Directions of Test

Test Name	2016 Bull CAT 19	Total Questions	100	Total Time	180 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal Ability	34	1:0(h:m)	3	1/3
DI & Reasoning	32	1:0(h:m)	3	1/3
Quantitative Ability	34	1:0(h:m)	3	1/3

Section : Verbal Ability

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 1

After my farm was destroyed, it was clear to me that I had to adapt. I began to re-imagine my occupation and oyster farm. I began experimenting new designs. I lifted my farm off the sea bottom to avoid the impact of storm surges created by hurricanes and started to grow new mixes of restorative species. Let's dive in and take a look. Imagine a vertical underwater garden with hurricane-proof anchors on the edges connected by floating horizontal ropes across the surface. From these lines kelp and Gracilaria and other kinds of seaweeds grow vertically downward next to scallops in hanging nets that look like Japanese lanterns and mussels held in suspension in mesh socks. Staked below the vertical garden are oysters in cages and then clams buried in the sea floor. Our underwater farms have a low aesthetic impact. Because the farm is vertical, it has a small footprint. My farm used to be 100 acres; now it's down to 20 acres, but it produces much more food than before.

As ocean farmers, we reject aquaculture's obsession with monoculture, an obsession similar to that of modern land farming. It's a sea-basket approach: We grow two types of seaweeds, four kinds of shellfish, and we harvest salt. But with over 10,000 edible plants in the ocean, we've barely scratched the surface. We intend to de-sushify seaweed and invent a new native cuisine, not around our industrial palate of salmon and tuna but around the thousands of undiscovered ocean vegetables that are right outside our backdoor.

Native seaweeds contain more vitamin C than orange juice, more calcium than milk, and more protein than soybeans. It might surprise those of you on the hunt for Omega-3s to learn that many fish do not create these heart-healthy nutrients by themselves —they consume them. By eating the plants fish eat, we get the same benefits while reducing pressure on fish stocks. So it's time that we eat like fish. This is zero-input food that requires no fresh water, no fertilizer, no feed, no arid land. It is hands down the most sustainable food on the planet. The question is, will it be delicious food or will it be like being force-fed cod liver oil? As farmers, it's our job to grow this new cuisine, and for chefs it's their job to make it tasty.

In 1979, Jacques Cousteau, the father of ocean conservation, wrote: "We must plant the sea and herd its animals using the ocean as farmers instead of hunters. That is what civilization is all about—farming replacing hunting." This dream of Cousteau's and of Green Wave's is frightening to some environmentalists. The instinct of environmentalists is to do everything they can to protect the oceans from any and all forms of economic development. They shield themselves with a "politics of no." I'm sympathetic to these fears, especially given the history of industrial aquaculture in the 1980s; yet in the era of climate change, it's an illusion for environmentalists to think they can save our seas by relying on a conservation strategy alone while continuing to ask the oceans to feed our hunger for wild seafood.

Excerpted from a post in Medium by Bren Smith

Aquaculture : Ocean Farming

Which of the options below represent the same relationship as above?

A) Industrial Agriculture : Sustenance Farming ✓B) Industrial Agriculture : Organic Farming C) Hunting : Farming
D) Nature : Nurture

Explanation:- *Aquaculture is similar to what happens in industrial agriculture – huge landholdings devoted to one crop – artificially aided by fertilizer and mechanization. Ocean Farming is like Organic Farming, with minimal use of fertilizer and energy.*

1 – Sustenance farming is where you grow enough, just for your needs. No surpluses.
3 – Hunting would be the equivalent of deep sea fishing done by trawlers.
4 – The Nature / Nurture analogy is used to distinguish between what is in-born Vs What is learnt.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 2

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Excerpted from a post in Medium by Bren Smith

The author has been quoted making this statement: We're trying to break down the seawalls that separate our land-based and ocean-based food systems.

Which of the following measures is an instance to support the statement above?

✓A) Run-offs of fertilizers enter the seas through waterways; kelp at the ocean farms captures the nitrogen. Some of the kelp is converted to fertilizer for use in farms.
B) Seaweeds could be a powerful source of zero-input biofuel; feasibility studies suggest we might produce 2,000 gallons of ethanol per acre.
C) As the price of fertilizer, water, and feed goes up, zero-input food is going to be the most affordable food on the planet
D) Ocean greens such as kelp are not small boutique crops. We can grow incredible amounts of food in small areas: 25 tons of greens and 250,000 shellfish per acre in five months.

Explanation:- *This is an example of waste being captured and re-cycled to the farm through the ocean – thereby breaking down the wall between land and ocean based food systems.*

2, 3, 4 – Though true, do not talk about the connect between land and ocean farms.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 3

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Excerpted from a post in Medium by Bren Smith

What was the author's vocation immediately before he started his ocean farm?

