

XAT- 2017

Name _____

Test Booklet No.

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Booklet Series: A

INSTRUCTIONS

- 1. DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO.**
- Fill in the information required on the answer sheet. Your test may not be evaluated if the required details are not entered on the answer sheet (OMR).
- 3. This examination consists of two parts: Part I and Part II. Part I has three sections A, B and C with 24, 21 and 27 questions respectively, i.e. a total of 72 questions. The three sections of Part I are followed by Part II with 25 GK questions and an essay. If there is a problem with your test booklet, inform the invigilator/supervisor immediately and get a replacement.**
- 4. Do not seek clarification on any item in the test booklet from the test invigilator or the centre supervisor. Use your best judgment.**
- 5. The time for completing the three sections and general knowledge is 210 minutes. You are expected to answer the first three sections in 170 minutes and General Knowledge QUESTIONS in 35 minutes. Aim at securing maximum scores in each section. General Knowledge marks would be used only for the final selection and not for shortlisting candidates for interview/GD.**
- All questions carry **EQUAL** marks. **ONE FOURTH OF A MARK** may be deducted for each **incorrect answer**.
- Leaving a question **UNATTEMPTED** may result in a **DEDUCTION OF 0.05 MARK**. However, this deduction will not apply for a **MAXIMUM OF 12 UNATTEMPTED QUESTIONS**. The negative marks for **UNATTEMPTED QUESTIONS** shall be deducted proportionately across the three sections.
- Each question has five alternatives. Answer each question by darkening the appropriate bubble against the question number on the answer sheet. For example, if your answer to question number 1 is **B**, completely darken the bubble **B** against the question.
- Mark all your answers only on the (OMR) answer sheet. Use the margin in the test booklet for rough work. No other piece of paper is permitted for rough work.
- 10. Use only BLUE OR BLACK BALL-POINT PEN for marking answers on the OMR answer sheet. Do not use gel pens or ink pens.**
- Failure to follow instructions and examination norms will lead to disqualification.

To open the test booklet, insert a pen beneath this page and tear open along the right side of the test booklet as indicated by the arrow at the bottom of the page.

PLEASE WAIT FOR THE SIGNAL TO OPEN THE TEST BOOKLET.

BEST OF LUCK!

Open from this side



SECTION-A

VERBAL AND LOGICAL ABILITY

1. Read the following statements and answer the question that follows:
 1. This is Russia's Wild West, though the mountains lie to the south of Moscow and St. Petersburg.
 2. The Caucasus range has throughout history held Russians, especially fierce nationalists like Solzhenitsyn, in fear and awe.
 3. Here, between the Black and Caspian seas, is a land bridge where Europe gradually vanishes amid a six-hundred-mile chain of mountains as high as eighteen thousand feet - mesmerizing in their spangled beauty, especially after the yawning and flat mileage of the steppe lands to the north.
 4. Here, since the seventeenth century, Russian colonizers have tried to subdue congeries of proud peoples: Chechens, Ingush, Ossetes, Daghestanis, Abkhaz, Kartvelians, Kakhetians, Armenians, Azeris, and others.
 5. Here, the Russians encountered Islam in both its moderation and implacability.

Which of the following options is the best logical order of the above statements?

- A. 1,2,3,4,5
- B. 2,3,1,4,5
- C. 2,4,3,1,5
- D. 3,1,2,4,5
- E. 4,5,3,1,2

Statements 3, 4 and 5 cannot be the opening statement since the usage of "Here" implies that the subject of the discussion has already been introduced; nor can statement 1, since statement 1 begins with "This" and that too implies the subject has been introduced. The introduction to the passage can only be through Statement 2. Statement 1 labels/describes the area that has been introduced in statement 3. Therefore, the sequence should start from 2, proceed to statement 3 and then on to 1. Statement 3 after statement 4 is awkward as emphasis shifts from races to mountains. Hence, Option B is the correct answer.

2. Read the following statements and answer the question that follows:
 1. The periodic table orders the elements in a way that helps to understand why atoms behave as they do.
 2. The properties of the elements are due to electronic configuration, and their recurring pattern gives rise to periodicity.
 3. In other words, what gives the elements their properties and what order lies below

the surface of their seemingly random nature?

4. What makes Fluorine react violently with Caesium while its nearest neighbour neon is reluctant to react with anything?

Which of the following options is the best logical order of the above statements?

- A. 1,2,3,4
- B. 1,4,3,2
- C. 2,3,1,4
- D. 3,4,2,1
- E. 4,3,1,2

Statement 4 asks a specific query, which is illustrated by an example given in the statement 3 therefore creating a pattern of 4 followed by 3. Alternatively, statement 4 raises a question and statement 3 raises the same question in a different and a general manner (“In other words”). It again shows that 3 should follow 4.

Statement 1 talks about why do elements get their property, while statement 4 describes a specific case. As stated in the statement 1, the properties can only be derived from the periodic table. Hence, statement 4 should follow statement 1. Statement 2 is a conclusive statement and hence should be the last statement.

Statement 1 cannot flow from statement 3 because statement 1 does not give any hint about an answer to the question raised by statement 3. Statement 1 should also come before statement 3 as statement 1 mentions ‘order’ in periodic table while statement 3 asks justification behind the ‘order’, which is answered in statement 2.

Hence, Option B is the correct answer.

3. Read the following excerpt and answer the question that follows:

Fragrant with steam
were the days and the nights red
with many braziers
in the beloved house
of my father, my mother.

Which of the following options is the closest expression of the poet’s feeling?

- A. The house was located in beautiful settings probably surrounded by flowers in the mountains.
- B. The ancestral home was probably the most important house in the community.
- C. The poet fondly recalls the pleasant climate enjoyed day and night.
- D. The poet misses the braziers and steam she had enjoyed during her childhood.
- E. Everything about the house felt special because of her parents love for her.

The last two lines of the poem talk about sense of identification (word “my” is used) that poet may have towards her parents. This hints that fond memories were attributed to parents and not to the surroundings or the beautiful house. Surroundings and house became beautiful because of parents.

Option A is wrong as “mountains” are not mentioned anywhere. Option B is wrong as there is no mention of the “community”. Option C is again wrong as there is no mention of “climate”, there is mention of only “steam” and “brazier”, which is not climate. Option D is wrong because it captures the essence only of the first three lines from the stanza and not the entire passage.

Hence, Option E is the best answer.

4. Read the following paragraphs and answer the question that follows:

The current trend indicates that food and vegetable inflations continue to be pain points. Food inflation rose to 7.79 percent in June from 7.47 percent, and vegetable inflation rose to 14.74 percent from 10.85 percent. In the weeks ahead, the volatile food inflation will determine the course of overall inflation.

For RBI too, the trend is a concern since under the current agreement with the government, if the inflation exceeds 11 percent it will have to explain to the government why it could not be contained (the lower limit is 2 percent).

Which of the following options is the most appropriate?

- A. The first paragraph states a cause and the second illustrates the effect.
- B. The first paragraph provides information and the second highlights potential application of the information.
- C. The first paragraph is an assertion and the second provides an illustration of that assertion.
- D. The first paragraph highlights inflation conditions and the second hints at RBI’s inefficiency in managing the situation.
- E. The first paragraph highlights pain points and the second contains a remedy for them.

The First paragraph talks about food inflation and vegetable inflation rising and also states that the food inflation has an overwhelming impact on overall inflation.

The second paragraph talks about how this data concerns RBI. For RBI this data i.e. trend is a concern since if the trend continues, RBI will have to explain to the government.

As of now, the trend is a concern for RBI and therefore the data offers a potential application (use) to RBI. Thus, the most appropriate Option is B.

Options A is wrong since there is no cause and effect relationship between the two paragraphs. Option C is wrong, since no assertion is made in the first paragraph. In

Option E, while the first paragraph discusses pain points, the second paragraph does not discuss any remedy.

Option D is wrong since, the second paragraph does not hint at any inefficiency on the part of RBI other than the possibility of RBI giving an explanation in the future if and only if the trend continues in the future and crosses 11%. Even then it may not hint at any inefficiency on the part of RBI. At this point in time it is inappropriate to label RBI inefficient.

As of now, therefore the trend is a concern for RBI and therefore the data offers a potential application to RBI. But we cannot make any inference beyond this. Since the acceptable upper limit of inflation is 11%, the current trend may not mean that RBI is effective or ineffective in managing inflation. Also since how much resources RBI had in its arsenal to control inflation is not given in the first or second paragraphs, and how much was put to use is also not discussed in both the paragraphs, so, the second paragraph does not hint anything about efficiency or inefficiency.

5. The serious study of popular films by critics is regularly credited with having rendered obsolete a once-dominant view that popular mainstream films are inherently inferior to art films. Yet the change of attitude may be somewhat _____. Although, it is now academically respectable to analyse popular films, the fact that many critics feel compelled to rationalize their own _____ action movies or mass-market fiction reveals, perhaps unwittingly, their continued _____ the old hierarchy of popular and art films.

Consider the following words:

1. unproductive
2. not appreciated
3. overstated
4. penchant for
5. dislike for
6. investment in
7. exposure to

Which of the following options is the most appropriate sequence that would meaningfully fit the blanks in the above paragraph?

- A. 1,5,6
- B. 3,2,7
- C. 3,4,6
- D. 4,5,6
- E. 6,3,1

The second sentence/line in the passage can be completed by either 1) “unproductive” or 3) “overstated”. But the following sentence (third) questions the perception of “change of attitudes” contained in the second sentence/line.

The serious study of popular films by critics implies that the critics are compelled to rationalize their “penchant for” and hence, 3 will be followed by 4. By rationalizing their penchant for popular films, they unwittingly reveal their continued investment in the categorization of popular and art films.

Hence, the appropriate sequence of words should start with 3 follow it with 4 and then by 6. Hence, option C is the correct answer.

6. Read the following stanza and answer the question that follows:

Invisible atoms coming together
Revealing themselves in visible forms
Seeds are hugged by the earth
Which renders them as gardens in bloom.
And yonder stars, are they not pearls
Floating on teeming seas?
Scattered, yet strung together in orderly constellations
Love binding them to one another
And each is perpetually seeking its like?

Which of the following options best captures the spirit of the above stanza?

- A. Stars and seas are similar.
- B. All rivers flow into the ocean.
- C. United we stand, divided we fall.
- D. Love dissolves all religious differences.
- E. Something invisible binds disparate objects.

The poem talks about seemingly dissimilar items actually seeking each other and also connected with each other. Invisible atoms which may be of different types, such as seeds and earth, or stars and seas, each of these groups of dissimilar items are finally connected. Hence, Option E best captures the spirit of the stanza. Options A and B are specific examples related to stars, rivers and seas. Option C is wrong as there is nothing mentioned about division in the stanza. Option D is wrong as the stanza does not talk about religious differences.

7. Which of the following options is grammatically correct and meaningful?

- A. I want to join an MBA college that is not only the best in the country but also provides the best campus jobs.
- B. I want to join an MBA college that is not only the best in the country but also I can

get good job.

- C. I want to join an MBA college that is not only the best in the country but also best in job.
- D. I want to join an MBA college that is not only good but also I can get good job.
- E. I want to join an MBA college that I found not only best in the country but also I can get good job.

A is the correct answer as first and second part of the sentence should have same grammatical structure. Option C is also grammatically correct but it has no meaning as "MBA college" cannot be "best in Job". Options B, D and E are combined sentences as "I" gets repeated in the second part of the sentence, like in the first part. Moreover, the article "a" is missing before "good job" in options B, D and E.

8. Read the following passage and answer the question that follows:

On Friday morning, Dieting supplement sales company Herbalife agreed to pay the US Federal Trade Commission a \$200m fine. The FTC said Herbalife cheated hopeful salespeople out of hundreds of millions of dollars with a high-pressure multi-level marketing scheme.

Herbalife's stock received an immediate 15% increase following the above news. The company also announced that it would hire a second former FTC commissioner in a press release describing the terms of the settlement.

