VARC

DIRECTIONS *for questions 1 to 3:* The passage given below is followed by a set of three questions. Choose the best answer to each question.

At the disputed crossroads where economics and ethics meet stands Amartya Sen, a Nobel-prize-winning economist who thinks like a philosopher. In his work "The Idea of Justice", Mr Sen charges the American philosopher John Rawls, in the courtliest of tones, with sending political thinkers up a tortuous blind alley. The Rawlsian project of trying to describe ideally just institutions is a distracting and fruitless way to think about social injustice, Mr Sen complains.

Two themes predominate in his work: economic rationality and social injustice. Mr Sen approaches them alike. He can, when he wants, theorise without oxygen at any height. But he believes that theory, to be of use, must keep its feet on the ground. Modern theorists in his view have drifted too far from the actual world.

Economists have tended to content themselves with a laughably simple picture of human motivation, rationality and well-being. People are not purely self-interested. They care for others and observe social norms. They do not always reason "instrumentally", seeking least-cost means to given ends. They question the point of their aims and the worth of their wants. Well-being, finally, has no single measure and is not inscrutable to others. Its elements are many and do not boil down to "utility" or some cash-value equivalent.

Complexity, though, need not breed mystery. Well-being"s diverse elements (freedom from hunger, disease, indignity and discrimination) are generally observable and, he believes, measurable. They are, to put it crudely, matters of fact, not taste, even if his philosophical story - that what underpins the several elements of well-being is that they all extend people"s "capabilities" - is still argued over.

Rawls held that social justice depended on having just institutions, whereas Mr Sen thinks that good social outcomes are what matter. Strictly both could be right. The practical brunt of Mr Sen"s criticism, however, is that just institutions do not ensure social justice. You can, in addition, recognize social injustices without knowing how a perfectly fair society would arrange or justify itself. Rawlsianism, though laudable in spirit, is too theoretical, and has distracted political philosophers from corrigible ills in the actual world.

Q1. When the author says that, "He can … theorize without oxygen at any height". (para 2), he implies that

a) Amartya Sen can strain himself beyond limits to come up with a good theory.
b) no matter how difficult a subject or concept, Amartya Sen can always formulate a theory on it.
c) Amartya Sen can concoct theories which are divorced from reality.
d) Amartya Sen can formulate theories which have a basis neither in Economics nor in Philosophy.

Q2. Which of the following choices best captures the difference between Amartya Sen and John Rawls as can be inferred from the passage?

a) John Rawls believes that just institutions are essential for social justice; Amartya Sen believes the latter can be achieved without the former.
b) While John Rawls focuses on having just institutions, Amartya Sen is more interested in seeing fairness in society.
c) Unlike John Rawls who has sent political thinkers up a tortuous blind alley, Sen's ideas about justice, social choice theory, and the capabilities approach to assessing well-being have made a crucial contribution to the political philosophy that will influence future generations.
d) Amartya Sen signals the need for justice theory to reconnect to realistic human psychology, not the phony formal rationalism that infects modern economics or the for-sake-of-argument altruism that anchors John Rawls's project.

Q3. According to the passage, which of the following views is not attributed to Amartya Sen?

a) The components of well-being are not measurable.
b) The Rawlsian project cannot truly show the way to social justice.
c) Well-being cannot be equated to mere utility and material things.
d) John Rawls's political philosophy chases after the chimera of an ideally just society rather than identifying existing injustices.

Q4. DIRECTIONS *for question 4:* 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 six numbers as your answer in the input box given below the question.

    1.   Yahoo's history is littered with transactions that should not have been passed up: it did not buy Google and Facebook when it had the chance and it eschewed the chance to buy YouTube.

    2.   Some of Yahoo's purchases paid off: by the end, its stake in another web giant - Alibaba, a Chinese e commerce firm - was worth far more than its own internet properties.

3.   But a company's success depends as much on the deals it does not do as on the ones it does.

4.   A second problem at Yahoo concerned deal making.

5.   Others flopped: Ms Mayer, for example, bought Tumblr, a social-networking platform, for $1.1 billion in 2013, even though it was about to run out of money.

Q5. DIRECTIONS *for question 5:* The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4, 5 or 6). Decide on the proper order for the sentences and key in the correct sequence of six numbers as your answer in the input box given below the question.

1.   However, as time went on, Greek thinkers became critical of the old myths and proposed alternative explanations of natural phenomena based on observation and logical deduction.

2.   In the earliest, "mythos" stage of development, the Greeks saw events of the world as being caused by a multitude of clashing personalities - the "gods."

3.   However, many scholars argue that there was not such a sharp distinction between mythos and logos historically, that logos grew out of mythos, and elements of mythos remain with us today.

4.   The primary mode of explanation of reality consisted of highly imaginative stories about these superhuman personalities.

5.   The Greeks had gods for natural phenomena such as the sun, the sea, thunder and lightening, and gods for human activities such as winemaking, war, and love.

6.   Under "logos," the highly personalized worldview of the Greeks became transformed into one in which natural phenomena were explained not by invisible superhuman persons, but by impersonal natural causes.

Q6. DIRECTIONS *for question 6:* 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.   In some fields, however, Japan still allows itself some swagger: it is, for example, happy to describe itself as a "robotics superpower".

2.   The robotic exoskeleton can add strength and stamina to healthy limbs, restore movement to enfeebled ones and aptly serves as a symbol of Japanese ingenuity in overcoming debility.

3.   Japan's economic pride has suffered many years of deflation, a form of macroeconomic self-deprecation, in which firms and workers continuously discount what they do.

4.   In a speech early this year Shinzo Abe, the Prime Minister, praised a "dream robot suit" made by Cyberdyne as a prime example of the country's technological advances.

5.   Japan is not, by nature, a boastful country: its opportunities for bombast have shrunk along with its population.

Q7.   DIRECTIONS *for question 7:* The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4, 5 or 6). Decide on the proper order for the sentences and key in the correct sequence of six numbers as your answer in the input box given below the question.

1.   It may then become possible to combine the human brain with a whole set of artificial sensors, receptors and effectors, and to call that tangle of wires and plastic a human being.

2.   The inanimate part of his body is still relatively unimportant in terms of his personality and consciousness.

3.   Then it is possible to conceive of a disembodied brain - a brain without arms, legs, spinal cord or other equipment - as a self, a personality, an embodiment of awareness.

4.   Let us assume that the brain is the seat of consciousness and intelligence, and that no other part of the body affects personality or self very much.

5.   But as the proportion of machine components rises, what happens to his awareness of self, his inner experience?

6.   Today the man with a pacemaker or a plastic aorta is still recognizably a man.

DIRECTIONS *for questions 8 to 13:* The passage given below is followed by a set of six questions. Choose the best answer to each question.

They already use basic tools, have rudimentary language and star in TV commercials, but now scientists have proof that chimpanzees are more closely related to humans than other great apes.

Genetic tests comparing DNA from humans, chimps, gorillas and orang-utans reveal striking similarities in the way chimps and humans evolve that set them apart from the others.

The finding adds weight to a controversial proposal to scrap the long-used chimp genus "Pan" and reclassify the animals as members of the human

family. The move would give chimps a new place in creation"s pecking order alongside humans, the only survivor of the genus Homo.

The biologist Soojin Yi"s team at Georgia Institute of Technology in Atlanta compared 63m base pairs of DNA from different species, where each base is a letter in the animal"s genetic code. They then analysed the DNA to look at what evolutionary biologists call the molecular clock, the rate at which an animal"s genetic code evolves i.e. They studied the rate at which the base pairs that define the differences between species were incorrectly paired due to errors in the genetic encoding process, an occurrence known as substitution. The speed of the clock shows how the span of a generation has changed over the millennia.

The tests showed that even though humans and chimps split from a common ancestor between 5m and 7m years ago, the rate of human and chimp molecular evolution was extremely similar, differing by only 3%, and much slower than gorillas and orang-utans, with the evolution of humans being the slowest of all.