A) Deep sea trawler operator ✓B) Aquaculture farm owner C) University Professor D) Environmentalist

Explanation:- *Refer the first two sentences of the passage. After my farm was destroyed, it was clear to me that I had to adapt. I began to re-imagine my occupation and oyster farm.*

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

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Extending further on the idea of the passage, which of the following measures, if taken, can make ocean farming more sustainable? (Tick all that apply)

A. Hatcheries close by so that farmers can access seed just-in-time.
B. Farmers don't own their patch of ocean; they own only the right to grow shellfish and seaweeds there.
C. Leases are up for review every five years.
D. Designing the farms to require high capital costs and minimal labor skills.

A) A & B B) B & D ✓C) B & C D) A & D

Explanation:- *Option 2 - By allowing others to use their ocean patches, the benefits of a healthy ocean are being spread to the community – increasing their involvement – and hence the chances of success in sustaining the experiment.*
Option 3 – This will allow the regulatory authorities to terminate contracts of those who are not into sustainable farming.

1 – a sustainable measure would have been one where the farmer can produce his own seed.
4 – anything with high capital costs, is going to be difficult to sustain.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 5

So far we've been looking to this new piece of mechanical technology or that great next generation robot as part of a lineup to ensure our species' safe passage in space. Wonderful as they are, I believe the time has come for us to complement these bulky electronic giants with what nature has already invented: the microbe, a single-celled organism that is itself a self-generating, self-replenishing, living machine. It requires fairly little to maintain, offers much flexibility in design and only asks to be carried in a single plastic tube.

The field of study that has enabled us to utilize the capabilities of the microbe is known as synthetic biology. It comes from molecular biology, which has given us antibiotics, vaccines and better ways to observe the physiological nuances of the human body. Using the tools of synthetic biology, we can now edit the genes of nearly any organism, microscopic or not, with incredible speed and fidelity. Given the limitations of our man-made machines, synthetic biology will be a means for us to engineer not only our food, our fuel and our environment, but also ourselves to compensate for our physical inadequacies and to ensure our survival in space.

To give you an example of how we can use synthetic biology for space exploration, let us go to the Mars environment. The Martian soil composition is similar to that of Hawaiian volcanic ash, with trace amounts of organic material. Let's say, hypothetically, what if martian soil could actually support plant growth without using Earth-derived nutrients? The first question we should probably ask is, how would we make our plants cold-tolerant? Because, on average, the temperature on Mars is a very uninviting negative 60 degrees centigrade. The next question we should ask is, how do we make our plants drought-tolerant? By borrowing genes for anti-freeze protein from fish and genes for drought tolerance from other plants like rice and then stitching them into the plants that need them, we now have plants that can tolerate most droughts and freezes. They're known on Earth as genetically modified organisms, and we rely on them to feed all the mouths of human civilization.

So why would we want to change the genetic makeup of plants for space? Well, to not do so would mean needing to engineer endless acres of land on an entirely new planet by releasing trillions of gallons of atmospheric gasses and then constructing a

giant glass dome to contain it all. It's an unrealistic engineering enterprise that quickly becomes a high-cost cargo transport mission. One of the best ways to ensure that we will have the food supplies and the air that we need is to bring with us organisms that have been engineered to adapt to new and harsh environments. In essence, using engineered organisms to help us terraform a planet both in the short and long term. These organisms can then also be engineered to make medicine or fuel.

Now moving on to homo sapiens, a species that is still continuing to evolve. Thousands of years of human evolution has not only given us humans like Tibetans, who can thrive in low-oxygen conditions, but also Argentinians, who can ingest and metabolize arsenic, the chemical element that can kill the average human being. Every day, the human body evolves by accidental mutations that equally accidentally allow certain humans to persevere in dismal situations.

But, and this is a big but, such evolution requires two things that we may not always have, or be able to afford, and they are death and time. In our species' struggle to find our place in the universe, we may not always have the time necessary for the natural evolution of extra functions for survival on non-Earth planets. We're living in what E.O. Wilson has termed the age of gene circumvention, during which we remedy our genetic defects like cystic fibrosis or muscular dystrophy with temporary external supplements. But with every passing day, we approach the age of volitional evolution, a time during which we as a species will have the capacity to decide for ourselves our own genetic destiny. Augmenting the human body with new abilities is no longer a question of how, but of when.

Excerpted from TED talk by Lisa Nip

What is the relation between gene circumvention and volitional evolution?

A) They are both synonyms B) One is cure, the other is prevention ✓C) The difference is that of degree
D) One is artificial, the other is natural

Explanation:- *In gene circumvention we are looking at remedying some human disease through gene manipulation, whereas in volitional evolution we are looking at changing the human by DNA change. Hence we can say that it is a matter of degree.*

1 – although both are related to genes, there is a difference in meaning.
2 – although gene circumvention can be labeled as a cure, volitional evolution is not prevention – it is adaptation.
4 – Both are artificial (in the sense that they speed up nature's work)

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

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Excerpted from TED talk by Lisa Nip

What is the main question that this passage is trying to answer?

✓A) How to undertake mankind's journey to find a new home under a new sun?
B) What can we do to reinvigorate the ethos for space travel?
C) What all do we need to be ready for before we start work on modifying the human genome?
D) Where all can we use the upcoming science of synthetic biology?