Which of the following options would imply that the 15 percent increase in stock price is fair?

- A. Cheating results in increase in the company's stock price.
- B. When fraudulent companies are exposed, their stock price increases.
- C. When fraudulent companies are caught, their stock price initially goes down.
- D. Acknowledgement of deceit increases the stock price of companies.
- E. Compliance with court order increases the company's stock price.

The question is, among the five options which would imply that the stock price increase is "fair"?

Increase in the stock price took place after the company agreed to pay 200 million and not when punishment was announced by the commission. Even assuming commission and court are the same, given that complying with the commission is mandatory/statutory behaviour, compliance is no "fair" reason for stock price to increase based on compliance behaviour. Hence, option E cannot be the right answer.

When the company agreed to pay the fine, the market perceived it as acknowledgement of deceit and the valuation of such deceit is clear (from the fine amount). This acknowledgement of behaviour (deceit) and specifically the valuation or price of such

behaviour becoming clear, gives lots more information to the market thereby increasing the stock price. Hence, D is the answer.

Options A and B are wrong since stock price did not increase when the organization was exposed, but when the organization acknowledged. Option C is wrong as there is no data on stock price movement when the organization's "fraud" was exposed.

9. Read the following paragraph and answer the question that follows:

Worldwide, tomato is one of the most important crops. Because this crop can be adapted for cultivation in various environments ranging from tropical to alpine regions, its cultivation area is now expanding worldwide into not so productive regions. On the other hand, traditional cultivation areas, the most favourable for tomato cultivation with warm and dry climate, are contracting. Every year, traditional cultivation areas lose 2 million hectares (ha) of land to environmental factors such as salinity, drought, and soil erosion.

Which of the following is the correct inference based on the above passage?

- A. In recent years, per hectare production of tomato has increased worldwide.
- B. In recent years, per hectare wastage of tomato has increased worldwide.
- C. In recent years, per hectare production of tomato has decreased worldwide.
- D. In recent years, per hectare wastage of tomato has decreased worldwide.
- E. In recent years, per hectare production of tomato has remained the same worldwide.

The paragraph says 2 million hectares of world's current tomato cultivation areas are lost in the most favourable areas of cultivation. Therefore, favourable area under cultivation is reducing. Given that favourable areas have more production per hectare and extended areas have lesser production per hectare, the overall production per hectare will reduce though total global production may increase. Hence, Option C is the correct inference.

Option A and E are not correct since going by the discussion above, increase in "per hectare production of tomato" or production remaining the same is not possible. Options B and D are wrong because there is no mention of "wastage of tomato" in the passage.

10. Carefully read the statements below:

- 1. Chatterjee loves books; therefore, he reads them all the time.
- 2. Chatterjee loves books. Therefore, he reads them all the time.
- 3. Chatterjee loves books and, therefore, reads them all the time.

Which of the above statement(s) is (are) correct in grammar and meaning?

- A. 1 only

- B. 2 only
- C. 1 and 2 only
- D. 2 and 3 only
- E. 1, 2 and 3

All the sentences are grammatically correct. Hence, option E is correct.

11. Grotesque is related to Macabre in a similar way as _____

- A. Classics is related to Ruins
- B. History is related to Palaeontology
- C. Marriage is related to Funeral
- D. Sorcery is related to Necromancy
- E. Science is related to Thanatology

Grotesque and macabre both mean/signify unpleasant, out of the normal and hideous. But Macabre while being unpleasant specifically focuses on death or is related to death. Among the options given below, all the right hand side words signify or are related to death/dead.

But among options, the words on the left hand side, only sorcery is unpleasant and therefore similar to grotesque. Hence D.

12. Choose the option with all the correct words and their correct accent (underlined syllable) that fits the blanks.

The suspension of the captain may _____ the number of spectators, who turn up for this match.

Transportation costs will directly _____ the cost of retail goods.

Grandmother's advancing age could _____ her ability to take care of the house.

She _____ a Texan accent throughout the interview.

- A. affect, effect, effect, effected
- B. affect, effect, affect, affected
- C. affect, affect, affect, affected
- D. effect, affect, effect, effected
- E. effect, affect, effect, affected

In all these words, the emphasis is on the second syllable -fect'. Hence, option with first part emphasised are wrong. This makes C as the right answer. Further, generally, affect is used as verb, while effect is used as noun. Hence, C is the correct answer.

Analyse the passage below and answer the questions 13-15 that follow:

It's taken me 60 years, but I had an epiphany recently: Everything, without exception,

requires additional energy and order to maintain itself. I knew this in the abstract as the famous second law of thermodynamics, which states that everything is falling apart slowly. This realization is not just the lament of a person getting older. Long ago I learnt that even the most inanimate things we know of—stone, iron columns, copper pipes, gravel roads, a piece of paper—won't last very long without attention and fixing and the loan of additional order. Existence, it seems, is chiefly maintenance.

What has surprised me recently is how unstable even the intangible is. Keeping a website or a software program afloat is like keeping a yacht afloat. It is a black hole for attention. I can understand why a mechanical device like a pump would break down after a while—moisture rusts metal, or the air oxidizes membranes, or lubricants evaporate, all of which require repair. But I wasn't thinking that the nonmaterial world of bits would also degrade. What's to break? Apparently everything.

Brand-new computers will ossify. Apps weaken with use. Code corrodes. Fresh software just released will immediately begin to fray. On their own—nothing you did. The more complex the gear, the more (not less) attention it will require. The natural inclination toward change is inescapable, even for the most abstract entities we know of: bits.

And then there is the assault of the changing digital landscape. When everything around you is upgrading, this puts pressure on your digital system and necessitates maintenance. You may not want to upgrade, but you must because everyone else is. It's an upgrade arms race.

I used to upgrade my gear begrudgingly (why upgrade if it still works?) and at the last possible moment. You know how it goes: Upgrade this and suddenly you need to upgrade that, which triggers upgrades everywhere. I would put it off for years because I had the experiences of one “tiny” upgrade of a minor part disrupting my entire working life. But as our personal technology is becoming more complex, more co-dependents upon peripherals, more like a living ecosystem, delaying upgrading is even more disruptive. If you neglect ongoing minor upgrades, the change backs up so much that the eventual big upgrade reaches traumatic proportions. So I now see upgrading as a type of hygiene: You do it regularly to keep your tech healthy. Continual upgrades are so critical for technological systems that they are now automatic for the major personal computer operating systems and some software apps. Behind the scenes, the machines will upgrade themselves, slowly changing their features over time. This happens gradually, so we don't notice they are “becoming.”

We take this evolution as normal.

Technological life in the future will be a series of endless upgrades. And the rate of graduations is accelerating. Features shift, defaults disappear, menus morph. I'll open up a software package I don't use every day expecting certain choices, and whole menus will have disappeared.

No matter how long you have been using a tool, endless upgrades make you into a newbie—the new user often seen as clueless. In this era of “becoming,” everyone becomes a newbie. Worse, we will be newbies forever. That should keep us humble.

That bears repeating. All of us—every one of us—will be endless newbies in the future simply trying to keep up. Here’s why: First, most of the important technologies that will dominate life 30 years from now have not yet been invented, so naturally you’ll be a newbie to them. Second, because the new technology requires endless upgrades, you will remain in the newbie state. Third, because the cycle of obsolescence is accelerating (the average lifespan of a phone app is a mere 30 days!), you won’t have time to master anything before it is displaced, so you will remain in the newbie mode forever. Endless Newbie is the new default for everyone, no matter your age or experience.

13. Which of the following statements would the author agree with the most?
- A. The second law of thermodynamics states that things need more energy as they separate.
 - B. When it comes to erosion, intangibles behave differently from tangible.
 - C. Up-gradation is no longer an option but an obligation.
 - D. Up-gradation though simple is disruptive.
 - E. In the next thirty years, one’s experience in up-grading will be greatly valued.

The essence of passage is how we are forced to upgrade in order to stay relevant. Hence, up gradation is forced rather than left to our choices. Hence, C is the best answer. Option A is wrong because second law of thermodynamics, as mentioned in the paragraph, talks about things falling apart and not about “energy required”. B and E are contradictory to the ideas mentioned in the passage. D is partially incorrect as up-gradation is not simple.

14. Which of the following quotes would the author agree with the most?
- A. Life is like riding a bicycle. In order to avoid falling, you must keep moving.
 - B. The only thing constant in life is change.
 - C. You must be the change you wish to see in the world.
 - D. If you do not change you will be changed.
 - E. What we can’t cure we must endure.

In the passage, the author is making two points. The first is that change is constant and the second is how to adapt to the change so as to survive. In other words, the first is more of an observation by the author while the second part is his/her core argument/exhortation. Thus, the essence of the passage is the second point (i.e. how to adapt) while keeping in mind the existence of the first.

Based on the argument above, Option A is the closest since it includes both the points and hence, the correct answer. Option B contains only the first point, while Option C is irrelevant.

Option D and E are reactive and would be a consequence of non-adherence of the author's exhortation.

15. The CEO of a technology company was thinking of the following policies.

1. Life time employment
2. Promotion based on seniority
3. Hire new competent employees and fire old incompetent employees
4. Regular training and retraining

If a CEO were to consult the author of the passage, which of the above policies should the author recommend?

- A. 1 or 3
- B. 1 or 4
- C. 2 or 4
- D. 3 or 4
- E. 1, 3 and 4

If the CEO were to consult the author, then going by the passage, life-time employment does not guarantee continuous up-gradation. Also, the tenure of an employee does not guarantee up-gradation. Similarly, inferring from the passage, those who do not upgrade should be fired and be replaced with new employees. The other solution can be providing regular training in place of firing. Hence, correct option is D.

Analyse the passage below and answer the questions 16-17 that follow:

Writing is both my vocation and my avocation: that's all I do.

You may wonder why I should write a genealogy. Well, to begin with, my story is interesting. And, next, I am a mystery -more so than a tree or a sunset or even a flash of lightning. But, sadly, I am taken for granted by those who use me, as if I were a mere incident and without background. This supercilious attitude relegates me to the level of the commonplace. This is a species of the grievous error in which mankind cannot too long persist without peril. For, as a wise man, G. K.Chesterton, observed, "We are perishing for want of wonder, not for want of wonders."

I, simple though I appear to be, merit your wonder and awe, a claim I shall attempt to prove. In fact, if you can understand me-no, that's too much to ask of anyone - if you can become aware of the miraculousness that I symbolize, you can help save the freedom mankind is so unhappily losing. I have a profound lesson to teach. And I can

teach this lesson better than an automobile or an airplane or a mechanical dishwasher because - well, because I am seemingly so simple.

Simple? Yet, not a single person on the face of this earth knows how to make me. This sounds fantastic, doesn't it? Especially when you realize that there are about one and one-half billion of my kind produced in the U.S. each year.

Pick me up and look me over. What do you see? Not much meets the eye - there's some wood, lacquer, the printed labeling, graphite lead, a bit of metal, and an eraser.

16. 'I' in the passage, most likely, refers to:

- A. the author of the passage
- B. a geometry box
- C. a study table
- D. a pencil
- E. the evolution of a book

The last paragraph of the passage gives away that 'I' is a pencil, as the one object among the options given, that can satisfy the passage completely. Thus, Option D is the correct answer.

17. A 'supercilious attitude' in this passage implies:

- A. Failure to perceive the mystery of the sunset.
- B. Arrogance of treating all simple things as trivial.
- C. Lack of curiosity in seeking the mystery behind the lightning.
- D. A tendency to break down intricacies of creation into its simple parts.
- E. Prosaic attitude immune to the mysteries of the world.

Supercilious is arrogant or contemptuous attitude. In the passage, it is used w.r.t. pencil. Since, pencil looks simple and trivial, people might develop supercilious attitude towards it. Hence, B is the right answer.