As species branch off along evolutionary lines, important genetic traits, like the rate of molecular evolution also begin to diverge. They found that the speed of this molecular clock in humans and chimps is so similar, it suggests that certain human-specific traits, like generation time, began to evolve one million years ago - very recently in terms of evolution. The amount of time between parents and offspring is longer in humans than apes. Since a long generation time is closely correlated with the evolution of a big brain, it also suggests that developmental changes specific to humans may also have evolved very recently.

Most biologists believe that humans and chimpanzees had a common ancestor before the evolutionary lines diverged about 5-7 million years ago. According to the analysis, one million years ago the molecular clock in the line that became modern humans began to slow down. Today, the human molecular clock is only 3 percent slower than the molecular clock of the chimp, while it has slowed down 11 percent from the gorilla"s molecular clock.

This slow down in the molecular clock correlates with a longer generation time because substitutions need to be passed to the next generation in order to have any lasting effect on the species.

"A long generation time is an important trait that separates humans from their evolutionary relatives," said Navin Elango, graduate student in the School of Biology at Georgia Institute of Technology. "We used to think that apes shared one generation time, but that"s not true. There"s a lot more variation. In our study, we found that the chimpanzee"s generation time is a lot closer to that of humans than it is to other apes." The results also confirm that there is very little difference in the alignable regions of the human and chimp genomes.

"I think we can say that this study provides further support for the hypothesis that humans and chimpanzees should be in one genus, rather than two

different genera because we not only share extremely similar genomes, we share similar generation time," said Yi.

Even though the 63 million base pairs they studied is a large sample, it"s still a small part of the genome. Yi said. "If we look at the whole genome, maybe it"s a different story, but there is evidence in the fossil record that this change in generation time occurred very recently, so the genetic evidence and the fossil data seem to fit together quite well so far."

Q8. According to the passage, the term 'molecular evolution' signifies

a) The differences between the alignable regions of humans and that of the chimps.
b) The differences in the rate of molecular change.
c) The process of genetic structure changing over a period of time.
d) Development changes that occur after the evolutionary lines diverge from a common ancestor.

Q9. Which of the following controversial hypothesis is supported by the genetic evidence found by Soojin Yi's team at Georgia Institute of Technology?

a) Chimps and gorillas should be brought together under the same umbrella genus Homo.
b) A tight genetic human-chimp connection suggests that the genus Homo can have two members.
c) Humans should be reclassified as "Pan".
d) Humans and chimpanzees shared a common ancestor before they split 5 to 7 million years ago and hence chimpanzees can be termed the "second humans".

Q10. Which of the following cannot be inferred from the passage?
Identify all that apply and enter the corresponding number in the input box given below. You must enter your answer in increasing order only. For example, if you think (1) and (4) apply, then enter 14 (but not 41) in the input box.

1. Reclassification of the chimpanzees as humans will raise the chimp's profile.
2. Chimps are more closely related to humans and gorillas are more closely related to orangutans.
3. Humans and chimpanzees share extremely similar genomes and similar generation times.

    4.   Humans evolve molecularly at a slower rate than gorillas and orangutans.

    5.   The molecular clock of the chimp has slowed down 11 percent from the gorilla's molecular clock.

    6.   The amount of time between parents and offsprings is longer in apes than in chimpanzees.

Q11.   According to the passage, a longer generation time

 a) is an important trait that separates humans from their evolutionary relatives.
 b) is indicative of a slower rate of molecular evolution.
 c) allows the substitution errors in the genetic encoding process to be absorbed into the next generation of a species.
 d) All of the above.

Q12.   Which of the following choices would describe the main purpose of the author in the passage?

 a) To prove that genetic evidences and fossil data that corroborate evolutionary findings fit together quite well.
 b) To present scientific findings that strengthen the claim that chimpanzees are closer to man than apes at the genetic level.
 c) To suggest that human beings and chimpanzees are very different even though genetic studies indicate otherwise and it would be improper to draw comparisons.
 d) To initiate a debate about the various evidences available and discuss the complexity involved in equating the evolution of man with that of the chimpanzee.

Q13.   Soojin Yi published the findings (discussed in the passage) in the scientific journal *Proceedings of the National Academy of Sciences.* Which of the following choices would be correctly reflected in the article?

 a) Some human traits only emerged 1m years ago, a fleeting moment on evolutionary scales.
 b) Through a comprehensive genetic analysis of the whole genomes of humans and chimpanzees, we conclude that humans not only share extremely similar genomes but also similar generation time.
 c) The molecular clock in the evolutionary line that became modern humans was 3 percent slower than the molecular clock of the chimp one million years ago, while today it has slowed down 11 percent as compared to the molecular clock of the chimp.

d) Scientists should join forces with lawyers to petition the country's government to pass a bill conferring "human rights" on chimpanzees.

Q14. DIRECTIONS *for questions 14 and 15:* In the question, the word in capitals is used in **five** different ways. Identify the option(s) in which the usage of the word is INCORRECT or INAPPROPRIATE and enter the number corresponding to the sentence(s) (in which the usage is INCORRECT or INAPPROPRIATE) in the input box provided below each question. [Note: Enter your answer in increasing order only. For example, if you think that sentences (1) and (3) are incorrect, then enter 13 (but not 31) in the input box].

BLUFF

1.   He is such a glib talker, he can bluff his way out of anything.
2.   When we called to his bluff, he just panicked and ran.
3.   I like Tom - he is nice, though a little bluff.
4.   Being situated on the edge of a sheer bluff, the house had a splendid view of the countryside.
5.   The "flying scene" in the movie Titanic was shot in the bluffed bow of the ship.

Q15. DIRECTIONS *for questions 14 and 15:* In the question, the word in capitals is used in **five** different ways. Identify the option(s) in which the usage of the word is INCORRECT or INAPPROPRIATE and enter the number corresponding to the sentence(s) (in which the usage is INCORRECT or INAPPROPRIATE) in the input box provided below each question. [Note: Enter your answer in increasing order only. For example, if you think that sentences (1) and (3) are incorrect, then enter 13 (but not 31) in the input box].

CHRONICLE

1.   In history books events are usually narrated in chronicle order.
2.   Hiuen Tsang provided a chronicle of the life and times of Harshavardhan.
3.   The cartoon series chronicles the bitter-sweet relationship between Tom and Jerry.
4.   History is not just a chronicle of man's follies, as a critic once put it.
5.   For decades now, Samuel Beckett's work 'Chronicles of Disorder' has invited extensive commentary and explication.

DIRECTIONS *for Questions 16 to 21:* The passage given below is followed by a set of six questions. Choose the best answer to each question.

It wasn"t until the 1970s that behavioural geneticists worked out productive techniques for answering questions about nature vs nurture. One method looked at adopted children, whose genes were provided by one set of parents and whose environment was provided by a different set. Another method involved finding identical twins separated at birth: same genes, different environments. A third involved comparisons between identical twins and fraternal twins reared in the same family (identical twins have the same genes; fraternal twins are genetically as different as ordinary siblings). Other methods made use of genetic differences between ordinary siblings, half-siblings, and step (adoptive) siblings raised in the same family. These methods produced the same results. About half the variation in the measured characteristic could be attributed to genetic differences. The other half, then, should be the result of environmental effects. But researchers haven"t been able to pin down which aspects of the environment are important. They are only able to determine which aspects of the environment are not important. ... The child who grows up in the orderly home is, on average, no more conscientious as an adult than the one who grows up in the messy one.

Because identical twins have identical genes (same inherited predispositions), they are valuable to people thinking about "nature /nurture". ... Why do identical twins reared in the same family differ in personality? Surely their experiences must play some role? It seems that the human brain is not a unitary organ: it is a toolbox of various "modules", each designed by evolution to perform a specific function and each responds to a specific type of information provided by the environment.

