 3 m more than A in the  $k$ th minute, find  $k$ .

**Q33. DIRECTIONS** for questions 33 and 34: Select the correct alternative from the given choices.

Water flowing at a speed of 2 cm/sec from a pipe, having a square cross-section of side 3 cm, into an empty tank can fill the entire tank in 30 minutes, in the absence of any leaks. However, a leak at the bottom of the tank can empty the tank at the rate of 6 cm<sup>3</sup>/sec. In how much time does the empty tank get filled, if both the pipe and the leak are operational?

- a) 35 minutes
- b) 45 minutes

- c) 40 minutes
- d) 25 minutes

**Q34. DIRECTIONS** for questions 33 and 34: Select the correct alternative from the given choices.

In a very large grass field there is a rectangular plot, of dimensions  $15 \text{ m} \times 5 \text{ m}$ , fenced on all four sides. If at one corner inside the plot, a goat is tied with a rope of length  $10 \text{ m}$ , calculate the area (in sq. m.) over which the goat can graze. (The goat cannot cross the fence)

- a)  $25\pi$

- b)  $\frac{25\pi}{4}$
- c)  $\frac{100\pi + 150\sqrt{3}}{12}$
- d)  $\frac{100\pi + 25\sqrt{3}}{4}$