Explanation:- *The passage starts off by defining the problem as how we can ensure that we are able to do safe space travel. But for what? We can infer that it is probably in keeping with the nomadic DNA of mankind, and to find a new home when our sun finally dies out.*

2 – our search for a new home will require space travel – but ultimately it is the destination that we are interested in.
3 – Is a milestone on our journey to the new home.
4 – Is a tool that will help us when we reach our destination.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

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Excerpted from TED talk by Lisa Nip

Research on which of the following applications of synthetic biology would be relevant to human life on Mars?

A) Structural properties of the DNA as the order of nucleotides, recombinational behaviors, self-assembly due to Watson-Crick base paring and storage of free energy have been used for different aspects of computational systems.
B) Use of characterized invasin from Yersinia pseudotuburculosis as an output module that enables Escherichia coli to invade cancer-derived cells.
C) Artemisia annua and yeast cells were engineered to express the enzyme amorphadiene synthase and a cytochrome P450 monooxygenase to get the active drug component to treat malaria.
✓D) Deinococcus radiodurans is known to be able to withstand cold, dehydration, vacuum, acid, and, most notably, radiation.

Explanation:- *The characteristics mention relate to the environment on Mars. If these could be transplanted into other life material, then it would be much easier to create life forms suited for life in the Martian terrain.*

1 – this is important for bio-computing, and a relation to Martian exploration is a bit stretched.
2 – suggests a possible cure for cancer treatment. May help at later stages, but not in initial ones.
3 – Unlikely that Martian humans would carry malarial parasites with them to Mars!

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Excerpted from TED talk by Lisa Nip

Which of the following is the first sentence of the paragraph that follows the last paragraph of the passage?

A) Among the plethora of life here on Earth, there's a subset of organisms known as extremophiles, or lovers of extreme living conditions.
B) Our true final frontier is the line we must cross in deciding what we can and should make of our species' improbable intelligence.
✓C) Using synthetic biology to change the genetic makeup of any living organisms, especially our own, is not without its moral and ethical quandaries.
D) I pose these questions not to engender the fear of science but to bring to light the many possibilities that science has afforded and continues to afford us.

Explanation:- *The last paragraph ends by hinting that we need to work on our own genes – so that we can evolve to take on new challenges. The next paragraph should build on the human evolution angle.*

1 – Should have featured before the last paragraph.
2 – is repeating the idea of the last line, but does not modify or extend it.
4 – the last paragraph does not actually pose any questions.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 9

The extent to which modern technology has taken over the work of human hands may be illustrated as follows. We may ask how much of 'total social time' - that is to say, the time all of us have together, twenty-four hours a day each - is actually engaged in

real production, Rather less than one-half of the total population of this country is, as they say, gainfully occupied, and about one-third of these are actual producers in agriculture, mining, construction, and industry. I do mean actual producers, not people who tell other people what to do, or account for the past, or plan for the future, or distribute what other people have produced. In other words, rather less than one-sixth of the total population is engaged in actual production; on average, each of them supports five others beside himself, of which two are gainfully employed on things other than real production and three are not gainfully employed. Now, a fully employed person, allowing for holidays, sickness, and other absence, spends about one-fifth of his total time on his job. It follows that the proportion of 'total social time' spent on actual production - in the narrow sense in which I am using the term - is, roughly, one-fifth of one-third of one-half, i.e. 3.3 per cent. The other 96 per cent of 'total social time' is spent in other ways, including sleeping, eating, watching television, doing jobs that are not directly productive, or just killing time more or less humanely.

Although this bit of figuring work need not be taken too literally, it quite adequately serves to show what technology has enabled us to do: namely, to reduce the amount of time actually spent on production in its most elementary sense to such a tiny percentage of total social time that it pales into insignificance, that it carries no real weight, let alone prestige. When you look at industrial society in this way, you cannot be surprised to find that prestige is carried by those who help fill the other 96 per cent of total social time, primarily the entertainers but also the executors of Parkinson's Law. In fact, one might put the following proposition to students of sociology: 'The prestige carried by people in modern industrial society varies in inverse proportion to their closeness to actual production.' There is a further reason for this. The process of confining productive time to 3.3 per cent of total social time has had the inevitable effect of taking all normal human pleasure and satisfaction out of the time spent on this work. Virtually all real production has been turned into an inhuman chore which does not enrich a man but empties him.

We may say, therefore, that modern technology has deprived man of the kind of work that he enjoys most, creative, useful work with hands and brains, and given him plenty of work of a fragmented kind, most of which he does not enjoy at all. It has multiplied the number of people who are exceedingly busy doing kinds of work which, if it is productive at all, is so only in an indirect or 'roundabout' way, and much of which would not be necessary at all if technology were rather less modern. All this confirms our suspicion that modern technology, the way it has developed, is developing, and promises further to develop, is showing an increasingly inhuman face, and that we might do well to take stock and reconsider our goals.

Excerpted from pages 445-451 of 'Small is Beautiful' by EF Schumacher

What can be inferred about Parkinson's law referenced to in the second paragraph?