Analyse the passage below and answer the questions 18-20 that follow:

Some psychologists and sociologists believe that psychopathy can be an asset in business and politics and that, as a result, psychopathic traits are overrepresented among successful people. This would be a puzzle if it were so. If our moral feelings evolved through natural selection, then it shouldn't be the case that one would flourish without them. And, in fact, the successful psychopath is probably the exception. Psychopaths have certain deficits. Some of these are subtle. The psychologist Abigail Marsh and her colleagues find that psychopaths are markedly insensitive to the expression of fear. Normal people recognize fear and treat it as a distress cue, but

psychopaths have problems seeing it, let alone responding to it appropriately. Other deficits run deeper. The overall lack of moral sentiments—and specifically, the lack of regard for others—might turn out to be the psychopath’s downfall. We non-psychopaths are constantly assessing one another, looking for kindness and shame and the like, using this information to decide whom to trust, whom to affiliate with. The psychopath has to pretend to be one of us. But this is difficult. It’s hard to force yourself to comply with moral rules just through a rational appreciation of what you are expected to do. If you feel like strangling the cat, it’s a struggle to hold back just because you know that it is frowned upon. Without a normal allotment of shame and guilt, psychopaths succumb to bad impulses, doing terrible things out of malice, greed, and simple boredom. And sooner or later, they get caught. While psychopaths can be successful in the short term, they tend to fail in the long term and often end up in prison or worse. Let’s take a closer look at what separates psychopaths from the rest of us. There are many symptoms of psychopathy, including pathological lying and lack of remorse or guilt, but the core deficit is indifference toward the suffering of other people. Psychopaths lack compassion. To understand how compassion works for all of us non-psychopaths, it’s important to distinguish it from empathy. Now, some contemporary researchers use the terms interchangeably, but there is a big difference between caring about a person (compassion) and putting yourself in the person’s shoes (empathy).

I am too much of an adaptationist to think that a capacity as rich as empathy exists as a freak biological accident. It most likely has a function, and the most plausible candidate here is that it motivates us to care about others. Empathy exists to motivate compassion and altruism. Still, the link between empathy (in the sense of mirroring another’s feelings) and compassion (in the sense of feeling and acting kindly toward another) is more nuanced than many people believe. First, although empathy can be automatic and unconscious—a crying person can affect your mood, even if you’re not aware that this is happening and would rather it didn’t—we often choose whether to empathize with another person. So when empathy is present, it may be the product of a moral choice, not the cause of it. Empathy is also influenced by what one thinks of the other person. Second, empathy is not needed to motivate compassion. As the psychologist Steven Pinker points out, “If a child has been frightened by a barking dog and is howling in terror, my sympathetic response is not to howl in terror with her, but to comfort and protect her.” Third, just as you can have compassion without empathy, you can have empathy without compassion. You might feel the person’s pain and wish to stop feeling it—but choose to solve the problem by distancing yourself from that person instead of alleviating his or her suffering. Even otherwise good people sometimes turn away when faced with depictions of pain and suffering in faraway lands, or when passing a homeless person on a city street.

18. The core deficit of Psychopaths affects their long term success because,

- A. they cannot sustain the behaviour.
- B. they are less likely to succeed as HR managers than as finance managers.
- C. they cannot hide their lack of compassion for long.
- D. empathy is essential for long term success.
- E. natural selection enables moral feelings.

Psychopaths hide their deficits as long as possible, thereby pretending to be normal. There are many symptoms of psychopathy, which they can hide for long. But the core deficit viz. lack of indifference or compassion is something they cannot hide for long. The passage directly mentions that compassion, the core deficit is missing among psychopath towards the end of first paragraph. Hence, C is the correct option.

19. Which of the following options is correct according to the author?

- A. Compassion exists for a reason.
- B. Empathy is a chance event.
- C. Empathy is the cause of moral choice.
- D. Caring for others is psychopathy.
- E. Long term success in business is a freak accident.

According to the author empathy and compassion exist not as freak biological accidents but for a reason. They have a function. Hence, option A is right.

The above argument rules out Option B.

Empathy according to the author is the product of moral choice and not the cause of it. Therefore, Option C is wrong.

Psychopaths' lack of regard of others, as stated in the passage makes option D wrong.

Option E is not discussed in the passage so it is irrelevant and therefore, wrong.

20. A student approached a faculty pleading to increase his marks because failure in one more subject will result in the student having to leave the program. The faculty said, "I am sorry. But I cannot change your grades as it would be unfair to others". In the given circumstance, which of the following best describes the faculty?

- A. The faculty is a psychopath.
- B. The faculty was compassionate.
- C. The faculty was both empathetic and compassionate but unfair.
- D. The faculty displayed empathy but not compassion.
- E. The faculty displayed compassion but not empathy.

As the faculty is not changing the grade for a particular student as others might get affected, he is clearly showing empathy to that student as well as to other students. But at the same time, he is not displaying compassion to any student in this situation (though we cannot conclude that he is not compassionate). It is difficult to conclude whether the faculty is a psychopath or not. Hence, Option D is correct.

Analyse the passage below and answer the questions 21-24 that follow:

Every age has its pet contradictions. A few decades back, we used to accept Marx and Freud together, and then wonder, like the chameleon on the turkey carpet, why life was so confusing. Today there is similar trouble over the question whether there is, or is not, something called Human Nature. On the one hand, there has been an explosion of animal behavior studies, and comparisons between animals and men have become immensely popular. People use evidence from animals to decide whether man is naturally aggressive, or naturally territorial; even whether he has an aggressive or territorial instinct. Moreover, we are still much influenced by Freudian psychology, which depends on the notion of instinct. On the other hand, many still hold what may be called the Blank Paper view, that man is a creature entirely without instincts. So do Existentialist philosophers. If man has no instincts, all comparison with animals must be irrelevant. (Both these simple party lines have been somewhat eroded over time, but both are still extremely influential.)

According to the Blank Paper view, man is entirely the product of his culture. He starts off infinitely plastic, and is formed completely by the society in which he grows up. There is then no end to the possible variations among cultures; what we take to be human instincts are just the deep-dug prejudices of our own society. Forming families, fearing the dark, and jumping at the sight of a spider are just results of our conditioning. Existentialism at first appears a very different standpoint, because the Existentialist asserts man's freedom and will not let him call himself a product of anything. But Existentialism too denies that man has a nature; if he had, his freedom would not be complete. Thus Sartre insisted that ~~there~~ is no human nature.... Man first of all exists, encounters himself, surges up in the world, and defines himself afterwards. If man as the Existentialist sees him is not definable, it is because to begin with he is nothing. He will not be anything until later, and then he will be what he makes himself." For Existentialism there is only the human condition, which is what happens to man and not what he is born like. If we are afraid of the dark, it is because we choose to be cowards; if we care more for our own children than for other people's, it is because we choose to be partial. We must never talk about human nature or human instincts. This implicit moral notion is still very influential, not at all confined to those who use the metaphysics of essence and existence. So I shall sometimes speak of it, not as Existentialist, but as Libertarian—meaning that those holding it do not just (like all of us) think liberty important, but think it supremely important and believe that our having a nature would infringe it.

Philosophers have not yet made much use of informed comparison with other species as a help in the understanding of man. One reason they have not is undoubtedly the fear of fatalism. Another is the appalling way terms such as instinct and human nature have been misused in the past. A third is the absurdity of some ethological propaganda.

21. A business school led by an existentialist director, wanted to decide on admission policy for its executive MBA program, which requires candidates to possess minimum five years of managerial experience.

With respect to the selection process, which of the following statements will be closest to the director's belief:

- A. Tenth standard marks should be given highest weightage.
- B. Twelfth standard marks should be given highest weightage.
- C. Marks scored in the engineering college should be given highest weightage.
- D. Marks scored by the candidate in all previous examinations be given equal weightage.
- E. Recent work experience and contribution to the organization should be given highest weightage.

As per Existentialists, we are completely plastic when we are born, and we are product of growing up and what we do. If we extend this logic, then our behaviour would be more determined by what we do in the recent past than distant past. Hence, the right option is E.

22. Which of the following statements would the author agree with the most?
- A. Existentialism can be extended to Libertarianism.
 - B. Existentialism and Libertarianism are the same.
 - C. Existentialism encompasses Libertarianism.
 - D. Animal behaviour should not be compared with human behaviour.
 - E. Liberty and existentialism are unrelated.

...So I shall sometimes speak of it, not as Existentialist, but as Libertarian—meaning that those holding it do not just (like all of us) think liberty important, but think it supremely important and believe that our having a nature would infringe it. ...

The above excerpt from the passage suggests that while existentialists hold liberty important, libertarians hold liberty supremely important. Therefore, existentialism can be extended to Libertarianism. Therefore, A is the correct answer.

23. Who among the following, as stated in the third paragraph, would the author be the most sympathetic to?
- A. PETA (People for the ethical treatment of animals) activists
 - B. Save the tiger activists
 - C. Architect

- D. Physicists
- E. Zoologists

Option A is wrong since PETA activists interfere with animal related experiments, impeding better understanding of animal behaviour and subsequently, human behaviour. Save the Tiger activists, broadly concerned about illegal poaching are irrelevant to the passage. Where they are concerned about the way tigers are being ill-treated, they are similar to PETA and hence would not earn the sympathy of the author. Architect, Physicists are irrelevant to the passage.

The passage clearly states, in the last line, that we need to compare human studies with animal studies for better understanding of human behaviour. Since zoologists study animals, the author is most likely to agree with them. Hence, E is the best answer.

24. Which sentence in the passage distances man from “nature”, the most?
- A. The sixth sentence of the first paragraph.
 - B. The first sentence of the second paragraph.
 - C. The sentence third from the last in the passage.
 - D. The sentence second from the last in the passage.
 - E. The last sentence of the passage.

Animal behaviour is farthest from “culture”, as used in the first sentence of the second paragraph. Hence, B is the right option.

SECTION B

DECISION MAKING ABILITY

Analyse the following caselet and answer the questions 25-26 that follow:

Vimla is the domestic help for Shreya and her neighbour Padma; both live in a posh gated community. Vimla not only cleans the house, but also cooks for both the families. Shreya treasures Vimla ever since she joined her family four years ago. Vimla joined Padma's household this year.

25. One evening Shreya trying to pay the pizza delivery was surprised to find a few five hundred rupee notes missing from her purse that she was sure were there earlier. She wants to ascertain if someone has stolen the money. On reflecting, the following facts crossed her mind:
1. In the last one year, Shreya had noticed cash missing on three occasions.
 2. Shreya's husband also shared that a few notes were missing from his wallet, though he was not sure if they were stolen.
 3. Her eldest son had been pestering Shreya for more pocket money for the last three weeks; in the last few days, he had stopped doing so.
 4. In the last one year, Vimla had received six mails from her family asking for money.
 5. Her eldest son's expenditure had gone up in the last few days.

Which of the following combinations of the above statements would DECREASE the likelihood that Vimla has stolen the money?

- A. 1 and 3
- B. 1 and 4
- C. 1 and 5
- D. 2 and 4
- E. 3 and 5

If the money was stolen, then someone who had the need for money should have stolen it. Out of the options available the choices 1&4 and 2&4 will increase the probability that Vimla has stolen it and hence, B and D are wrong. Options 3&5, 1&3, and 1&5 will increase the probability that Shreya's son has stolen it. Out of the three options 3&5 would make the probability of stealing by son the highest, which would imply that the probability that Vimla has stolen it is the lowest. Hence, E is the right answer.

26. Padma discovered some money missing from her purse. She suspects that Vimla has stolen it. She wants to prevent the stealing from happening again and is contemplating the following actions:

1. She should let it pass, since to err is human.
2. She should confront Vimla and tell her that she knows the truth and the act is unpardonable regardless of her past service and she is thinking of terminating her services.
3. She should tell Vimla that she is aware someone has stolen money from the house but is not sure who it is.
4. She should share with Vimla that neighbours think Vimla has stolen the money though she doesn't, but is interested in finding out the truth.
5. She should directly ask Vimla if she stole the money, promising her no punishment if she confesses.

Arrange the following combinations of the above actions in the DECREASING order of appropriateness.