This modularity of the mind can explain some mysteries of development. The human mind contains three modules: socialisation system, status system and relationship system. These systems sometimes issue contradictory orders. The socialisation system makes us want to fit in - to conform to our peers. The status system makes us want to stand out - to be better than our peers. We can see these motivations in people of all ages. The socialisation system and the status system are organs of the mind and are found in all neurologically normal human beings. They vary somewhat from one individual to another. For some, the socialisation system takes priority; for others, the status system often gains the upper hand. These differences become visible only when the two goals - fitting in or standing out - conflict. At other times the two goals can peacefully coexist.

The purpose of the socialisation system is to adapt the child to his culture. He acquires the local language, behaviours, customs and beliefs. He then figures out how others in his social category behave and adjusts his behaviour accordingly. Children acquire the accent of their peers rather than that of their parents. Based on an understanding of their own strengths and weaknesses and those of other children with whom they compete, children work out their own strategy of behaviour. Every child has to find out what he is good at and place his bets on the things that are most likely to pay off.

The relationship system motivates us to form new relationships and to maintain existing ones. The urge to learn new facts gradually declines as we get older, but we never lose our curiosity about people. Gossip is a popular sport even in the old people"s home. The relationship system fuels our hunger for biographies and novels, and makes us want to look at photos of movie actors and sports

stars. **The relationship system isa splitter, not a lumper.** Its job is to discriminate among people - to remember what makes each individual different from all the rest, even if that individual happens to have an identical twin. It chooses our friends, selects our romantic partners, and tells us who our relatives are. This system contributes more than its fair share to our conscious memories. The strong emotions associated with these memories make us feel that they must be important. The truth is that people don"t know why they turned out the way they did. Asking their parents why they are the way they are is even less likely to be profitable, because parents see only one part of their children"s lives. In the long run, it is what happens to them outside the parental home that makes children turn out the way they do. After all, outside the parental home is where they are destined to spend their adult lives.

Q16. Researchers were able to answer questions about nature vs nurture by which of the following methods?

1. By looking at adopted children.
2. Observing genetic differences between ordinary siblings and half-siblings raised in the same family.
3. Finding identical twins separated at birth.
4. Observing genetic differences between ordinary siblings and adoptive siblings raised in the same family.
5. Studying comparisons between identical twins and fraternal twins reared in the same family.
6. Fitting in and standing out method.
1.

a)
a, b, c and d

b)
b, d, e and f

c)
a, b, c, d and e

d)

None of these

Q17. Children give more importance to their peers than to their parents because of all the following reasons EXCEPT?

 a)
Children have to adapt themselves to the prevailing attitudes and beliefs and form their own culture.

 b)
More than their parents they admire and emulate their peers.

 c)
They have to compete with their peers.

 d)
They must be aware of their own strengths and weaknesses to work out their strategy of behaviour.

Q18. Which of the following is not true from the passage?

 a)
The differences between the effects of the socialization and the status systems discussed become apparent only when their objectives are in opposition to each other.

 b)
Researchers have been able to track down only the features of the environment which are irrelevant to account for variations.

 c)
The child who is brought up in an orderly home grows up to be a conscientious adult.

 d)
The socialization sytem and the status system discussed in the passage seem to pose a paradox for children as well as adults.

Q19. The author says asking parents why their children behave the way they do may not yield definite results because

a)
children spend only a part of their lives with their parents.

b)
parents being over ambitious are not able to accept the shortcomings of their children.

c)
parents are busy in their own lives and their own occupations.

d)
parents are predisposed to judge their children favourably.

Q20. The modularity of the mind explains

a)
the behavioural differences of half-siblings and adoptive siblings in the same family.

b)
the power of inherited predispositions of identical twins.

c)
the different biological processes in the development of fraternal twins.

d)
the differences between identical twins brought up in the same home environment.

Q21. What is the meaning of the sentence given in boldface in the passage?

a)
The relationship system helps to identify the affinity among people and select partners.

b)

The relationship system stokes out eagerness to know more about people and engage in idle talk.

c)

The relationship system stimulates our craving for novels and biographies.

d)

The relationship system helps us to recognise the differences between people, to act accordingly.

Q22.

DIRECTIONS *for questions 22 and 23:* 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. It was a police car and a policeman stepped out to greet them.
 2. The clangor of the train had swallowed the noise of the motor and they had not heard the approach of the car that swept out of the side road, from behind the farmhouse.
 3. The man who stepped suddenly out into the road must have come from behind the willow tree, but so swiftly that it seemed as if he had sprung up from the middle of the highway.
 4. A beam of light hit them with the violence of a physical blow.
 5. They were not in the car's path, yet they heard the screech of brakes behind the two headlights, pulling an invisible shape to a stop.

Q23.

DIRECTIONS *for questions 22 and 23:* 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. As the decree has only minor differences between the three versions, the Rosetta Stone proved to be the key to deciphering Egyptian hieroglyphs.
 2. Study of the decree was already under way when the first full translation of the Greek text appeared in 1803.
 3. It is inscribed with three versions of a decree issued at Memphis, Egypt in 196 BC during the Ptolemaic dynasty on behalf of King Ptolemy V.

4.   The top and middle texts are in Ancient Egyptian using hieroglyphic script and Demotic script, respectively, while the bottom is in Ancient Greek.

5.   The Rosetta Stone is a black granodiorite stele, found in 1799, and is believed to have been carved during the Hellenistic period and then originally displayed within a temple, possibly at nearby Sais.

DIRECTIONS *for questions 24 to 29:* The passage given below is followed by a set of six questions. Choose the best answer to each question.

The question of the scope of human knowledge has been a longstanding preoccupation of philosophy. And that question has always had a special intensity where philosophical knowledge itself is concerned. ... It is not merely that we are a tiny speck in a vast cosmos; that speck also has its own specific cognitive orientation, its own distinctive architecture. The human mind conforms to certain principles in forming concepts and beliefs and theories, originally given, and these constrain the range of knowledge to which we have access. We cannot get beyond the specific kinds of data and modes of inference that characterise our knowledge- acquiring systems - however paltry these may be. The question has been, not whether this is correct as a general thesis, but rather what the operative principles are, and where their limits fall. How limited are we, and what explains the extent and quality of our limits? Can we, indeed, come to understand the workings of our own epistemic capacities?

The most recent major theorist in this tradition, and perhaps the most explicit, is Chomsky. According to him, the mind is a biologically given system, organized into discrete (though interacting) subsystems or modules, which function as special-purpose cognitive devices, variously structured and scheduled, and which confer certain epistemic powers and limits on their possessors. The language faculty is one such module: innately based and specifically structured, it comes into operation early in human life and permits the acquisition, or emergence, of an intricate cognitive system in a spectacularly short time - this being made possible by the antecedent presence of the principles of universal grammar in its initial design. As Chomsky observes, the knowledge so generated is no simpler, by any plausible objective standard, than knowledge of advanced mathematics or physics; but the human mind is so adapted that it yields this knowledge with comparative ease - somewhat as we effortlessly develop a complex physiological structure in a pre-programmed way. (Compare the ease with which our visual system converts two-dimensional arrays into three-dimensional percepts, but the difficulty we have in making even simple two-dimensional drawings on the basis of our three-dimensional visual experience.) As a corollary, however, this faculty is poorly adapted to picking

up conceivable languages distinct in grammatical structure from that characteristic of human speech. Its strength is thus also its weakness; in fact, it could not be strong in one way without being weak in another. With language as his model case Chomsky develops a general conception of human intelligence which includes the idea of endogenously fixed cognitive limits even for conscious reason. Here, too, the price of ready success in some domains is fumbling or failure in others.