A) It correlates an individual's social status with the type of job she does.
✓B) It describes how we create work to fill available time. C) It is a law which sets about defining individual productivity.
D) It measures the impact that technology has on creating leisure time.

Explanation:- *Here is the sentence.*
When you look at industrial society in this way, you cannot be surprised to find that prestige is carried by those who help fill the other 96 per cent of total social time, primarily the entertainers but also the executors of Parkinson's Law.
The hint is that people who have prestige are the non-producers or people who do work which is not productive – but is just work for the sake of work. Hence option 2.

1 – is actually framed as a separate sociological law by the author.
3, 4 – The paragraph talks about how technology has reduced production time, thereby improved productivity. Yet the law cannot be about productivity or leisure time – as the author is not very happy with the way society is viewing 'productivity' and 'leisure'.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 10

The extent to which modern technology has taken over the work of human hands may be illustrated as follows. We may ask how much of 'total social time' - that is to say, the time all of us have together, twenty-four hours a day each - is actually engaged in real production, Rather less than one-half of the total population of this country is, as they say, gainfully occupied, and about one-third of these are actual producers in agriculture, mining, construction, and industry. I do mean actual producers, not people who tell other people what to do, or account for the past, or plan for the future, or distribute what other people have produced. In other words, rather less than one-sixth of the total population is engaged in actual production; on average, each of them supports five others beside himself, of which two are gainfully employed on things other than real production and three are not gainfully employed. Now, a fully employed person, allowing for holidays, sickness, and other absence, spends about one-fifth of his total

time on his job. It follows that the proportion of 'total social time' spent on actual production - in the narrow sense in which I am using the term - is, roughly, one-fifth of one-third of one-half, i.e. 3.3 per cent. The other 96 per cent of 'total social time' is spent in other ways, including sleeping, eating, watching television, doing jobs that are not directly productive, or just killing time more or less humanely.

Although this bit of figuring work need not be taken too literally, it quite adequately serves to show what technology has enabled us to do: namely, to reduce the amount of time actually spent on production in its most elementary sense to such a tiny percentage of total social time that it pales into insignificance, that it carries no real weight, let alone prestige. When you look at industrial society in this way, you cannot be surprised to find that prestige is carried by those who help fill the other 96 per cent of total social time, primarily the entertainers but also the executors of Parkinson's Law. In fact, one might put the following proposition to students of sociology: 'The prestige carried by people in modern industrial society varies in inverse proportion to their closeness to actual production.' There is a further reason for this. The process of confining productive time to 3.3 per cent of total social time has had the inevitable effect of taking all normal human pleasure and satisfaction out of the time spent on this work. Virtually all real production has been turned into an inhuman chore which does not enrich a man but empties him.

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Excerpted from pages 445-451 of 'Small is Beautiful' by EF Schumacher

In the context of the passage, fill in the blanks.

'From the factory,' it has been said, _____ goes out improved, whereas men there are _____'?

Blank 1	Blank 2
A. the entrepreneur	D. productively employed
B. dead matter	E. trained and reskilled
C. a worker	F. corrupted and degraded

✓A) B & F B) A & D C) C & F D) B & E

Explanation:- *The sentence reflects this philosophy espoused in the second paragraph. Virtually all real production has been turned into an inhuman chore which does not enrich a man but empties him.*
This justifies the 'corrupted and degraded' of Blank 2.
For the first blank, it cannot be a person (read men). So Dead matter fits best – as it is a non-person.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 11

The extent to which modern technology has taken over the work of human hands may be illustrated as follows. We may ask how much of 'total social time' - that is to say, the time all of us have together, twenty-four hours a day each - is actually engaged in real production, Rather less than one-half of the total population of this country is, as they say, gainfully occupied, and about one-third of these are actual producers in agriculture, mining, construction, and industry. I do mean actual producers, not people who tell other people what to do, or account for the past, or plan for the future, or distribute what other people have produced. In other words, rather less than one-sixth of the total population is engaged in actual production; on average, each of them supports five others beside himself, of which two are gainfully employed on things other than real production and three are not gainfully employed. Now, a fully employed person, allowing for holidays, sickness, and other absence, spends about one-fifth of his total time on his job. It follows that the proportion of 'total social time' spent on actual production - in the narrow sense in which I am using the term - is, roughly, one-fifth of one-third of one-half, i.e. 3.3 per cent. The other 96 per cent of 'total social time' is spent in other ways, including sleeping, eating, watching television, doing jobs that are not directly productive, or just killing time more or less humanely.

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Excerpted from pages 445-451 of 'Small is Beautiful' by EF Schumacher

What can be inferred about the kind of work that will lead to the most satisfaction?
Choose all that apply.

A. Work which involves experiments.
B. Work that requires application of mind.
C. Work that is non-routine
D. Work that is discontinuous

✓A) A, B & C B) A, C & D C) B & C D) A & D

Explanation:- *Refer to the sentence.*
We may say, therefore, that modern technology has deprived man of the kind of work that he enjoys most, creative, useful work with hands and brains, and given him plenty of work of a fragmented kind, most of which he does not enjoy at all.
Here we can look at experiments as a synonym for creativity.