- A. 1, 5, 4
- B. 2, 4, 1
- C. 2, 5, 4
- D. 3, 5, 4
- E. 5, 2, 4

The objective is to prevent (P) further theft while being appropriate (A). Therefore, best option should be P:Yes and A:Yes

Statement 1: (P-N, A-Y) Objective of prevention is not met in 1.

Statement 2: (P-Y, A-N)

Statement 3: (P-Y, A-Y) Message delivered to Vimla is same in statement 3 and 4, but 3 is more appropriate

Statement 4: (P-Y, A-Y (somewhat)): Message delivered to Vimla is same in 3 and 4, but 3 is more appropriate, as in 4 Shreya is bringing in a third party (neighbours) when it is she who suspects.

Statement 5: (P-Y, A-Y). This is more appropriate than 4 but less appropriate than 3 since compared to 4 where Shreya is placing the blame on her neighbours, in 5 Shreya owns it up, however in 3 Shreya is discussing the incident, while in 5 she is pointing a finger at Vimla purely on suspicion.

Therefore, Option D is the correct answer.

Analyse the following caselet and answer the question that follows:

27. Genius Consulting is a boutique consulting firm started by Shirish, Balram, Rahman and Xavier, four friends from a premier business school. They committed themselves to abide by two principles: a) not to indulge in anything unethical and b) share earnings equally.

Genius Consulting could not get a significant project till the following year, when they managed a big one after Rahman's father referred their firm to his top management. Convinced of the team's talent following an impressive presentation, the top management awarded them the project even though six other referred teams made presentations.

The day following the presentation, they met to decide the way forward for the organization. Which of the following choices would be the most appropriate for Genius Consulting?

- A. As this project violates both their principles, Genius consulting should not take up the project.
- B. Due to the violation of the first principle Genius consulting should not take up this project.
- C. They should take up the project. Further, since Rahman had agreed to equal sharing, he is not entitled to finder's fee.
- D. They should take up the project and as the referral helped them survive, Rahman should be paid finder's fee.
- E. They should take up the project. But, in order not to violate the principles, Rahman can be paid finder's fee this year and an equal amount be deducted from his compensation the next year.

Since company is formed with a motto of ethics and equal compensation, it should not be disturbed. Compensation, should not change based on who gets the business because tomorrow someone else might get the business or getting business may be a role assigned to one member, while others play equally important but different role. It is not an unethical situation because the project was won on the basis of capability and not because of favour from Rahman's father. Hence, C becomes the best option as no one is favoured.

Analyse the following caselet and answer the questions 28-30 that follow:

Mrs Biswas was to retire in one year after serving in the construction department of the Gujarat government for more than thirty years. After retirement, she wanted to spend her retired life along with Mr Biswas, a retired school teacher in a small town in Kerala. They had two children, both studying in Bengaluru. The Biswas' wished to construct a house in Kerala with their life savings.

The couple gathered information about owning a house in Kerala. They had four options:

1. Buy a fully furnished house from a big developer.
2. Buy a semi-furnished house from a big developer and furnish it.
3. Get a local unregistered contractor to construct a house and furnish it.

4. Mr Biswas with inputs from the family could supervise the construction of a house back in Kerala by employing the best material, engineers, masons and labourers.

28. Which option would ENSURE the best control of quality of construction for the Biswas'?

- A. The first option would ensure the best quality.
- B. The second option would ensure the best quality.
- C. The third option would ensure the best quality.
- D. The fourth option would ensure the best quality.
- E. Any of the options will equally ensure the best quality.

In options A, B and C, the house owner lacks control over the quality of construction. However, in option D the owner can monitor discrepancies on an everyday basis and take corrective actions, if required, especially given Mrs. Biswas' professional experience. Option D is equivalent to continuous monitoring which is superior to one time monitoring in other options. Hence, D is the best answer.

29. Which of the following additional information, IF TRUE, would improve the chances of the third option being preferred?

- A. Based on the current information, with no additional information, the third is the best option.
- B. Among local property holders, the contractor in the third option enjoys a good reputation.
- C. Big developers are less open to changes in design.
- D. Mr Biswas cannot stay back alone to supervise the construction.
- E. The Biswas' want to select the furniture on their own.

Option C makes first and second options (in the caselet) less attractive, but does not make third option (in the caselet) as attractive as option B does. Option D makes first option (in the caselet) and second option (in the caselet) attractive but does not improve the chances of preferring the third option (in the caselet). Option E makes first option (in the caselet) less attractive and second option most attractive. Based on arguments presented in the previous question, it is clear that third option (in the caselet) was not the best. Hence, A is not the right answer.

If the builder had good reputation among the local house owners, it means that the builder has been constructing houses to the satisfaction of the local house owners which probably would mean that the builder should be able to assure good quality. Hence, B is the answer.

30. The Kerala Government recently announced a policy: In case of major quality infringement, the builder will pay a penalty of 50% of the price of the house in addition

to the price of the house, to the client within a year of notice.

Rank in ASCENDING order the options that would ensure “control of quality”.

- A. 1,2,3,4
- B. 2,3,4,1
- C. 3,1,2,4
- D. 4,3,1,2
- E. 4,1,2,3

If builders are forced to pay penalty for bad quality then they are more likely to deliver good quality, though it would be difficult to force the penalty on unregistered builders. The chances of unregistered builder improving quality because of penalty are lower, as the builder can, more easily, escape the clutches of law. Hence, the right set of option should start with 3. It gives us C as the right answer.

Analyse the following caselet and answer the questions 31-32 that follow:

A pastor had eaten at a restaurant with his troupe of ten and his family. It is a norm to tip the waiter and about 20% of a waiter’s salary comes from these tips. However, while paying the bill, the pastor crossed out the automatic 18% tip charged for parties of more than eight and wrote “I give God 10% why do you get 18%?” above his signature. The chagrined waitress at the restaurant posted a photo of this on the social media. She was subsequently fired for violating company’s policy on customer privacy.

This would have been understandable if the restaurant had not posted just 2 weeks ago a customer receipt that was complimenting them. Social media and social activists came heavily upon the management’s ambivalent stand and the firing of the waitress. In response, the company posted a note on their social media page defending their actions. This quickly drew over 10,000 comments, mostly negative, to which the management started responding by posting the same note over and over again. There were also accusations of the company deleting negative comments and blocking users. The restaurant also experienced a sizable drop in their footfall.

31. Who/what is the main cause for the situation becoming unmanageable?
- A. The pastor for flouting the norm of restaurant.
 - B. The waitress for violating customer privacy.
 - C. The management for not taking action against the pastor.
 - D. The management for giving out disproportionate punishment to waitress.
 - E. The management for removing negative comments from the social media.

Among the options available, the root cause would be that option which if removed will stop the further consequences. Applying this principle D is the root cause because had the management not meted out a disproportionate punishment, the current situation faced by the organization would not have risen. Even if the pastor flouted the norms,

and the waitress violated the privacy, the public outcry would not have arisen unless the public perceived the punishment meted by the organization as unfair.

It is not a crime to flout a norm; but, the waitress might have committed an offence by flouting the rules of the organization. However the punishment for such an alleged offence is what started the outcry. Hence, Option D is the right answer.

32. The downward spiral continued for the restaurant as the management persisted in defending their actions and argued with those who criticised them. By the following week, the original post had generated over 18,000 negative comments.

Which of the following is the best way forward for the restaurant at this juncture?

- A. Unconditionally restore the waitress to her former position and salary on the ground that she was never at fault in the first place.
- B. Apologise to and reinstate the waitress and ask her to apologize for her breach of customer privacy and post both the apologies on social media.
- C. Reinstate the waitress provided she apologises for her breach of customer privacy and post that apology on the restaurant's social media page.
- D. Reinstate the waitress if and only if she apologizes for her breach of customer privacy and posts that apology on her social media page.
- E. Recruit two waitresses at a higher wage but stick to the original decision of firing the waitress.

Since waitress was punished in a disproportionate manner to the mistake she committed, hence, the organization should first apologize to the waitress and offer to re-instate her as early as possible. However, waitress is wrong to display customer details on her personal social media page. She should also apologise for this act of discretion. Hence, the organization should offer to reinstate and ask her to apologize for her action, in the social media. Hence, B is the best answer.

Analyse the following caselet and answer the questions 33-34 that follow:

A college campus with a population of around 2,000 of whom 200 were children, 1,200 people between 15 and 45 years, 500 people between 45 and 65 and around 100 people more than 65 years of age. The campus has two big gates opening out to the city. There are 400 cars and 500 motorbikes inside the campus. The residents relied on these vehicles to visit the city located 10 kilometres away.

Now, with land within the campus becoming scarce, the chief administrator (CA) found the growing demand for parking lot difficult to handle. The faculty, staff and students wanted increased parking space. In the past six years, the parking requirement on campus had doubled. The CA found it inappropriate to construct parking lots from the students' fee, even though those with vehicles may not complain about it.

Besides creating parking problems, the CA felt that these vehicles added to the pollution and made residents less responsible towards each other. The risk to the children and the elderly because of over-speeding was menacing. Therefore, the CA wanted to reduce the number of vehicles in the campus. Many faculty members, students and staff members, however, felt that demand for more parking space was natural as vehicles were required to go to the market, railway station, airport, and interstate bus terminal all located in the city. They also told the CA that the elderly, sick and the toddlers relied only on these vehicles.

After listening to all stakeholders, the CA wanted to solve these problems while ensuring the campus remained responsible and green.

33. Which of the following actions would best satisfy all the stakeholders within the campus?
- A. Levy extra fee on students to construct additional parking lots inside the campus. Students should pay for up-keep of the campus.
 - B. Let all vehicles be parked in a college-managed space outside the campus while two battery operated vehicles handle exigencies inside the campus.
 - C. Bring all stakeholders to the discussion table.
 - D. To reduce carbon footprints, only pooled vehicles should be allowed to operate inside the campus.
 - E. Charge significant fee from any vehicle entering or leaving the campus.

Option A is not possible because it is unfair to the students as mentioned in the case. Option C is not a solution as it talks only about discussions and not a decision. It can be a good initial point but not a concrete way to solve the problem. Option D is not the best solution as it does not address the concern of parking lot and emergencies. Further D is an inferior option in comparison to Option B even with respect to pollution control. Option E does not solve the problem as it does not address concerns of parking lot. Further, Option E is inferior in comparison to Option B with respect to pollution control. Option B is the best solution as it addresses parking as well as other issues including those related to environment.

34. Which of the following would be the best option to increase revenue, decrease carbon footprint and still satisfy all the stakeholders in the campus?
- A. Make substantial collection from vehicles entering or leaving campus and construct a parking lot outside the campus.
 - B. Levy extra fee on the students and build extra parking lots inside the campus.
 - C. Bring all stakeholders to table and let them build consensus.
 - D. To reduce the carbon footprint, only pooled vehicles be permitted on campus.
 - E. Let all vehicles be parked in a managed space outside the campus while battery operated vehicles parked at the two gates can be used inside the campus.

Option C is not correct as it offers a path but does not offer a solution. Option D is wrong because it does not provide the administration with any increase in revenue. Option E can reduce carbon footprints and satisfy stakeholders but there is no scope of increase in revenues. Option B is unfair as one stakeholder pays for deeds of others and it does not solve carbon footprints. Option A increases satisfaction for all stakeholders; it will also increase revenue and can reduce carbon footprints by making it costly to drive vehicles inside campus. So, Option A is the correct answer.

Analyse the following caselet and answer the questions 35-37 that follow:

Girirajan an unemployed youngster from Kumbakonam, Tamilnadu, visited Singapore where his school friend worked as software engineer. In Singapore, Girirajan realized that there were a lot of Tamils in “Little India” area. He soon assessed that there were very few restaurants serving authentic Tamil food and decided to set-up a restaurant “Giri’s” in “Little India” serving authentic Tamil food in traditional banana leaf. Customers loved the food. Very soon word spread about the good quality food served in the traditional way. Girirajan expanded operation recruiting 10 employees, all Tamils.