"The human mind is a biologically given system with certain powers and limits. As Charles Sanders Peirce argued, "Man"s mind has a natural adaptation to imagining correct theories of some kinds....If man had not the gift of a mind adapted to his requirements, he could not have acquired any knowledge". The fact that "admissible hypotheses" are available to this specific biological system accounts for its ability to construct rich and complex explanatory theories. But the same properties of mind that provide admissible hypotheses may well exclude other successful theories as unintelligible to humans. Some theories might simply not be among the admissible hypotheses determined by the specific properties of mind that adapt us "to imagining theories of some kinds," though these theories might be accessible to a differently organised intelligence. Or these theories might be so remote in an accessibility ordering of admissible hypotheses that they cannot be constructed under actual empirical conditions, though for a differently structured mind they might be easily accessible. Among the theories that he thinks may not be accessible to human intelligence, in virtue of its specific slant, Chomsky includes the correct theory of free creative action, particularly the ordinary use of language. We seem able to develop adequate theories of linguistic competence, i.e. grammars, but when it comes to actual performance our theoretical insights are meagre or nonexistent. And this is a reflection of the contingencies of our theoretical capacities, rather than an indication of objective intransigence.

Q24. Which of the following best summarizes the content of the first paragraph of the passage?

 a) Determining the scope of human knowledge is a preoccupation of philosophy but the range of knowledge to which we can claim access is bounded by certain limiting forces.
 b) It is correct to say that we cannot get beyond certain information and inference-drawing mechanisms that characterise our knowledge-acquiring processes. Understanding the workings of our own epistemic capacities will help us in our quest for knowledge.
 c) There are limits to our epistemic capacities and these limits stem from the internal organisation and functioning of the knowing mind.

d) There are limits to our understanding of knowledge that result from our contingent position in the world. We cannot rise above traditional ways of gathering data and forming concepts, beliefs, theories and inferences.

Q25. According to the passage, man's access to the full range of knowledge is limited by which of the following factors?

a) Agreement with the predetermined principles.
b) The concurrence with certain pre-existing precepts while forming beliefs.
c) Limitations inherent in the knowledge-gathering process and ignorance of philosophical endeavour.
d) A certain anxiety about the nature, possibility and scope of philosophical knowledge.

Q26. Which of the following statements is incorrect about language as can be inferred from para 2?

a) Language is a specifically structured module of the human mind that comes into play early in human life.
b) The concepts of grammar are adapted in the initial design of language.
c) Language helps in the evolution of the mind in a short span of time and the mind can yield the knowledge of language effortlessly.
d) The language faculty, and therefore the mind, are fairly adapted to picking up distinct languages, to which the principles of universal grammar need not apply.

Q27. What purpose does the discussion of the working of the human visual system serve in the context of the passage as a whole?

a) It reminds us that the visual system is a complex physiological structure.
b) It brings out the comparison between the physiological process of vision and the psychological faculty of language.
c) The discussion compares the limitations of three- dimensional visual experience with those inherent in the language module.
d) The discussion highlights the fact that both the visual system and the language module are developed in a pre-programmed way and inspite of their complexity, their strengths are also their weaknesses.

Q28. "Man's mind has a natural adaptation to imagining correct theories of some kinds." (Last para).
Why are other theories classified as 'unintelligible to humans'?

a) They cannot be formulated under actual heuristic conditions.

b) Our own epistemic capacities are not fully developed.
c) They may not be in the same domain as the admissible hypotheses determined by the specific properties of mind.
d) All of the above.

Q29. According to the last paragraph of the passage, the ability to construct rich and complex explanatory theories is primarily dependent on?

a) The capacity of man's intelligence.
b) A linguistic framework.
c) The availability of 'admissible hypotheses'.
d) The theory of free creative action.

Q30. DIRECTIONS *for questions 30 and 31:* 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. In November 2013, Viktor Yanukovych, the president of Ukraine then, succumbed to Russian pressure and renounced an association agreement

2. with European Union that he and his predecessors had spent six years of negotiating. Many Ukrainians thought their country's best hope for

3. transforming themselves from a corrupt gangster state into an order democracy had been sacrificed on the orders of Vladimir Putin, Russia's president.

4. Thousands set camp on Kiev's Maidan, chanting "Ukraine is Europe". Police attacked, touching a cycle of protest

5. and violence that ended in Mr Yanukovych's flight to Russia, a new government, and the signing of the Ukraine-EU agreement.

Q31. DIRECTIONS *for questions 30 and 31:* 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.   One of the reading rooms of the public library in Newark, New Jersey, where the teenage Philip Roth fired up his imagination, is an events room now, empty of books.

2.   Erected by public demand in the 1890s as one of the first civic building in what was then swelling industrial town near the mouth of the Hudson river,

3.   the library is now as much as an information service for the poor as a books repository. People use the library

4.   to get access to social services, to type out a job application, or to learn English. This is important work, but not what its ambitious architects had in mind.

5.   Paying for the library is a constant worry, its main benefactor, the city, is one of America's poorest.

DIRECTIONS *for questions 32 to 34:* The passage given below is followed by a set of three questions. Choose the best answer to each question.

The euro-zone crisis that first blew up in 2009 has transitioned from an acute phase to a chronic one. Many politicians, especially Germans, think the main culprits were not the design flaws in the single currency's design but fiscal profligacy and excessive public debt. That meant the only cure was fiscal austerity. But later bail-outs of countries like Ireland and Spain showed that excessive private debt, property bubbles and over-exuberant banks can cause even bigger problems for financial stability.

That is one early conclusion of "The Euro and the Battle of Ideas", by three academics from Germany, Britain and France. Markus Brunnermeier, Harold James, and Jean-Pierre Landau describe thoroughly the watershed moments of the crisis, how power shifted to national governments (especially in Berlin) and the roles played by the IMF and the European Central Bank (ECB). They blame euro-zone governments for not pushing through structural reforms in good times.

Such complaints are often heard, not least from Britain and America. But the authors find the roots of these failings not in stupidity but in clashing economic ideas. Simplifying a bit, they focus on Germany and France. The Germans fret about the moral hazard created by bail-outs. The French worry about the lack of a mutualised debt instrument. German policymakers are often lawyers, French ones more frequently economists.

Examples of such ideological clashes run throughout the book. Throughout the crisis the French tended to see bank or national-debt woes as cases of illiquidity whereas the Germans usually viewed them as signs of insolvency. Germany, a federal state with strong regional governments, saw the Maastricht Treaty, the framework for the Euro, as a set of rules. France, with a more centralized system of government, saw the framework as flexible, to be overseen by governments. Eurobonds were backed by France (opposed

by Germany) and over accountability and democratic control at supranational level was backed by Germany (not by France).

Such differences in ideas are not party-political (they persist regardless of whether the two countries have centre-left or centre-right governments). Nor, interestingly, are they fixed forever in history: in the 19th century, and even more in the 1930s, it was France, not Germany, that favoured rigid rules, big surpluses and the discipline of the gold standard. Only after 1945 did that change. The authors conclude by discussing how the troubles faced by the Euro have led its member states to focus on national, as opposed to collective, responses, a reaction explained by the resurgence of the battle of economic ideas: rules vs. discretion, liability vs. solidarity, solvency vs. liquidity, austerity vs. stimulus.

Q32. The primary purpose of the book "The Euro and the Battle of Ideas" as discussed in the passage is to

a) Show how the seemingly incompatible differences in the ideologies of prominent European countries can be reconciled to ensure Europe's survival.
b) Explain that the problem with the Euro lies in the philosophical differences between the founding countries of the Eurozone, particularly Germany and France.
c) Provide a forensic investigation and a road map for Europe's future through economic analysis and historical reflection.
d) Demonstrate that exploding sovereign debt was the symptom rather than the cause of the crisis and suggest that fiscal austerity is the only cure for the crisis.

Q33. Which of the following can be understood from the passage?

a) Fiscal austerity is seen as a solution to the Euro crisis by German politicians because profligacy was not a German trait.
b) The Maastricht Treaty was signed in 1945.
c) The authors of the book note that the points of view of Germany and France before 1945 were the reverse of their current ideological view-points.
d) France has a centralized system of government and her policy makers are mostly lawyers while Germany has regional governments and the policy makers in Germany are economists.