4 – Discontinuous is a synonym for 'fragmented.'

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 12

The extent to which modern technology has taken over the work of human hands may be illustrated as follows. We may ask how much of 'total social time' - that is to say, the time all of us have together, twenty-four hours a day each - is actually engaged in real production, Rather less than one-half of the total population of this country is, as they say, gainfully occupied, and about one-third of these are actual producers in agriculture, mining, construction, and industry. I do mean actual producers, not people who tell other people what to do, or account for the past, or plan for the future, or distribute what other people have produced. In other words, rather less than one-sixth of the total population is engaged in actual production; on average, each of them supports five others beside himself, of which two are gainfully employed on things other than real production and three are not gainfully employed. Now, a fully employed person, allowing for holidays, sickness, and other absence, spends about one-fifth of his total time on his job. It follows that the proportion of 'total social time' spent on actual production - in the narrow sense in which I am using the term - is, roughly, one-fifth of one-third of one-half, i.e. 3.3 per cent. The other 96 per cent of 'total social time' is spent in other ways, including sleeping, eating, watching television, doing jobs that are not directly productive, or just killing time more or less humanely.

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Excerpted from pages 445-451 of 'Small is Beautiful' by EF Schumacher

Which of the following quotations would exemplify the message of the passage?

A) Confucius: 'Choose a job you love, and you will never have to work a day in your life.'
✓B) Karl Marx: 'The production of too many useful things results in too many useless people.'
C) Peter Drucker: 'The productivity of work is not the responsibility of the worker but of the manager.'
D) Arthur C Clarke: 'Any sufficiently advanced technology is indistinguishable from magic.'

Explanation:- *The Karl Marx quotation tells us that we should not become so productive a society that we have no work to do. Which means that we need technologies which are less sophisticated: read intermediate technologies.*

1 – It talks of the rare minority with a passion, whereas the paragraph emphasizes on jobs for the majority. The last paragraph talks about the importance of having creative work which uses the hands and the brain. Yet the passage is less about the individual, but more about society and its use of intermediate technologies.
3 – Goes against the grain of the passage which is making the worker more important than the manager.
4 – is only about technology. No people angle to it.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 13

Adultery has existed since marriage was invented, and so, too, the taboo against it. So how do we reconcile what is universally forbidden, yet universally practiced? Throughout history, men practically had a license to cheat with little consequence, and supported by a host of biological and evolutionary theories that justified their need to roam, so the double standard is as old as adultery itself. When it comes to sex, the pressure for men is to boast and to exaggerate, but the pressure for women is to hide, minimize and deny, which isn't surprising when you consider that there are still nine countries where women can be killed for straying.

So it's never been easier to cheat, and it's never been more difficult to keep a secret. And never has infidelity exacted such a psychological toll. When marriage was an economic enterprise, infidelity threatened our economic security. But now that marriage is a romantic arrangement, infidelity threatens our emotional security.

Because of this romantic ideal, we are relying on our partner's fidelity with a unique fervor. But we also have never been more inclined to stray, and not because we have new desires today, but because we live in an era where we feel that we are entitled to pursue our desires, because this is the culture where I deserve to be happy. And if we used to divorce because we were unhappy, today we divorce because we could be happier. And if divorce carried all the shame, today, choosing to stay when you can leave is the new shame.

So if we can divorce, why do we still have affairs? Now, the typical assumption is that if someone cheats, either there's something wrong in your relationship or wrong with you. But millions of people can't all be pathological. The logic goes like this: If you have everything you need at home, then there is no need to go looking elsewhere, assuming that there is such a thing as a perfect marriage that will inoculate us against wanderlust. But what if passion has a finite shelf life? What if there are things that even a good relationship can never provide? If even happy people cheat, what is it about?

The vast majority of people that I actually work with are not at all chronic philanderers. They are often people who are deeply monogamous in their beliefs, and at least for their partner. But they find themselves in a conflict between their values and their

behavior. They often are people who have actually been faithful for decades, but one day they cross a line that they never thought they would cross, and at the risk of losing everything. At the heart of an affair, you will often find a longing and a yearning for an emotional connection, for novelty, for freedom, for autonomy, for sexual intensity, a wish to recapture lost parts of ourselves or an attempt to bring back vitality in the face of loss and tragedy. And contrary to what you may think, affairs are way less about sex, and a lot more about desire: desire for attention, desire to feel special, desire to feel important.

So how do we heal from an affair? The fact is, the majority of couples who have experienced affairs, stay together. But some of them will merely survive, and others will actually be able to turn a crisis into an opportunity. I've noticed that a lot of couples, in the immediate aftermath of an affair, because of this new disorder that may actually lead to a new order, will have depths of conversations with honesty and openness that they haven't had in decades. And, partners who were sexually indifferent find themselves suddenly so lustfully voracious, they don't know where it's coming from.