Six months later, Girirajan realized that a lot of Kannadiga and Telugu customers started visiting the restaurant along with their Tamil friends. One day, a Kannadiga customer looking for Devangere Benne Dosa suggested that it may not be a bad idea for Girirajan to serve Karnataka and Andhra cuisines along with Tamil.

With time, the popularity of the restaurant kept soaring. As a result, a lot of Malays, Indonesians and Chinese started visiting the restaurant. His software engineer friend advised to cater to customers of all nationalities. Despite his desire to go grand, Girirajan realized he did not have enough money to get extra space anywhere in Singapore and banks were also reluctant to lend.

One day, while assessing the business, he realized that the restaurant had 90% occupancy rate during peak hours and 40% during the non-peak hours. Both figures were increasing with time.

35. Which of the following options would be most suitable for the growth of the business?
- A. Include Karnataka and Andhra cuisines in the menu.
 - B. Include Indonesian and Chinese cuisines in the menu.
 - C. Keep the focus on Tamil food only with an increased focus on quality improvement.
 - D. Expand to include either Karnataka and Andhra cuisines or Indonesian and Chinese cuisines.
 - E. Include Karnataka and Andhra cuisines as well as Indonesian and Chinese.

The business has already reached 90% utilization (and this is improving further) during peak hours, in addition he has space constraints. Making substantial changes will incur lot of costs but opportunities for benefits are limited because of existing 90% utilization. Further, selling dishes of other regions might affect current focus on authentic Tamil food (and this was the business opportunity according to the passage). – . Moreover, there is no surety that he will do well in other cuisines because lack of experience/expertise. Hence, Giri is better off to focus on authentic and quality Tamil cuisine which is the reason for his success. So, option C is the correct answer.

36. Girirajan started analysing his quarterly customer data to assess growth opportunities. He discovered that 20 % of his customers are Kannadigas and many of them were requesting for a few Karnataka dishes. He was not sure if it was a good idea to serve Karnataka food. He wanted to experiment before taking the final call. Which of the following options will be worth experimenting in the next fortnight?
- A. Introduce a Karnataka food day every week to please the Kannadiga customers.
 - B. Recruit a few Kannadiga waiters to interact with Kannadiga customers.
 - C. Rename a few Tamil dishes as Karnataka dishes.
 - D. Serve Karnataka dishes as and when requested by customers without the menu displaying these dishes.
 - E. Add a few Karnataka dishes to the cuisine and display these in a separate menu.

The objective is to experiment with a few Karnataka dishes. Customer should be aware of it, but this (experimentation) should not be added to the mainstream business as of now, therefore, should not be part of the main menu. The only option that satisfies both the criteria is E and therefore, Option E is the right answer.

37. Girirajan experimented with Karnataka food for a fortnight. He collected sales data for Karnataka food along with the trend of overall sales for the last seven days. Which of the following datasets, IF TRUE, will give Girirajan greater confidence to continue serving Karnataka food? (Figures below represent Karnataka food sales as percentage of total sales.)
- A. 14, 15, 16, 17, 18, 19, 20, with total sales trend increasing by 0.4%.
 - B. 20, 20, 20, 20, 20, 20, 20, with total sales trend increasing by 0.4%.
 - C. 50, 47, 44, 40, 47, 45, 40, with total sales trend remaining same.
 - D. 45, 44, 43, 42, 41, 40, 39, with total sales trend remaining same.
 - E. 20, 50, 10, 45, 43, 13, 36, with total sales trend coming down.

In Option A, the trend for sales for Karnataka dishes increasing along with the total sales increasing and hence, is the right answer.

Analyse the following caselet and answer the questions 38-40 that follow:

A University coach was asked to select teams in three sports: Shooting, Cricket (batsmen only) and –Snakes & Ladder”. The honest and keen observer head boy of the school informed the coach that he had observed 100 students playing the three games - shooting, cricket and –Snakes & Ladder”. In shooting, all students were given 100 chances to hit a target. In cricket, a batsman faced a maximum of 100 balls, provided he DID NOT GET OUT. In –Snakes & Ladder”, every student could play 100 matches, one each with the other students and one against a computer. In shooting, a player got one point for hitting the target and zero point for missing the target. In cricket, a batsman got one point for hitting the ball and zero point for missing it. In –Snakes & Ladder”, a person got one point for winning the game and zero for losing. To the coach’s utter surprise, the distribution of points across all three games was the same. It was as follows:

Points scored	Number of students
0-9	1
10-19	8
20-29	5
30-39	15
40-49	20
50-59	20
60-69	13
70-79	7
80-89	9
90-99	2

The coach has to select a team of eleven in each sport.

38. Which of the following options is the best way to select the –Snakes & Ladder” team?
- A. The coach must select all students between 80 and 99.
 - B. The coach must select both the students between 90 and 99.
 - C. The coach must select at least 6 students between 40 and 59.
 - D. The coach must not select students between 0 and 9.
 - E. The coach can ignore the data in the table and randomly pick any 11 players.

In *Snakes and Ladder*, the player cannot exhibit any skill and therefore cannot determine the outcome, which is random if the dice is fair. The past data in the table is not relevant for selection. Hence, the best selection process should give equal opportunity to everyone and therefore, Option E is the right answer.

39. Which of the following options is the best way of selecting the Shooting team?
- A. The coach should select all students in 80-99 ranges.
 - B. The coach should select both the students in 90-99 range; others can be from any of the other ranges.
 - C. The coach should select at least 6 students between 40 and 49.
 - D. The coach should not select students between 40 and 89.
 - E. The coach can pick randomly any 11 players from any of the ranges.

In hundred shooting trials, it is highly unlikely that any student would get a high score unless he/she is really good at shooting. The trials give us enough information to choose those who have scored the highest. Therefore, option A is correct.

40. Which of the following options is the correct statement for picking up the cricket team?
- A. The coach should never select the player in the range of 0-9 points.
 - B. The coach should never select players from the range of 50-59.
 - C. The coach should never select players from the range of 70-79.
 - D. The coach should definitely select players only from the range of 80-99.
 - E. None of the above.

In the game of cricket, a player has to stop batting when he gets out. Therefore, there is no guarantee that even the best of batsman will play out all 100 balls. On the contrary, even the worst batsman can play hundred balls, though chances are low. Hence, there is a possibility that best batsman can get out after playing 5 balls and worst batsman can play more balls than him. Hence, the coach can never be sure of rejecting a person with low score or select a batsman, based on the above data. Hence, options A, B, C, and D all are wrong. Best answer is Option E.

Analyse the following caselet and answer the question that follows:

41. As a newly started organization in the IT sector, Saksha IT is a fast growing 400 employee organization. Its head, Saksha Kumar believes in building an organization driven by humility. Which of the following policies would best help him achieve that?
- A. Employees shall, in their annual evaluation form, be asked to acknowledge three of their shortcomings, overcoming which will make them better.
 - B. Employees shall be asked to share with their peers three shortcomings they had noticed about their peers.
 - C. The immediate superiors would suggest three shortcomings their subordinates have to work on in a given period.
 - D. Everyone beginning with Saksha, shall be asked to share three of their weaknesses,

in a public forum.

- E. Employees shall be asked to overcome three shortcomings in the following year. Improvement, if noticed would attract rewards.

Humility is the quality of not being proud of being perfect as you are aware of your limitations. Therefore, among the options, the option that focuses on awareness of the self with respect to limitations should be in the consideration set for the correct answer. However, the focus on awareness of self is not necessarily linked to “improvement” or “overcoming” the limitations. Moreover, the culture of humility should not be confused with the performance measurement or rewards and compensation.

Among the options, Option D focuses on making one aware of one self without any link with rewards or performance and hence, Option D is the right answer.

Analyse the following caselet and answer the question that follows:

42. Principal Maheswari of BINK School of Management is facing a problem that calls for quick action. She received an anonymous mail one day, possibly from one of the students, complaining about outdated syllabi, mediocre teachers and poor choice of courses on offer.

Which of the following is the best course of action available to the Principal?

- A. She should invite students to discuss any problem openly, one on one or in small groups, promise to act on them but firmly condemn the culture of anonymous mails.
- B. She should update the students about the efforts the institute is taking in sprucing up the syllabi, hiring talented faculty etc., but make no reference to the letter.
- C. She should convene a meeting of the faculty at the earliest and get them to work on updating the syllabi and also arrange a faculty development program but keep mum about the letter.
- D. She should convene a meeting of the faculty and talk about the letter as a symptom of a deeper malaise, ask them to update the syllabi and also organise a faculty development program.
- E. She should ignore the letter and not think about it at all.

The principal has received an anonymous mail which could be a result of an underlying concern, which might be genuine or not, among the student(s). So, she should focus on the underlying concern, but this way of communicating anonymously is something that should be strongly discouraged. Since the underlying concern may or may not be genuine, she should openly invite students for discussions but not discuss the mail as such.

Hence, Option A is the right answer because principal is addressing: a) the issue of anonymous email and b) whether the content of the email is a concern.

Analyse the following caselet and answer the questions 43-45 that follow:

Shyam prepares and sells piping hot puri and sabji (gravy) from 7:00 am to 9:00 am (both inclusive) through a stall at XLRI campus. Presently, he has just a single oven, which can do only one job at a time. It takes 30 minutes to cook one handi (a large bowl) of sabji, sufficient for 12 customers. It takes him 10 minutes to prepare 2 plates of puri at a time. While the cost of a plate of puri-sabji is ₹10, the price is ₹25. Puri stays hot for only 5 minutes after preparation, while sabji stays hot for 30 minutes only. It takes 10 minutes to reheat the sabji which stays hot for another 30 minutes. If he brings a handi of hot sabji from home, the transport would cost him ₹5 0. It can also stay hot for 30 minutes excluding the transportation time. Currently, every 20 minutes five plates are ordered. All unsold quantities are distributed at cost after 9:30 am.

43. Find the maximum number of plates of puri-sabji Shyam can sell in the first hour of business?
- A. 6
 - B. 8
 - C. 10
 - D. 12
 - E. 15

Answer is C (10), as can be seen from the table below:

Time	Oven	Puri nos.		
7				
7.05				
7.1		2		
7.15				
7.2		2		Puri preparation
7.25				Reheating sabji
7.3		2		Heating
7.35				
7.4		2		
7.45				
7.5				
7.55				
8		2		
	Total	10		

	puri	sabji	Timeline	customer in line	Event
Preparation	2/10 min	30 min	7:00		Start + Sabji comes from home
remains hot	5 min	30 min	7:10		2 puri
reheat time	NA	10 min	7:20	5-2-2	2 puri
			7:30		2 puri + Sabji becomes

					cold
			7:40	5 + 5 - 2 - 2 - 2	Sabji reheated
			7:50		2 puri
			8:00	5 + 5 + 5 - 2 - 2 - 2 - 2 - 2	2 puri
			Total		10 puri

44. Shyam's puri-sabji became famous. Now he gets 5 orders per 10 minutes and has invested in an additional oven. As he is working alone on both the ovens simultaneously, now in any one oven it takes him 45 minutes to cook one handi of sabji, 15 minutes for 2 plates of puri and 15 minutes to reheat the sabji. He can bring only one handi from home. What will be his maximum daily profit?
- A. ₹250
 B. ₹280
 C. ₹300
 D. ₹330
 E. ₹360

Answer is B (280), can be seen.