Q34. Which of the following would describe the German camp in terms of their views on the Euro crisis, as can be deduced from the details mentioned in the book "The Euro and the Battle of Ideas"?
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. They fret about the moral hazard created by bail-outs and the lack of a mutualised debt instrument.

2. They tend to see bank or national-debt woes as symbols of insolvency.

3. They saw the Maastricht Treaty, the framework for the Euro, as flexible, to be overseen by governments.

4. They favoured rigid rules and big surpluses after 1945.

5. They oppose Eurobonds as well as over accountability and democratic control at supranational level.

DILR

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

Four actresses, Amy, Charlotte, Denise and Nicole, acted in a certain number of films such that no two actresses ever acted in the same film. It is known that, by the end of the year 2014, the four actresses had acted in a total of exactly 18 films and, by the end of 2016, the four of them had acted in a total of exactly 35 films.

The following information is known about the number of films that they acted in:

1. The number of films in which Charlotte acted during 2015 was the same as the number of films in which Amy acted during 2016, which, in turn, was more than the number of films in which Denise acted during 2016.

2. By the end of 2014, Amy and Nicole had acted in 3 and 5 films respectively.

3. Even though Denise did not act in any film during 2016, each of Denise, Amy and Nicole had acted in the same number of films by the end of 2016.

4. The number of films in which Nicole acted during 2016 was the same as that during 2015, which, in turn, was twice the number of films in which Amy acted during 2016.

5. The number of films in which Denise acted during 2015 was the same as the number of films in which Charlotte acted during 2016.

Q1. DIRECTIONS *for questions 1 to 3:* Type in your answer in the input box provided below the question.
In how many films did Amy act during 2015?

Q2. DIRECTIONS *for questions 1 to 3:* Type in your answer in the input box provided below the question.

What is the total number of films in which the four actresses acted during 2016?

Q3. **DIRECTIONS** *for questions 1 to 3:* Type in your answer in the input box provided below the question.
In how many films did Denise act by the end of 2014?

Q4. **DIRECTIONS** *for question 4:* Select the correct alternative from the given choices.
Which of the four actresses acted in the highest number of films during 2016?

 a) Charlotte
 b) Nicole
 c) **Amy**
 d) Cannot be determined

DIRECTIONS *for questions 5 to 8:* Answer these questions on the basis of the information given below.
In a meeting, six employees, Ram, Kalyan, Parthiv, Tarun, Guru and Larry, were sitting around a circular table in six equally spaced chairs. Each employee had a different designation among CEO, CFO, CSO, COO, CTO and CAO. The following information is known about their relative positions around the table:
     1.   Guru was sitting to the left of Ram, while Tarun was sitting opposite the COO.
     2.   Kalyan was sitting to the left of the CSO but was not sitting adjacent to Parthiv, who, in turn, was the CTO.
     3.   The CFO was sitting to the left of the CEO.
     4.   Larry, who was sitting to the left of Parthiv, was neither the CSO nor sitting to the right of the CSO.

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

 a) Larry
 b) Kalyan
 c) **Ram**
 d) Tarun

Q6. **DIRECTIONS** *for questions 5 to 8:* Select the correct alternative from the given choices.
Who was sitting opposite the CSO?

a) Larry
b) **Ram**
c) Guru
d) Parthiv

Q7. **DIRECTIONS** *for questions 5 to 8:* Select the correct alternative from the given choices.
Who among the following was sitting adjacent to the CAO but not adjacent to the CFO?

a) Guru
b) **Ram**
c) Kalyan
d) Parthiv

Q8. **DIRECTIONS** *for questions 5 to 8:* Select the correct alternative from the given choices.
Which of the following pairs of persons were sitting adjacent to each other?

a) The CEO, the CAO
b) The CAO, the CSO
c) The COO, the CSO
d) The CSO, the CFO

DIRECTIONS *for questions 9 to 12:* Answer these questions on the basis of the information given below.
Four teams, A, B, C and D, played in a football tournament, in which each team played against each of the other three teams exactly twice. In any match, the winner was awarded three points, the loser, no points and, in case of a tie, the two teams were awarded one point each. Further, it is also known that for any two teams, the result of the first match that they played against each other was not the same as that of the second match.
The following table provides the points that each team scored at the end of the tournament:

Team	Points
A	11
B	5
C	10
D	6

Q9. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.
C drew a match against which of the following teams?

 a) **A**
 b) **B**
 c) D
 d) More than one of the above

Q10. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.
B won a match against which of the following teams?

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

Q11. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.
For which of the following pairs of teams were the total points scored by both the teams the maximum, if only the matches that they played against each other are considered?

 a) B and D
 b) C and D
 c) A and C
 d) A and D

Q12. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.
If, after the first three matches that it played, A scored a total of 6 points, then at least one of the first three matches of A <u>must</u> have been against

 a) C.
 b) **D.**
 c) **B.**
 d) None of the above

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

In a hostel, there are exactly six rooms along a corridor, from left to right. In each room, there is exactly one item among a TV, an AC, a Geyser, a Computer, a Wardrobe and a Heater. Further, exactly six persons - Bhargav, Chintu, Dev, Eshwar, Farhan and Gautam - stay in the six rooms such that only one person stays in each room.

The following information is known about the persons who stay in each room:

1.   Farhan, who does not stay in the room with the Computer, stays in the room, which is to the left of the room with the Wardrobe and to the immediate right of the one with the AC.

2.   Eshwar, who stays in the room with the Geyser, stays in the room adjacent to the one with the AC.

3.   Chintu stays in the room to the immediate left of the one with the TV.

4.   Bhargav stays in the room to the immediate left of the room in which Dev stays and one of these two rooms has a Heater.

5.   There are at least four rooms to the left of the one with the TV, while the room with the Computer is not adjacent to the one with the Geyser.

Q13.   DIRECTIONS *for questions 13 to 16:* Select the correct alternative from the given choices.
Bhargav stays in the room with the

 a) Heater.
 b) Wardrobe.
 c) **TV.**
 d) Computer.

Q14.   DIRECTIONS *for questions 13 to 16:* Select the correct alternative from the given choices.
How many persons stay in the rooms between the room with the Wardrobe and the room in which Dev stays?

 a) **2**
 b) 3
 c) **4**
 d) None of the above

Q15.   DIRECTIONS *for questions 13 to 16:* Select the correct alternative from the given choices.
The room which is to the immediate right of the one with the Heater has

a) Wardrobe.
b) Computer.
c) Geyser.
d) **AC.**

Q16. DIRECTIONS *for questions 13 to 16:* Select the correct alternative from the given choices.
Which of the following pairs of persons stay in adjacent rooms?

a) Bhargav, Eshwar
b) Gautam, Farhan
c) Dev, Chintu
d) Bhargav, Chintu

DIRECTIONS *for questions 17 to 20:* Answer these questions on the basis of the information given below.
A hexathlon is a sport, which comprises six events, 1000m Running, 200m Running, 200m Breaststroke, 200m Backstroke, 400m Running and 800m Running, not necessarily in the same order. Any athlete who participates in the hexathlon participates in each of the six events, one after the other. The order in which any athlete completes the six events is the same for all the athletes.
Six athletes - A through F - participated in a hexathlon, which started at exactly 10:00 AM on a particular day. The table below provides the event that each athlete was participating in at exactly 10:10 AM and 10:15 AM (*a hyphen ('-') indicates that none of the athletes were participating in that event at that time*).

Event	Athletes participating in the event at 10:10 AM	Athletes participating in the event at 10:15 AM
1000m Running	E	-
200m Running	C	B
200m Breaststroke	A	C
200m Backstroke	D	-
400m Running	B	D, E
800m Running	F	A, F

Q17. DIRECTIONS *for questions 17 to 20:* Select the correct alternative from the given choices.
What was the fourth event of the hexathlon?

a) 1000m Running
b) 200m Running

c) 200m Breaststroke
d) Cannot be determined

Q18.   DIRECTIONS *for questions 17 to 20:* Select the correct alternative from the given choices.
How many events did B complete by 10:10 AM?