Every affair will redefine a relationship, and every couple will determine what the legacy of the affair will be. Betrayal in a relationship comes in many forms. There are many ways that we betray our partner: with contempt, with neglect, with indifference, with violence. Sexual betrayal is only one way to hurt a partner. In other words, the victim of an affair is not always the victim of the marriage.

I look at affairs from a dual perspective: hurt and betrayal on one side, growth and self-discovery on the other -- what it did to you, and what it meant for me. And so when a couple comes to me in the aftermath of an affair that has been revealed, I will often tell them this: Today, most of us are going to have two or three relationships or marriages, and some of us are going to do it with the same person. Your first marriage is over. Would you like to create a second one together?

Excerpted from TED Talk by Esther Perel

What can be construed to be the original reason for men to impose the concept of 'fidelity' on a woman?

✓A) In order to know whose children these are, and who gets the cows when I die.
B) Monogamy used to be one person for life. Today, monogamy is one person at a time.
C) Because passion has a finite shelf life D) Since they always yearned for an emotional connection

Explanation:- *Motherhood is certain, but Fatherhood can always be doubted. So fidelity was imposed in order to get certainty about the sperm. Interwoven is the concept of property – and inheritance.*

2 – is going against the concept of fidelity – or loyalty.
3 – is introducing a practical problem that will detract from fidelity
4 – the emotional connection can happen even in affairs, not just in the fidelity of a marriage.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 14

Adultery has existed since marriage was invented, and so, too, the taboo against it. So how do we reconcile what is universally forbidden, yet universally practiced? Throughout history, men practically had a license to cheat with little consequence, and supported by a host of biological and evolutionary theories that justified their need to roam, so the double standard is as old as adultery itself. When it comes to sex, the pressure for men is to boast and to exaggerate, but the pressure for women is to hide, minimize and deny, which isn't surprising when you consider that there are still nine countries where women can be killed for straying.

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The vast majority of people that I actually work with are not at all chronic philanderers. They are often people who are deeply monogamous in their beliefs, and at least for their partner. But they find themselves in a conflict between their values and their behavior. They often are people who have actually been faithful for decades, but one day they cross a line that they never thought they would cross, and at the risk of losing everything. At the heart of an affair, you will often find a longing and a yearning for an emotional connection, for novelty, for freedom, for autonomy, for sexual intensity, a wish to recapture lost parts of ourselves or an attempt to bring back vitality in the face of loss and tragedy. And contrary to what you may think, affairs are way less about sex, and a lot more about desire: desire for attention, desire to feel special, desire to feel important.

So how do we heal from an affair? The fact is, the majority of couples who have experienced affairs, stay together. But some of them will merely survive, and others will actually be able to turn a crisis into an opportunity. I've noticed that a lot of couples, in the immediate aftermath of an affair, because of this new disorder that may actually lead to a new order, will have depths of conversations with honesty and openness that they haven't had in decades. And, partners who were sexually indifferent find themselves suddenly so lustfully voracious, they don't know where it's coming from.

Every affair will redefine a relationship, and every couple will determine what the legacy of the affair will be. Betrayal in a relationship comes in many forms. There are many ways that we betray our partner: with contempt, with neglect, with indifference, with violence. Sexual betrayal is only one way to hurt a partner. In other words, the victim of an affair is not always the victim of the marriage.

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Excerpted from TED Talk by Esther Perel

In today's world of serial relationships, which of the following represent reason(s) for affairs to be still seen as traumatic?

A. As they are attempts to bring back vitality in the face of loss and tragedy.
B. It shatters the concept of a romantic ideal of turning to one person for fulfilling a long list of needs – romance, friendship, confidant, intellectual.
C. It creates a sense of doubt – and violates the trust on which relationships are founded.
D. People find themselves in a conflict between their values and their behavior.

A) A & D ✓B) B & C C) B & D D) Only C

Explanation:- *After an affair, we lose faith in our partner – Statement 3. Also we lose our idealism of having a partner who fulfills all our needs. Clearly the partner had to go to someone else to fulfill part of those needs – Statement 2.*

1 – is telling us the positives of an affair.
4 – may happen in the aftermath of an affair, but it is self-inflicted, hence not so traumatic.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 15

Adultery has existed since marriage was invented, and so, too, the taboo against it. So how do we reconcile what is universally forbidden, yet universally practiced? Throughout history, men practically had a license to cheat with little consequence, and supported by a host of biological and evolutionary theories that justified their need to roam, so the double standard is as old as adultery itself. When it comes to sex, the pressure for men is to boast and to exaggerate, but the pressure for women is to hide, minimize and deny, which isn't surprising when you consider that there are still nine countries where women can be killed for straying.

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Excerpted from TED Talk by Esther Perel

When we seek the gaze of another, it isn't always our partner that we are turning away from, but the person that we have ourselves become.

The above sentence –

A) Is a philosophy that applies exclusively to same-gender relationships. B) Contradicts a point mentioned in the passage.
✓C) Is a new perspective on the reason people have affairs. D) Would not be relevant in this passage.