Time	Oven1	Puri		Oven2	Puri		
7							
7.05							
7.1							
7.15		2			2		
7.2							
7.25							
7.3		2			2		Puri preparation
7.35							Reheating sabji
7.4							Heating
7.45					2		idle
7.5							
7.55							
8							
8.05		2					
8.1							
8.15							
8.2							
8.25							
8.3							
8.35		2					
8.4							
8.45							
8.5		2			2		
8.55							
9							
		2			2		
Total		12			10	G.Total	22
		Profit	Transpt				
Answer		22*15	-50	280			

	Puri	sabji	Timeline	Oven 1	Oven 2
Preparation	2/15 min	45 min	7:00	Start + Sabji comes from home	
remains hot	5 min	30 min	7:15	2 puri	2 puri
reheat time	NA	15 min	7:30	2 puri + Sabji becomes cold	2 puri
			7:45	sabji reheated	Sabji
			8:00	2 puri	sabji
			8:15	2 puri	sabji
			8:30	2 puri	2 puri
			8:45	2 puri	sabji reheated
			9:00	2 puri	2 puri
			Total	22 puri	
				=(Price - cost) *plates - transportation cost	
				280	

- 45 Shyam's stall was becoming popular by the day. Now he gets 5 customers every 10 minutes. After buying a second oven, he employed a helping hand, Aman at ₹100 for two hours. Aman can cook one handi of sabji in 20 minutes or can prepare 3 plates of puri in 10 minutes. Reheat time for sabji is 10 minutes. None of them can work on both the ovens simultaneously.

Which of the following options will help Shyam maximize his daily profit, if he does NOT bring sabji from home?

- A. Shyam should dismiss Aman because his wages are more than the benefits he brings.
- B. Shyam will prepare only puri and Aman will prepare only sabji.
- C. Shyam will prepare only sabji and Aman will prepare only puri.
- D. Shyam and Aman will prepare both puri and sabji.
- E. Options B, C and D will yield the same profit.

Option D is the best option as it gives highest profit. Even if we subtract wages of Aman (100), option D remains the better.

Cond 1: Shyam puri,Aman, Sabji					Cond 2: Aman Puri, Shyam Sabji					Cond 3: Both puri and sabji				
Time	Shyam	Puri Nos	Aman	Sabji	Time	Aman	Puri Nos	Shyam	Sabji	Time	Oven1		Oven2	Puri Nos
7					7					7				
7.05					7.05					7.05			Aman	
7.1					7.1					7.1				
7.15					7.15					7.15	Shyam			
7.2		2			7.2					7.2		2		
7.25					7.25					7.25				
7.3		2			7.3		3			7.3				3
7.35					7.35					7.35				
7.4		2			7.4		3			7.4	Shyam			3
7.45					7.45					7.45				
7.5		2			7.5		3			7.5				3
7.55					7.55					7.55				
8		2			8		3			8				3
8.05					8.05					8.05				
8.1		2			8.1		3			8.1			Aman	3
8.15					8.15					8.15	Shyam			
8.2		2			8.2		3			8.2				3
8.25					8.25					8.25				
8.3		2			8.3		3			8.3				3
8.35					8.35					8.35				
8.4		2			8.4		3			8.4	Shyam			3
8.45					8.45					8.45				
8.5		2			8.5		3			8.5				3
8.55					8.55					8.55	Shyam			
9		2			9		3			9		2		3
	Total	22					30		0			4		30
			Profit				Profit							Profit
			330				450							510

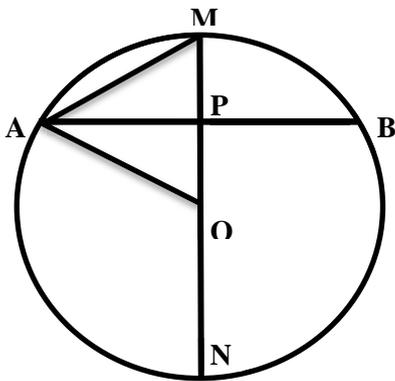
SECTION C

DATA INTERPRETATION AND QUANTITATIVE ABILITY

46. The sum of series, $(-100) + (-95) + (-90) + \dots + 110 + 115 + 120$, is:
- A. 0
 - B. 220
 - C. 340
 - D. 450
 - E. None of the above.

The series can be written as follows: $105+110+115+120 = 450$. Thus, Option D is the correct answer.

47. AB is a chord of a circle. The length of AB is 24 cm. P is the midpoint of AB. Perpendiculars from P on either side of the chord meets the circle at M and N respectively. If $PM < PN$ and $PM = 8$ cm. then what will be the length of PN?
- A. 17 cm
 - B. 18 cm
 - C. 19 cm
 - D. 20 cm
 - E. 21 cm



AB is a chord and MN is the perpendicular bisector of the chord AB at point P (as PM and PN both are perpendicular to AB). Then, MN is also diameter of the circle. Hence, $OA=OM=ON$, are the radii of the circle.

We need to find PN, which is equal to $OP+ON$

Given, $AP=12$ and $PM=8$, therefore; $OP=(r-8)$, where r is radius of the circle.

OPA is a right angle triangle. Hence,

$$12^2+(r - 8)^2=r^2$$

$$144 + r^2 + 64 - 16r = r^2$$

$$16r=208$$

$$r=13$$

If radius is 13, then $OP = (13 - 8) = 5$

Hence, $PN = 5 + 13 = 18$

48. If x and y are real numbers, the least possible value of the expression

$$4(x - 2)^2 + 4(y - 3)^2 - 2(x - 3)^2 \text{ is:}$$

- A. - 8
- B. - 4
- C. - 2
- D. 0
- E. 2

$$\begin{aligned} &4(x - 2)^2 + 4(y - 3)^2 - 2(x - 3)^2 \\ &= 4(x^2 - 4x + 4) + 4(y^2 - 6y + 9) - 2(x^2 - 6x + 9) \\ &= 2x^2 - 4x + 4y^2 - 24y + 34 \\ &= 2(x^2 - 2x + 1) + 4(y^2 - 2 \cdot y \cdot 3 + 9) + (34 - 2 - 36) \\ &= 2(x - 1)^2 + 4(y - 3)^2 - 4 \\ &= -4 \text{ (assuming minimum value of square terms is zero). Thus, Option B is the right answer} \end{aligned}$$

49. Four two-way pipes A, B, C and D can either fill an empty tank or drain the full tank in 4, 10, 12 and 20 minutes respectively. All four pipes were opened simultaneously when the tank is empty. Under which of the following conditions the tank would be half filled after 30 minutes?
- A. Pipe A filled and pipes B, C and D drained
 - B. Pipe A drained and pipes B, C and D filled
 - C. Pipes A and D drained and pipes B and C filled
 - D. Pipes A and D filled and pipes B and C drained
 - E. None of the above

Tank get half-filled in 30 minutes, i.e., in 1 minute $1/60$ fraction get filled. Let's check this through options with 1 minute cases:

Option A: $\frac{1}{4} - (1/10 + 1/12 + 1/20) = \frac{1}{4} - 14/60 = 1/60$ (correct answer)

Option B: $- 1/60$ (drained)

Option C: $(1/10 + 1/12) - (1/4 + 1/20) = 11/60 - 18/60$ (drained)

Option D: $7/60$ filled in 1 minute

50. A shop, which sold same marked price shirts, announced an offer - if one buys three shirts then the fourth shirt is sold at a discounted price of ₹100 only. Patel took the offer. He left the shop with 20 shirts after paying ₹20,000. What is the marked price of

a shirt?

- A. ₹1260
- B. ₹1300
- C. ₹1350
- D. ₹1400
- E. ₹1500

Assume marked price of shirts = x /per shirt

Four shirts will cost (with the offer) = $3x + 100$

Then, 20 shirts will cost (5 such offers) = $5(3x + 100) = 15x + 500 = 20000$

Thus, $x = 19500/15 = 1300$.

Therefore, B is the right answer.

51. The volume of a pyramid with a square base is 200 cm^3 . The height of the pyramid is 13 cm. What will be the length of the slant edges (i.e. the distance between the apex and any other vertex), rounded to the nearest integer?

- A. 12 cm
- B. 13 cm
- C. 14 cm
- D. 15 cm
- E. 16 cm

Volume = $\frac{1}{3} \times \text{Area of the base (A}^2) \times \text{Height of the pyramid (H=13cm)}$

Thus, $200 = \frac{1}{3} * A^2 * 13 \rightarrow A^2 = 600/13$

Therefore, side of the square base = $A = \sqrt{(600/13)}$

Say, diagonal of the base = $2B$

Then, $B^2 + B^2 = A^2 = 600/13 \rightarrow B^2 = 300/13$

(Slant edge of pyramid) $^2 = H^2 + B^2$

Thus, length of the slant edge = $\sqrt{(169 + 300/13)} = \sqrt{192.1} = 13.86 \approx 14$

52. A dice is rolled twice. What is the probability that the number in the second roll will be higher than that in the first?

- A. $5/36$
- B. $8/36$
- C. $15/36$
- D. $21/36$
- E. None of the above

Out of a total of 36 cases following cases will satisfy the above condition:

Dice 1 (1): Dice 2 (2,3,4,5, & 6) i.e. 5 cases

Dice 1 (2): Dice 2 (3,4,5, & 6) i.e. 4 cases
 Dice 1 (3): Dice 2 (4,5, & 6) i.e. 3 cases
 Dice 1 (4): Dice 2 (5, & 6) i.e. 2 cases
 Dice 1 (5): Dice 2 (6) i.e. 1 case
 Hence, possible number of cases = 15/36 i.e. Option C.

53. If $f(x) = ax + b$, a and b are positive real numbers and if $f(f(x)) = 9x + 8$, then the value of $a + b$ is:

- A. 3
- B. 4
- C. 5
- D. 6
- E. None of the above.

If $f(x) = ax + b$, then $f(f(x)) = a(ax + b) + b = a^2x + ab + b$
 $9x + 8 = a^2x + ab + b$
 Thus, $a^2 = 9$, $a = 3$.
 Moreover, $ab + b = 8$, or, $3b + b = 8$, or, $b = 2$
 So, $a + b = 5$

54. Arup and Swarup leave point A at 8 AM to point B. To reach B, they have to walk the first 2 km, then travel 4 km by boat and complete the final 20 km by car. Arup and Swarup walk at a constant speed of 4 km/hr and 5 km/hr respectively. Each rows his boat for 30 minutes. Arup drives his car at a constant speed of 50 km/hr while Swarup drives at 40 km/hr. If no time is wasted in transit, when will they meet again?

- A. At 9.15 AM
- B. At 9.18 AM
- C. At 9.21 AM
- D. At 9.24 AM
- E. At 9.30 AM

During the 2 km walk, Arup takes 30 minutes and Swarup takes 24 minutes. Hence, Swarup is ahead of Arup by 6 minutes.
 In boat, both of them row for 30 minutes. Hence, Swarup maintains the margin of 6 minutes.
 In car, every hour Arup goes ahead by 10 km.
 Before Arup starts, in 6 minutes, Swarup covers 4 km.
 Arup covers this distance in $(60/10)*4 = 24$ minutes
 During walk and in boat Arup goes = 30 + 30 = 60 minutes
 They will meet again at 8 AM + 60 minutes + 24 minutes = 9:24 AM

55. Hari's family consisted of his younger brother (Chari), younger sister (Gouri), and their father and mother. When Chari was born, the sum of the ages of Hari, his father and mother was 70 years. The sum of the ages of four family members, at the time of Gouri's birth, was twice the sum of ages of Hari's father and mother at the time of Hari's birth. If Chari is 4 years older than Gouri, then find the difference in age between Hari and Chari.
- A. 5 years
 B. 6 years
 C. 7 years
 D. 8 years
 E. 9 years

Assuming the age of: Hari's father = F, Hari's mother = M, Hari=H, when Chari was born.

Hence, their ages would be: F-H, M-H and 0, when Hari was born.

Similarly, the ages of four other members, at the time of Gouri's birth, would be: F+4, M+4, H+4, 4. (since Chari is 4 years older than Gouri)

We need to find H.

It is given that: $F+M+H=70 \rightarrow$ Eq. (1)

It is also given that $F+M+H+16=2(F-H+M-H) \rightarrow$ Eq. (2)

If we can replace F+M+H from Eq. (1) in Eq. (2) then:

Eq. 2 $\rightarrow 70+16=2(F+M+H-3H)$ (expressing -2H as H-3H in RHS)

$$86=2(70-3H)$$

$$6H=54$$

H=9. Hence, E is the correct answer.