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

Q19.   DIRECTIONS *for questions 17 to 20:* Select the correct alternative from the given choices.
What is the last event of the hexathlon?

a) 200m Breaststroke
b) 800m Running
c) 400m Running
d) Cannot be determined

Q20.   DIRECTIONS *for questions 17 to 20:* Select the correct alternative from the given choices.
How many of the following statements logically follow from the given information?
    1.   200m Breaststroke is after 400m Running.
    2.   200m Running is before 200m Backstroke.
    3.   400m Running is before 200m Running.
    4.   1000m Running is before 200m Backstroke.

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

DIRECTIONS *for questions 21 to 24:* Answer these questions on the basis of the information given below.
Five countries - Lamuria, Prevalia, Quasimore, Stertoran and Talnia, were ranked from 1 to 5 on the basis of two parameters - Cleanliness and Sustainability - such that a numerically lower rank is considered better than a numerically higher rank. The following information is known about their ranks:
    1.   For no country was its rank in Cleanliness the same as its rank in Sustainability.

2.   The number of countries ranked better than Lamuria in Cleanliness was the same as the number of countries ranked worse than it in Sustainability.

3.   At least three countries were ranked better in Cleanliness than Quasimore, which, in turn, was ranked fourth in Sustainability.

4.   Prevalia was ranked better than Stertoran in both Cleanliness and Sustainability.

5.   Talnia was ranked second in Sustainability.

Q21.   DIRECTIONS *for questions 21 to 23:* Select the correct alternative from the given choices.
What is the rank of Prevalia in Sustainability?

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

Q22.   DIRECTIONS *for questions 21 to 23:* Select the correct alternative from the given choices.
How many countries are ranked worse than Stertoran in Cleanliness?

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

Q23.   DIRECTIONS *for questions 21 to 23:* Select the correct alternative from the given choices.
Which country has the same rank in Sustainability as that of Talnia in Cleanliness?

a) Prevalia
b) Quasimore
c) Stertoran
d) Lamuria

Q24.   DIRECTIONS *for question 24:* Type in your answer in the input box provided below the question.
For how many countries do their ranks in Cleanliness and Sustainability, taken in any order, form two consecutive integers?

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

A group of friends were discussing about how they spent a weekend. Some of them went camping, while the others stayed at home. All the friends who went camping participated in at least one of two activities - playing cards and trekking. All the friends who stayed at home participated in at least one of two activities - playing cards and watching movies.

The following information is known about the number of friends who participated in each activity:

1. The number of friends who went for a trek was twice the total number of persons who participated in exactly two activities, among the entire group of friends.

2. The number of friends who played cards among those who went camping was 11 less than the number of friends who watched movies.

3. The total number of friends who played cards among the entire group of friends was 20 more than the number of friends who went for a trek.

4. The sum of the number of friends who played cards among the entire group of friends and the number of friends who watched movies was 94.

5. The total number of friends who participated in exactly two activities was 22, which was four less than the number of friends who participated only in trekking.

Q25. DIRECTIONS *for questions 25 to 28:* Type in your answer in the input box provided below the question.

Among the friends who stayed at home, how many friends played cards?

Q26. DIRECTIONS *for questions 25 to 28:* Type in your answer in the input box provided below the question.

What is the difference between the number of friends who went camping and the number of friends who stayed at home?

Q27. DIRECTIONS *for questions 25 to 28:* Type in your answer in the input box provided below the question.

Among the entire group of friends, what is the total number of persons who only played cards?

Q28. **DIRECTIONS** *for questions 25 to 28:* Type in your answer in the input box provided below the question.
What is the number of friends who only watched movies?

DIRECTIONS *for questions 29 to 32:* Answer these questions on the basis of the information given below.
On a particular day, six friends, Kirk, Rob, Tom, Steve, Phil and Manny, together went to five different shops, Shop1 through Shop 5, in that order. Each of the six friends purchased a few necessities from each of the five shops. It is known that the amount of money with any friend immediately before he purchased anything from Shop 4 was the same.
The following graph provides the amount of money (in USD) that each person spent in each shop:
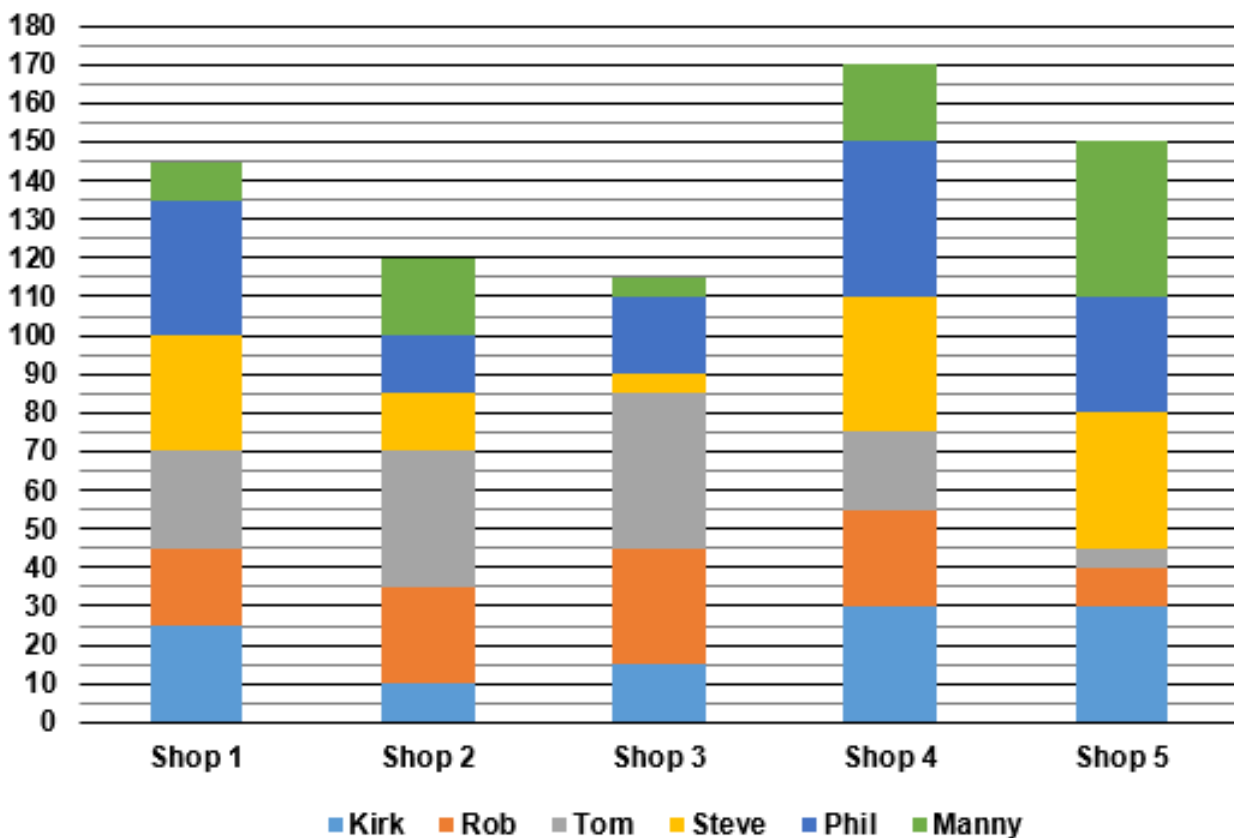
Q29. **DIRECTIONS** *for questions 29 to 32:* Select the correct alternative from the given choices.
Which friend had the least amount with him before they purchased anything from Shop 1?

 a) Manny

b) **Tom**
c) Steve
d) Kirk

Q30. **DIRECTIONS** *for questions 29 to 32:* Select the correct alternative from the given choices.
Which friend had the highest amount with him after they purchased from Shop 5?