Explanation:- *It is indeed a new perspective. To rephrase: it isn't so much that we're looking for another person, as much as we are looking for another self.*

1 – The passage covers relationships, without specifying whether these are heterogenous or not. The sentence is apt for any kind of relationship.
2 – What existing idea is it contradicting?
4 – is relevant, as it mentions that people sometimes have affairs, not because of a deficiency in their partner, but because of some shortcoming in themselves.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 16

Adultery has existed since marriage was invented, and so, too, the taboo against it. So how do we reconcile what is universally forbidden, yet universally practiced? Throughout history, men practically had a license to cheat with little consequence, and supported by a host of biological and evolutionary theories that justified their need to roam, so the double standard is as old as adultery itself. When it comes to sex, the pressure for men is to boast and to exaggerate, but the pressure for women is to hide, minimize and deny, which isn't surprising when you consider that there are still nine countries where women can be killed for straying.

So it's never been easier to cheat, and it's never been more difficult to keep a secret. And never has infidelity exacted such a psychological toll. When marriage was an economic enterprise, infidelity threatened our economic security. But now that marriage is a romantic arrangement, infidelity threatens our emotional security.

Because of this romantic ideal, we are relying on our partner's fidelity with a unique fervor. But we also have never been more inclined to stray, and not because we have new desires today, but because we live in an era where we feel that we are entitled to pursue our desires, because this is the culture where I deserve to be happy. And if we used to divorce because we were unhappy, today we divorce because we could be happier. And if divorce carried all the shame, today, choosing to stay when you can leave is the new shame.

So if we can divorce, why do we still have affairs? Now, the typical assumption is that if someone cheats, either there's something wrong in your relationship or wrong with you. But millions of people can't all be pathological. The logic goes like this: If you have everything you need at home, then there is no need to go looking elsewhere, assuming that there is such a thing as a perfect marriage that will inoculate us against wanderlust. But what if passion has a finite shelf life? What if there are things that even a good relationship can never provide? If even happy people cheat, what is it about?

The vast majority of people that I actually work with are not at all chronic philanderers. They are often people who are deeply monogamous in their beliefs, and at least for their partner. But they find themselves in a conflict between their values and their behavior. They often are people who have actually been faithful for decades, but one day they cross a line that they never thought they would cross, and at the risk of losing everything. At the heart of an affair, you will often find a longing and a yearning for an emotional connection, for novelty, for freedom, for autonomy, for sexual intensity, a wish to recapture lost parts of ourselves or an attempt to bring back vitality in the face of loss and tragedy. And contrary to what you may think, affairs are way less about sex, and a lot more about desire: desire for attention, desire to feel special, desire to feel important.

So how do we heal from an affair? The fact is, the majority of couples who have experienced affairs, stay together. But some of them will merely survive, and others will actually be able to turn a crisis into an opportunity. I've noticed that a lot of couples, in the immediate aftermath of an affair, because of this new disorder that may actually lead to a new order, will have depths of conversations with honesty and openness that they haven't had in decades. And, partners who were sexually indifferent find themselves suddenly so lustfully voracious, they don't know where it's coming from.

Every affair will redefine a relationship, and every couple will determine what the legacy of the affair will be. Betrayal in a relationship comes in many forms. There are many ways that we betray our partner: with contempt, with neglect, with indifference, with violence. Sexual betrayal is only one way to hurt a partner. In other words, the victim of an affair is not always the victim of the marriage.

I look at affairs from a dual perspective: hurt and betrayal on one side, growth and self-discovery on the other -- what it did to you, and what it meant for me. And so when a couple comes to me in the aftermath of an affair that has been revealed, I will often tell them this: Today, most of us are going to have two or three relationships or marriages, and some of us are going to do it with the same person. Your first marriage is over. Would you like to create a second one together?

Excerpted from TED Talk by Esther Perel

Based on your reading of the passage, what can be construed to be a relationship between the death of a loved one and an affair?

A) You would not call an affair as something that happens after your spouse passes away.
B) Affairs bring back the life in a relationship – so in a sense they are anti-death.
✓C) Some affairs are an attempt to beat back deadness, in an antidote to death.

D) Affairs make you ask a lot of questions about what you all you want to do before you die.

Explanation:- *The idea makes sense – because death of a loved one makes us realize our own mortality – and we are looking for something which gets us away from death.*

1 – the interpretation of a loved one to only mean a spouse, is very narrow.
2 – the life may come back, or it may not. The ambiguity is what creates a problem with this option.
4 – It is death that causes you to ask these questions, not affairs.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 17

It all started with learning about learning. I remember clearly my early teaching experience in college. I knew my subject, and I had read books on pedagogy, psychology, and development. I was sitting on top of the world — so "knowledgeable,". . . Reality came in small doses. First, I found out that all those eager, happy-looking faces sitting before me were masking massive boredom and indifference. Then I found out that they weren't getting most of what I was saying. "Here's an important point," I would intone with majestic emphasis, "and it provides an insight the textbooks don't give." Alas, to no avail. When the exam papers came back, the textbook version, memorized carefully, was all I ever saw.