56. In a True/False quiz, 4 marks are awarded for each correct answer and 1 mark is deducted for each wrong answer. Amit, Benn and Chitra answered the same 10 questions, and their answers are given below in the same sequential order.

AMIT	T	T	<u>F</u>	<u>F</u>	T	T	<u>F</u>	T	T	<u>F</u>
BENN	T	T	<u>T</u>	<u>F</u>	<u>F</u>	T	<u>F</u>	T	T	<u>F</u>
CHITRA	T	T	T	T	<u>F</u>	<u>F</u>	T	<u>F</u>	T	T

If Amit and Benn both score 35 marks each then Chitra's score will be:

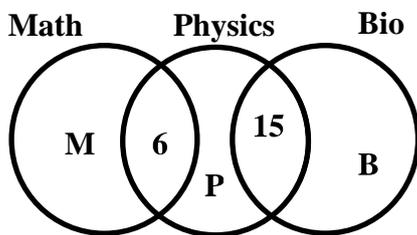
- A. 10
 B. 15
 C. 20
 D. 25
 E. None of the above.

Amit and Benn both got 35 marks. Maximum possible = 40 (if all correct). So they made 1 mistake. (9 correct and one wrong = $9 \times 4 - 1 = 35$). Their answers are all same, except 3rd and 5th number. As they made only 1 mistake, both of them are correct in one of these two.

Except 3rd and 5th answers, out of remaining 8, Chitra had 5 mismatches with both of them i.e. 5 mistakes. In 3rd and 5th numbers, her answer was same as Benn. So, one out of 3rd and 5th question is right and the other one is wrong. Hence, she made a total of 6 mistakes and her marks should be = $4 \times 4 - 6 = 10$.

57. In a class of 60, along with English as a common subject, students can opt to major in Mathematics, Physics, Biology or a combination of any two. 6 students major in both Mathematics and Physics, 15 major in both Physics and Biology, but no one majors in both Mathematics and Biology. In an English test, the average mark scored by students majoring in Mathematics is 45 and that of students majoring in Biology is 60. However, the combined average mark in English, of students of these two majors, is 50. What is the maximum possible number of students who major ONLY in Physics?

- A. 30
- B. 25
- C. 20
- D. 15
- E. None of the above.



Total = 60, Math = $M + 6$, Physics = $P + 21$, Bio = $B + 15$

In English,

Total marks by M and B as common English = $50 \times (\text{Math} + \text{Bio})$

Total marks by students in Math = $45 \times (\text{Math})$

Total marks by students in Bio = $60 \times (\text{Bio})$

$50 \times (\text{Math} + \text{Bio}) = 45 \times (\text{Math}) + 60 \times (\text{Bio})$

Or, $\text{Math} = 2 \times \text{Bio}$

Minimum Bio = 15, Minimum Math = $2 \times 15 = 30$,

So, the possible maximum students in ONLY Physics should be $60 - 15 - 30 = 15$

58. If $5^{\circ} \leq x^{\circ} \leq 15^{\circ}$, then the value of $\sin 30^{\circ} + \cos x^{\circ} - \sin x^{\circ}$ will be :

- A. Between -1 and - 0.5 inclusive
- B. Between - 0.5 and 0 inclusive
- C. between 0 and 0.5 exclusive
- D. between 0.5 and 1 inclusive
- E. None of the above

Value of $\sin (30^{\circ}) = 1/2$, Hence, we need to find the maximum value of $(\cos x^{\circ} - \sin x^{\circ})$ to solve the question.

As value of $\cos x^{\circ}$ decreases as angle moves from 0 to 90 and value of $\sin x^{\circ}$ increases, highest possible value of $\cos x^{\circ} - \sin x^{\circ}$ will be at 5° as it is closer to zero.

The minimum value will be at 15° , in the given range of: $5^{\circ} \leq x^{\circ} \leq 15^{\circ}$.

$\cos 15^{\circ} - \sin 15^{\circ}$ can be written as: $\cos(45^{\circ} - 30^{\circ}) - \sin(45^{\circ} - 30^{\circ})$

Applying the formula for $\cos (A-B)$ and $\sin(A-B)$

$\rightarrow (\cos 45^{\circ} \cdot \cos 30^{\circ} + \sin 45^{\circ} \sin 30^{\circ}) - (\sin 45^{\circ} \cos 30^{\circ} - \cos 45^{\circ} \sin 30^{\circ})$

$\rightarrow (1/\sqrt{2} \cdot \sqrt{3}/2 + 1/\sqrt{2} \cdot 1/2 - 1/\sqrt{2} \cdot \sqrt{3}/2 + 1/\sqrt{2} \cdot 1/2)$

$\rightarrow (1/2\sqrt{2} + 1/2\sqrt{2})$

$\rightarrow (2/2\sqrt{2})$

$\rightarrow 1/\sqrt{2}$

$\rightarrow 1/1.42$

$\rightarrow .71$

This means that 0.71 is the minimum value of the expression $(\cos x^{\circ} - \sin x^{\circ})$ in the range of x given.

Hence, at 15° , the value of $(\sin 30^{\circ} + \cos x^{\circ} - \sin x^{\circ})$ would be $(0.5 + .71)$, which is greater than 1.

So, Option E is the right answer.

59. If $N = (11^{p+7})(7^{q-2})(5^{r+1})(3^s)$ is a perfect cube, where p, q, r and s are positive integers, then the smallest value of $p + q + r + s$ is:

- A. 5
- B. 6
- C. 7
- D. 8
- E. 9

If N is perfect cube, then $(p + 7), (q - 2), (r + 1)$ and (s) should be divided by 3 (11, 7, 5 and 3 being prime numbers).

For smallest sum of $p + q + r + s$, $p = 2, q = 2, r = 2$ and $s = 3$ (all are positive integers)

Answer = 9 (Option E)

60. An institute has 5 departments and each department has 50 students. If students are

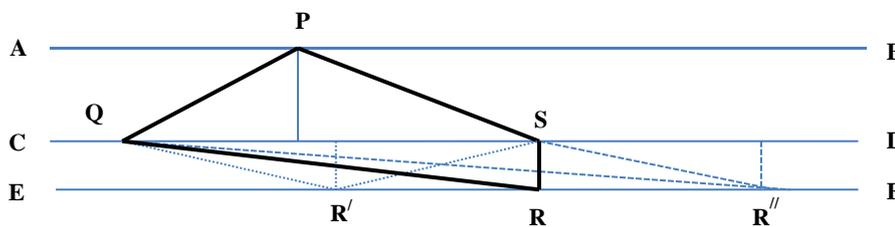
picked up randomly from all 5 departments to form a committee, what should be the minimum number of students in the committee so that at least one department should have representation of minimum 5 students?

- A. 11
- B. 15
- C. 21
- D. 41
- E. None of the above.

If we choose maximum 4 students from each department, there will be 20 students. So, 21st student will ensure at least one group has 5 representatives.

61. AB, CD and EF are three parallel lines, in that order. Let d_1 and d_2 be the distances from CD to AB and EF respectively. d_1 and d_2 are integers, where $d_1:d_2 = 2:1$. P is a point on AB, Q and S are points on CD and R is a point on EF. If the area of the quadrilateral PQRS is 30 square units, what is the value of QR when value of SR is the least?

- A. slightly less than 10 units
- B. 10 units
- C. slightly greater than 10 units
- D. slightly less than 20 units
- E. slightly greater than 20 units



The area of PQRS is 30 with heights of QPS and QRS in the proportions of 2:1. It is further given that heights are integers; it means that QR would be maximum for when value of $d_1:d_2$ is lowest integer. The lowest possible integer value of d_1 and d_2 can be 1 and 2. For all other values of d_1 and d_2 (for example, 4 and 2, or 8 and 4), the value of QR will be lower.

This implies, that values of $d_1=2$ units and value of $d_2=1$ unit. For these values of d_1 and d_2 ; area of ΔQPS will be 20 and area of ΔQRS will be 10 (in proportion to the heights). The two triangles have same base: QS.

$$\text{Area of } \Delta QPS = 20$$

$$\frac{1}{2} * QS * d_1 = 20$$

$$\frac{1}{2} * QS * 2 = 20$$

$$QS = 20$$

Further, the least possible value of $SR=1$ (all other possible values of SR s will be greater than 1, as can be seen in $\Delta QR'S$ and $\Delta QR''S$). Which means ΔQSR is a right angle triangle in which:

$$QS^2 + SR^2 = QR^2$$

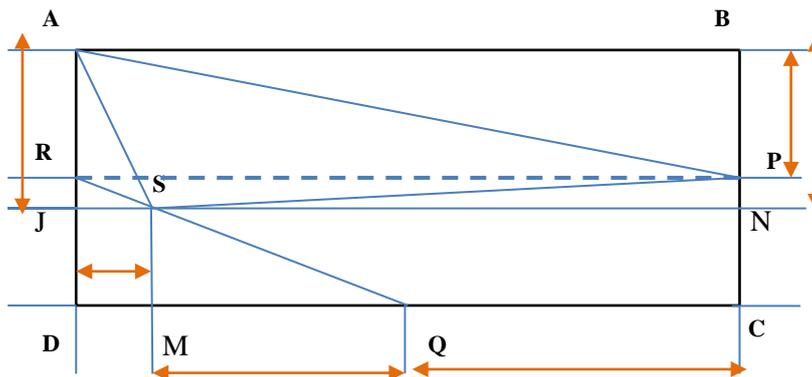
$$20^2 + 1^2 = QR^2$$

$$QR^2 = \sqrt{401}$$

$QR = \text{slightly greater than } 20$ (Answer)

62. ABCD is a rectangle. P, Q and R are the midpoint of BC, CD and DA. The point S lies on the line QR in such a way that $SR:QS = 1:3$. The ratio of the triangle APS and rectangle ABCD is

- A. 36/128
- B. 39/128
- C. 44/128
- D. 48/128
- E. 64/128



To get to the answer, we need to find area of APS. Let us assume the length of rectangle to be $16x$ and breadth to be $8y$.

Therefore area of rectangle is $= 16x * 8y = 128xy$

$BP = PC = AR = RD = 4y$, Similarly, $DQ = QC = 8x$

$SQ = 3(SR) \rightarrow MQ = 3(DM) = 6x \rightarrow MD = 2x$

Also, $JD = 3RJ = 3y \rightarrow AJ = 5y$, $JD = 3y$, $PN = RJ = y$

Area of APS = Area of AJNB - Area of Δ AJS - Area of Δ ABP - Area of Δ SPN, where AJS, ABP and SPN are all right angled triangles.

Area of AJNB = $16x * 5y = 80xy$

Area of AJS = $1/2 * 2x * 5y = 5xy$

Area of APB = $1/2 * 16x * 4y = 32xy$

Area of SPN = $1/2 * y * 14x = 7xy$

Area of APS = $80xy - 32xy - 7xy - 5xy = 36xy$

Therefore area of APS / Area of ABCD = $36xy / 128xy = 36/128$ (Answer)

Study the data given in the caselet below and answer the questions 63-64 that follow:

In an innings of a T20 cricket match (a team can bowl for 20 overs) 6 bowlers bowled from the fielding side, with a bowler allowed maximum of 4 overs. Only the three specialist bowlers bowled their full quota of 4 overs each, and the remaining 8 overs were shared among three non-specialist bowlers. The economy rates of four bowlers were 6, 6, 7 and 9 respectively. (*Economy rate is the total number of runs conceded by a bowler divided by the number of overs bowled by that bowler*). This however, does not include the data of the best bowler (*lowest economy rate*) and the worst bowler (*highest economy rate*). The number of overs bowled and the economy rate of any bowler are in integers.

63. Read the two statements below:

S1: The worst bowler did not bowl the minimum number of overs.

S2: The best bowler is a specialist bowler.

Which of the above statements or their combinations can help arrive at the minimum number of overs bowled by a non-specialist bowler?