a) Tom
b) **Rob**
c) Steve
d) Manny

Q31. **DIRECTIONS** *for questions 29 to 32:* Select the correct alternative from the given choices.
After the five friends purchased from each shop, they compared the money left with them and declared all the friends with the maximum amount as the *Most Affluent*. Which of the following friends would have been declared the *Most Affluent* at least twice?

a) Kirk
b) **Rob**
c) Manny
d) More than one of the above

Q32. **DIRECTIONS** *for questions 29 to 32:* Select the correct alternative from the given choices.
If each friend spent at least 50% of the money that he had at the beginning in the five shops combined, what is the maximum amount of money with any friend before any of them purchased from Shop 1?

a) USD 250
b) USD 310
c) USD 280
d) USD 245

QA

Q1. **DIRECTIONS** *for question 1:* Type in your answer in the input box provided below the question.
Given p, q, r, s are whole numbers and a, b, c, d are distinct prime numbers, such that
$X = a^p b^q c^r d^s$ has 2016 factors;

Y=$bpdqas$ has 168 factors;
and Z = $cqbrds$ has 288 factors.
What is the minimum possible value of $p + q + r + s$?

Q2. DIRECTIONS *for questions 2 to 9:* Select the correct alternative from the given choices.
If the point (6, 11) is the image of the point (3, 5) with respect to the line $lx + my + n = 0$, find the value of $\dfrac{l+m}{n}$.

a) $\dfrac{-6}{41}$

b) $\dfrac{-6}{47}$

c) $\dfrac{4}{35}$

d) $\dfrac{-4}{37}$

Q3. DIRECTIONS *for questions 2 to 9:* Select the correct alternative from the given choices.
The graph of $x2 + y2 = 29$ and the curve $xy = 10$ intersect at certain number of points. All these points of intersection are joined successively by line segments to form a convex polygon. Which of the following best describes the polygon thus obtained?

a) Rectangle
b) Square
c) Hexagon
d) Rhombus

Q4. DIRECTIONS *for questions 2 to 9:* Select the correct alternative from the given choices.
There are three containers, A, B and C, filled with 60%, 75% and 80% solutions respectively, of alcohol in water. The solutions in the three containers are taken in a certain ratio and mixed thoroughly to form a 70% solution of alcohol in water. In this mixture, if the quantity of the solution taken from C is 40% less than the quantity taken from A, by what percent is the quantity taken from B less or more than the quantity taken from A?

a) 10% less
b) 10% more

c) 20% less
d) 20% more

Q5. DIRECTIONS *for questions 2 to 9:* Select the correct alternative from the given choices.
If $f(x)$ is a quadratic polynomial, such that $f(5) = 35$ and $f(-5) = 15$, and $f(p) = f(q) = 0$, find $p + q$.

a) **2**
b) **-3**
c) **5**
d) Cannot be determined

Q6. DIRECTIONS *for questions 2 to 9:* Select the correct alternative from the given choices.
In a relay race, each team member runs only a certain (not necessarily equal) portion of the total length of the race, such that together all the team members cover the entire length of the race. A certain relay race is conducted, with each team comprising exactly two runners. A and B are two runners of one of the teams participating in the relay race. The total length of the race is 140 m and the total time that A and B take to finish the race is 20 seconds. If it turns out that the average speed of A and B together for the entire race equals the average of their individual speeds, how many of the following statements are false?
    1.   If A's speed is 6 m/s, B's speed is 8 m/s.
    2.   If B's speed is more than 8 m/s, A runs for less than 12 seconds.
    3.   If B's speed is 7 m/s, A's speed is 7 m/s.
    4.   If A's speed is less than 6 m/s, B runs for more than 12 seconds.

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

Q7. DIRECTIONS *for questions 2 to 9:* Select the correct alternative from the given choices.
In a society, 50 people know Telugu, 40 know Hindi and 30 know English. The number of people who know Telugu and Hindi is 15. The number of people who know Hindi and English is 8 and the number of people who know Telugu and English but not Hindi is 4. If each member of the society knows at least one of the three languages, what is the number of people in the society?

a) **93**

b) **87**
c) **96**
d) Cannot be determined

Q8. DIRECTIONS *for questions 2 to 9:* Select the correct alternative from the given choices.
In the set of all two-digit natural numbers, if the digits of each number are interchanged, how many numbers have their values diminished consequently?

 a) **42**
 b) **36**
 c) **33**
 d) **45**

Q9. DIRECTIONS *for questions 2 to 9:* Select the correct alternative from the given choices.
The number of houses in a locality is half the number of children and the number of shops is $\frac{1}{10}^{th}$ of the number of houses. The number of adults is $\frac{5}{3}^{rd}$ of the number of children. Find the minimum possible number of girls in the locality, if 55% of the children are girls.

 a) **6**
 b) **11**
 c) 33
 d) **44**

Q10. DIRECTIONS *for question 10:* Type in your answer in the input box provided below the question.
In a lock and key factory, the lock machine produces 100 locks per hour and needs to be oiled for 5 hours for every 1000 locks produced. The keys machine produces 150 keys per hour and needs oiling for 10 hours after production of every 3000 keys. If both machines start at the same time, what is the minimum duration (in hours) required for producing 6000 sets, each set comprising one lock and two keys?

Q11. DIRECTIONS *for question 11:* Select the correct alternative from the given choices.

A triangle is cut out of a square, which, originally, was cut out of a circle. If the diameter of the circle was 4 cm, the area of the triangle is at most

a) $4\sqrt{3}$ sq.cm.
b) 4 sq.cm.
c) 8 sq.cm.
d) $8\sqrt{2}$ sq.cm.

Q12. DIRECTIONS *for question 12:* Type in your answer in the input box provided below the question.
Eleven persons, P1, P2 ……. P11, have *m* coins each. P1 first distributes 1 coin to each of the remaining 10 persons. P2 then takes 2 coins from each of the remaining 10 persons. Later, P3 distributes 3 coins to each of the remaining 10 persons and this process continues until P7 completes his turn. If P7 is left with no coins after distributing coins to the remaining persons, find the total number of coins with the four persons P8, P9, P10 and P11 after P7 completes his turn.

Q13. DIRECTIONS *for question 13:* Select the correct alternative from the given choices.
Pradeep wants to take a loan of Rs.10,00,000 to buy a house. He approached two banks, A and B, for the loan. Both banks agreed to give the loan but at different terms. Bank A charges interest at 20% per annum, compounded annually, while bank B charges simple interest at 25% per annum. If Pradeep wants to repay the loan in a single payment at the end of *n* years, find the maximum value of *n* for which Bank A is a better preference for Pradeep when compared to Bank B.

a) **2**
b) **3**
c) **4**
d) **5**

Q14. DIRECTIONS *for question 14:* Type in your answer in the input box provided below the question.

If *x*, *y* and *z* are positive real numbers, find the ratio $\dfrac{y}{z}$ for which the value of $\left(\dfrac{x}{y} + \dfrac{z}{12x} + \dfrac{4y}{x} + \dfrac{x}{3z} \right)$ is the minimum.

Q15. **DIRECTIONS** *for question 15:* Select the correct alternative from the given choices.
An arithmetic progression is given by 2, 4, 6, 8 …….. upto *n* terms. If the sum of the last five terms and the first five terms is 130, find the sum of all the terms.

 a) **150**
 b) 156
 c) **180**
 d) **164**

Q16. **DIRECTIONS** *for question 16:* Type in your answer in the input box provided below the question.
There are four straight lines which divide a circle into the greatest possible number of regions. If three additional straight lines are drawn, what is the greatest number of additional regions that can be formed in the circle?

Q17. **DIRECTIONS** *for question 17:* Select the correct alternative from the given choices.
A mathematics teacher asked each of her students to think of a natural number which was a perfect square and then convert it to a number system to the base of any natural number of their choice, where the base is not more than 9. The teacher later observed that though no two students took the same base, all the students in the class ended up with the same result of 12321. Find the maximum, possible number of students in the class.

 a) **8**
 b) **7**
 c) **6**
 d) **5**

Q18. **DIRECTIONS** *for questions 18 and 19:* Type in your answer in the input box provided below the question.
Exactly 3000 students wrote a multiple choice test comprising exactly five questions, each question, in turn, having exactly five answer choices, exactly one of which is correct. Every question correctly answered fetches 4 marks and every question incorrectly answered fetches -1 mark. If each student attempted all the questions and the answer choices marked by no two students are the same for all the five questions, then the number of students with a net positive score in the test is at least

Q19. **DIRECTIONS** *for questions 18 and 19:* Type in your answer in the input box provided below the question.
If a, b, c are real and $(x - a)(x - b) + (x - b)(x - c) + (x - c)(x - a) = 0$, then how many of the following statements are true?
   1.   The roots of this equation are always real.
   2.   The roots of this equation are imaginary, if $a + b \geq 2c$.
   3.   The roots of this equation are equal, if $a = b = c$.
   4.   The roots of this equation are always imaginary

Q20. **DIRECTIONS** *for questions 20 to 22:* Select the correct alternative from the given choices.
Mahendar took a contract to paint the railings on both the sides of a way bridge. On one side, he did half of the work with the help of only Manish and the remaining half with the help of both Naren and Karan, each of whose efficiency is twice that of Manish. Mahendar completed painting the railings on the other side of the way bridge, working alone. If Mahendar's share in the total wages is 75%, then what is the ratio of the efficiency of Mahendar to that of Manish?

 a) 2 : 1
 b) 3 : 2
 c) 2 : 3
 d) 1 : 2

Q21. **DIRECTIONS** *for questions 20 to 22:* Select the correct alternative from the given choices.
An arithmetic progression $a1$, $a2$, $a3$, ….. consists of natural numbers with a common difference of 18. If x is the mth term and y is the average of the first n ($n \neq m$) terms, which of the following could be a possible value of (x, y)?

 a) (23, 37)
 b) (42, 69)
 c) (45, 56)
 d) (54, 69)

Q22. **DIRECTIONS** *for questions 20 to 22:* Select the correct alternative from the given choices.
Ajay and Bhavan are two friends who have a certain number of marbles with them. Ajay has m marbles and Bhavan has n marbles. The number m is a

two-digit number whose square root is a perfect square. The number n is a two-digit prime number whose units digit and tens digit are both distinct perfect squares. Considering the following statements independently, which of the statements is/are definitely false?

    1. $m < n$, if the tens digit of m is less than its units digit.
    2. $| m - n |$ is a perfect square.
    3. $m + n$ is a perfect square.

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

Q23. DIRECTIONS *for question 23:* Type in your answer in the input box provided below the question.

Robin, the cook, can cut either 120 carrots or 72 potatoes or 60 beetroots in t minutes. One day, during the first K minutes, he spent an equal amount of time cutting each of the three types of vegetables. However, in the next K minutes, he cut exactly n carrots, n beetroots and n potatoes. If he cut a total of 282 vegetables during the first 2K minutes on that day, what is the value of n?

Q24. DIRECTIONS *for question 24:* Select the correct alternative from the given choices.

From a cuboid of dimensions 4 m × 6 m × 8 m, the largest possible cube is cut out. What is the minimum possible number of cubes, all of equal size, into which the remaining part of the solid can be cut, ensuring that no part of the solid remains?

a) **2**
b) **4**
c) **16**
d) **20**

Q25. DIRECTIONS *for question 25:* Type in your answer in the input box provided below the question.

Find the sum of all the natural numbers from 1 to 120 which are divisible neither by 2 nor by 7.

Q26. DIRECTIONS *for questions 26 to 28:* Select the correct alternative from the given choices.

If *a* and *b* are real numbers and *n* is an integer, such that $a < b$, $ab > 0$ and $an > bn$, which of the following statements can be true (not necessarily simultaneously)?

1. *n* is negative.
2. *n* is positive and even.
3. *n* is negative and odd.

a) Only I
b) Only I and II
c) Only I and III
d) I, II and III

Q27. **DIRECTIONS** *for questions 26 to 28:* Select the correct alternative from the given choices.

If *p*, *q* and *r* have a product of 1,

$$\frac{1}{1+r^2p+r^2q} + \frac{1}{1+p^2q+p^2r} + \frac{1}{1+q^2p+q^2r} =$$

a) $\dfrac{(p+q+r)^2}{9}$

b) $\dfrac{(p+q+r)^2}{3}$

c) 1

d) $\dfrac{3}{(p+q+r)^3}$

Q28. **DIRECTIONS** *for questions 26 to 28:* Select the correct alternative from the given choices.
The angle of elevation of a pole was observed to be 45° from two points B and D on the ground. If the foot of the pole is A, and $\angle ABD = 45°$ and the distance BD = 25 m, then find the height of the pole.

a) 25 m

b) $\dfrac{25}{\sqrt{2}}$ m

c) $\dfrac{25\sqrt{3}}{\sqrt{2}}$ m

d) $\dfrac{25}{\sqrt{3}}$ m.

Q29. **DIRECTIONS** *for question 29:* Type in your answer in the input box provided below the question.
Find the number of whole numbers less than 100 such that the sum of the factorials of the individual digit(s) of the number is less than or equal to the number.

Q30. **DIRECTIONS** *for question 30:* Select the correct alternative from the given choices.
In triangle ABC, BC < CA < AB. If the distance of S, the circumcentre of the triangle, from the three sides BC, CA and AB is p, q and r respectively, then which of the following is the correct relation between p, q and r?

a) $r < q < p$
b) $p < q < r$
c) $q < p < r$
d) $r < p < q$

Q31. **DIRECTIONS** *for question 31:* Type in your answer in the input box provided below the question.
Given $x1 + x2 + x3 + \ldots.. xn = 15015$, where n is a natural number and $x1$ is an integer. If $xi - xi - 1 = 2$, for all $i = 2, 3, \ldots.n$, then find the number of different possible values of n.

Q32. **DIRECTIONS** *for questions 32 to 34:* Select the correct alternative from the given choices.
A cube is taken and all its six faces are painted. Then, the cube is cut by six planes, so as to yield the maximum number of smaller cubes. If 3.5 litres of paint was consumed to paint the original cube, find the additional amount of paint needed to paint all the unpainted faces of all the smaller cubes.

a) 3.5 litres
b) 11.5 litres
c) 7 litres
d) 10.5 litres

Q33. **DIRECTIONS** *for questions 32 to 34:* Select the correct alternative from the given choices.
The cost of 1 folder, 2 notebooks and 5 pens is Rs.45. The cost of 2 folders and 3 pens exceeds that of 4 notebooks by Rs.17. Which of the following is sufficient to determine the cost of a pen?

 a) The cost of 4 folders and 13 pens.
 b) The excess of the cost of 9 folders, and 3 pens over that of 30 notebooks.
 c) The excess of the cost of 20 notebooks and 11 pens over that of 2 folders.
 d) The cost of 3 folders, 4 notebooks and 5 pens.

Q34. DIRECTIONS *for questions 32 to 34:* Select the correct alternative from the given choices.

Find the sum of the series S

$$= \frac{1}{\sqrt{1}+\sqrt{3}} + \frac{1}{\sqrt{2}+2} + \frac{1}{\sqrt{3}+\sqrt{5}} + \frac{1}{2+\sqrt{6}} \cdots \frac{1}{\sqrt{119}+\sqrt{121}}.$$

 a) **5**

 b) $\dfrac{2\sqrt{15}+1}{2}$

 c) $5 + \dfrac{2\sqrt{15}-1}{\sqrt{2}}$

 d) $\dfrac{10+2\sqrt{30}+\sqrt{2}}{2}$