A. S1 only.

B. S2 only.

C. Either S1 or S2.

D. S1 and S2 in combination.

E. The minimum number of overs can be determined without using S1 or S2.

3, 3, 2 is the correct distribution. Other possible combinations will violate the conditions of maximum overs mentioned in the question. So, the question can be answered without using S1 and S2. (Option E)

64. Read the two statements below:

S1. The economy rates of the specialist bowlers are lower than that of the non-specialist bowlers.

S2. The cumulative runs conceded by the three non-specialist bowlers were 1 more than those conceded by the three specialist bowlers.

Which of the above statements or their combinations can help arrive at the economy rate of the worst bowler?

A. S1 only.

B. S2 only.

- C. Either S1 or S2.
- D. S1 and S2 in combination.
- E. The economy rate can be calculated without using S1 or S2.

All the regular bowlers have lower economy rate. Further, these rates have to be in integers. Let the best economy rate be a. Worst is b.

According to S1: $a < 6$ and $b > 9$ and all the regular bowlers economy rate is less than or equal to 6.

If we use S2, three possible conditions emerge:

Condition 1: If the worst bowler gets three overs

$$4*a + 4*6 + 4*6 + 1 = 3*7 + 2*9 + 3*b.$$

Solving this gives us an equation: $4*a - 3*b = -10$. Since both a and b have to be integers the only possible values of a and b are 5 and 10.

Condition 2: If worst bowler gets two overs but the bowlers with economy rates of nine and seven get three overs each:

$$4*a + 48 + 1 = 21 + 27 + 2*b, \text{ which gives us}$$

$4*a - 2*b = -1$. As, a and b are not integers, this possibility cannot be entertained.

Condition 3: If worst bowler gets three overs, but the bowler with economy of nine gets three overs and the bowler with economy rate of seven gets two overs:

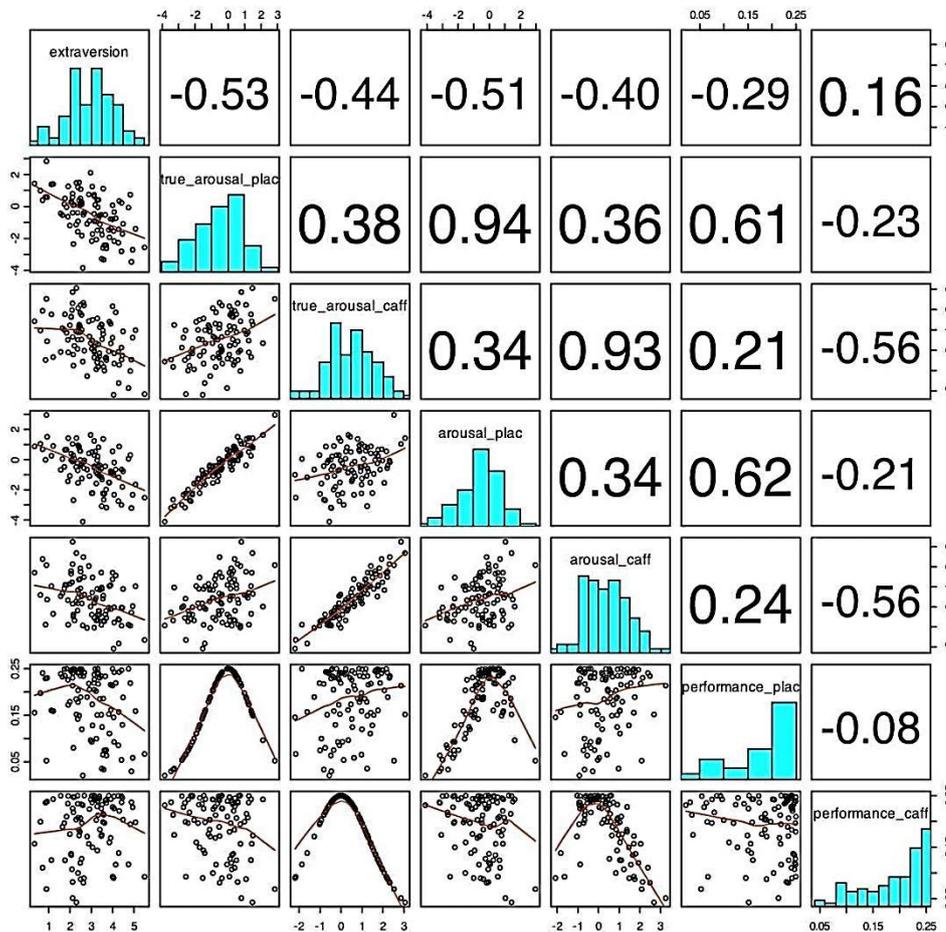
$4*a + 48 + 1 = 2*7 + 3*9 + 3*b$. Solving this should give us the equation $4*a - 3*b = -8$
 $\Rightarrow 3b - 4a = 8$. We get the integer solution in this case ($b=4$ and $a=1$), but this does not satisfy S1 and, therefore, cannot be entertained.

Hence, using only S2, we get two "integer" solutions, out of which one does not satisfy S1. So, we are left with only one possible solution ($a=5$ and $b=10$), if we use both S1 ($a < 6$, and $b > 9$) and S2 (cumulative runs scored...). (Option D)

Analyse the graph below and answer the questions 65-68 that follow:

The grid below captures relationships among seven personality dimensions: ~~extraversion~~, ~~true_arousal_plac~~, ~~true_arousal_caff~~, ~~arousal_plac~~, ~~arousal_caff~~, ~~performance_plac~~, and ~~performance_caff~~. The diagonal represents histograms of the seven dimensions. Left of the diagonal represents scatterplots between the dimensions while the right of the diagonal represents quantitative relationships between the dimensions. The lines in the scatterplots are closest approximation of the

points. The value of the relationships to the right of the diagonal can vary from -1 to +1, with -1 being the extreme linear negative relation and +1 extreme linear positive relation. (Axes of the graph are conventionally drawn).



65. Which of the following is true?

- A. "Extraversion" has two modes.
- B. Median for "arousal_plac" is definitely the same as its average.
- C. Median for "arousal_caff" is definitely higher than its average.
- D. Median for "performance_plac" is definitely lower than its average.
- E. Median for "performance_caff" is definitely lower than its average.

We need to look at histogram to interpret the answer. The histogram for performance_caff and performance_plac is left skewed (most of data are on right side), which will shift median to right side compared to the mean. The situation is opposite in case of arousal_caff. Furthermore, arousal_plac's histogram is not symmetric and hence, there is no guarantee of its mean and median being equal. Hence, options B, C, D and E are incorrect and Option A is right

66. Which of the scatterplots shows the weakest relationship?

- A. Between "extraversion" and "performance_caff".

- B. Between ~~true_~~arousal_plac'' and ~~a~~rousal_plac''.
- C. Between ~~true_~~arousal_plac'' and ~~p~~erformance_plac''.
- D. Between ~~true_~~arousal_caff'' and ~~p~~erformance_caff''.
- E. Between ~~a~~rousal_caff'' and ~~p~~erformance_caff''.

The weakest relationship should be away from ~~extreme values~~'', i.e. it should be the closest to zero. The closest relationship to zero, among the five options, is .16, which is between ~~extraverion~~' and ~~p~~erformance_caff''. Therefore, A is the right option.

67. In which of the following scatterplots, the value of one dimension can be used to predict the value of another, as accurately as possible?

- A. ~~extraversion~~' and ~~true_~~arousal_caff''
- B. ~~true_~~arousal_plac'' and ~~a~~rousal_plac''
- C. ~~true_~~arousal_plac'' and ~~p~~erformance_plac''
- D. ~~true_~~arousal_plac'' and ~~p~~erformance_caff''
- E. All the above are irrelevant relations.

The question can be answered by looking at the scatterplot, which is on the left hand side of the diagonal. Option A is weak as the scatter is dispersed all over. Option B is very close, but some dispersion can be seen away from the ~~trend line~~''. The scatterplot in the option D is dispersed as well and hence it cannot be right answer. The scatterplot in the option C is the closest to the trend line and hence it should be the answer, though the relationship is weaker as compared to that in the option B (This is because it is curvilinear in shape, while relationship value assumes linearity).

68. Which of the following options is correct?

- A. 0.93 on the right side of the diagonal corresponds to the third scatterplot in the fourth row.
- B. 0.94 on the right side of the diagonal corresponds to the second scatterplot in the fourth row.
- C. 0.38 is the relationship between ~~extraversion~~' and ~~true_~~arousal_plac''.
- D. ~~a~~rousal_caff'' and ~~p~~erformance_caff'' are positively related.
- E. The line that captures relationship between ~~a~~rousal_caff'' and ~~a~~rousal_plac'' can be denoted by equation: $y=a-bx$, where $b>0$.

Comparison between the visual pattern in the left side and the numbers in the right hand side indicates Option B is the correct answer.

Study the paragraph below and answer the questions 69-72 that follow:

Abdul has 8 factories, with different capacities, producing boutique kurtas. In the

production process, he incurs raw material cost, selling cost (for packaging and transportation) and labour cost. These costs per kurta vary across factories. In all these factories, a worker takes 2 hours to produce a kurta. Profit per kurta is calculated by deducting raw material cost, selling cost and labour cost from the selling price (Profit = selling price – raw materials cost - selling cost – labour cost). Any other cost can be ignored.

Exhibit : Business Details of Abdul's 8 Factories

	Production Capacity	Selling Price/Kurta	Profit/Kurta	Selling Cost/Kurta	Labour Cost/Hour
#	(No. of Kurtas)	₹	₹	₹	₹
Factory 1	2500	4800	775	60	450
Factory 2	1500	5300	800	45	400
Factory 3	800	5800	900	60	550
Factory 4	1000	5500	800	68	450
Factory 5	1500	5400	600	75	600
Factory 6	1100	6000	875	65	400
Factory 7	2500	4900	500	85	350
Factory 8	2000	5300	600	70	420

69. Which of the following options is in decreasing order of raw materials cost?

- A. Factory 3, Factory 4, Factory 7, Factory 5
- B. Factory 4, Factory 3, Factory 2, Factory 5
- C. Factory 6, Factory 3, Factory 5, Factory 7
- D. Factory 6, Factory 8, Factory 7, Factory 2
- E. Factory 8, Factory 3, Factory 2, Factory 4

Option A (Calculations at the end)

70. Which of the factories listed in the options below has the lowest sales margin (sales margin = profit per kurta divided by selling price per kurta)?

- A. Factory 2
- B. Factory 4
- C. Factory 5
- D. Factory 6
- E. Factory 7

Option E (Calculations at the end)

71. Abdul has received an order for 2,000 kurtas from a big retail chain. They will collect the finished pre-packaged kurtas directly from the factories, saving him the selling cost. To deliver this order, he can use multiple factories for production. Which of the

following options will ensure maximum profit from this order?

- A. Factory 1
- B. Factories 2 and 3
- C. Factories 4 and 6
- D. Factories 3, 6 and 4
- E. Factory 1 or Factory 7 or Factory 8

Option D (Calculations at the end)

72. Abdul has introduced a new technology in all his factories. As a result, a worker needs just 1.5 hours to produce a kurta. If raw materials cost and selling cost remain the same, which of the factories listed in the options below will yield the highest profit per kurta?

- A. Factory 2
- B. Factory 3
- C. Factory 4
- D. Factory 5
- E. Factory 6

Option B (Calculations at the end)

			Sales margin	Raw Material	Profit	Profit
#	Labor Cost*2	Labor Cost*1.5	Q69	Q70	Q71	Q72
Factory 3	1100	825	15.5%	3740	1175	960
Factory 6	800	600	14.6%	4260	1075	940
Factory 4	900	675	14.5%	3732	1025	868
Factory 2	800	600	15.1%	3655	1000	845
Factory 1	900	675	16.1%	3065	1000	835
Factory 5	1200	900	11.1%	3525	900	675
Factory 8	840	630	11.3%	3790	810	670
Factory 7	700	525	10.2%	3615	675	585