Then I discovered the awful truth, that in fact we really don't know how people learn at all, whether they are or are not interested in what they are learning. Sometimes, I feel the schools around us are the world's greatest example of the legend of the emperor's new clothes.

In our school, the kids use other kids, books, instruments, and adults as they see fit. Their chief tool is their curiosity, which drives them to find, to master, to understand. Watching the children teaches me something new every day. Consider this, for example. People say, "Let children be free to choose their activities, and they will always take the path of least resistance. They'll never develop character to face hardship."

Most of the time, kids choose the path of greatest resistance. It's as if kids see their weak spots as a challenge that simply must be met. The kid with a math phobia studies arithmetic and algebra. The recluse tries mixing; the gregarious one learns to be alone. Each story is a saga of monumental struggle and iron determination. Then there's the bit about being well-rounded. "You've got to force them to learn a little about a lot of things. Children need to be exposed at school. If you leave them be, they may become too narrow."

First of all, there's the arrogance of it, as if you or I or some panel of experts could choose out of the vast ocean of human knowledge the right combination of droplets everyone needs to imbibe. The very same people who complain about narrowness can be found the next day complaining about overexposure and over stimulation. Finally, there's the assumption that it's bad to be narrow. Bad for whom? For Mozart? For Einstein? For Wilbur and Orville Wright? Our greatest national heroes are praised for their single-minded devotion to some cause or other. Is that well-rounded?

Excerpted from 'The Sudbury School' by Daniel Greenberg

What was the author's major learning as a newly minted teacher?

A) Students will not learn, whatever anyone else does. B) Students will learn what they don't want to learn.
✓C) Students will learn what they want to learn. D) Students will not learn what they want to learn.

Explanation:-
Option 3.
The author states students were indifferent and bored in the class.
Moreover even though he took great care to teach students more than what was given in textbooks they were least appreciative of this as can be seen from the fact that when the exam papers came back, the textbook version, memorized carefully, was all that the author ever saw.
Hence students learn what they want to learn.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 18

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Excerpted from 'The Sudbury School' by Daniel Greenberg

What role do teachers play in the current school that the author is associated with?

✓A) Minor actors B) Villains C) Heroes D) Directors.

Explanation:-
Option 1.
The author mentions right in the first paragraph that students rarely listen to teachers.
In the second paragraph, he goes on to add that teachers have very little understanding today of how students learn.
The third paragraph contains the real answer - "In the current school, the children pretty much do what they want to do and the teachers are more like supporting personnel who assist the child if the child asks."
Hence, teachers are more like "minor actors" than heroes or villains or directors.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 19

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Excerpted from 'The Sudbury School' by Daniel Greenberg.

Based on your understanding of the ideas expressed in the passage, what would you expect an ungainly kid to do in the author's school?

✓A) Play sports all day. B) Be ensconced in the school library. C) Spend time outdoors, fishing in the school pond.
D) Tutor junior kids in their areas of difficulty.

Explanation:-

Option 1.

The author states that kids choose the path of greatest resistance and kids see their weak spots as a challenge that simply must be met. The kid with a math phobia studies arithmetic and algebra.

The definition of ungainly is - (of a person or movement) Awkward; clumsy: "an ungainly walk".

So it is with reference to physical activity.

Thus if the child is ungainly i.e. lacking in smoothness or dexterity, he or she will try to overcome that by working on the physical aspects of the body, hence sports would be the best option.

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 20

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Excerpted from 'The Sudbury School' by Daniel Greenberg

Which of the following could be the paragraph that immediately follows the last paragraph?

A) Children will learn what they will learn, when they want and how they want, our best efforts notwithstanding. At our school, I see this truth in action all the time. I never have been able to unlock the secret of how they really do it.
✓B) It all comes back to humility. The smartest of us is just a tiny bit less stupid than the stupidest of us. Let children be. They will learn all they have to, and more, if we don't mess with them, unless and until they beg us to.
C) Students learn to relate to people, because they are with people, of all ages, all day. They learn to solve problems, because they have to. "The buck stops here" said the sign on President Truman's desk, and "here" is each student's own place. There is no one else to bail them out.
D) Year after year, we carry on, calling ourselves purveyors of knowledge, providers of education. When all else fails, money is applied as a plaster to heal the wounds.

Explanation:-
Option 2.
The last paragraph talks about how children need to choose what interests them and study it on their own. Option 2 carries on that train of thought best because it recommends autonomy to children in their education.

1 - is specific to the author's school - and would probably fit in better after the second para.

3 - talks of problem solving skills - not choice of subjects.

4 - talks of the approach that normal schools adopt - again no relation to the student autonomy that we are looking out for.

DIRECTIONS for the question: *The question consists of four/five sentences on a topic. Select the option that indicates grammatically* ***incorrect or inappropriate*** *sentence/s.*

Question No. : 21

A. What writers struggle to express through numerous newspaper columns, the cartoon manages in a pointed one-liner.
B. Little wonder then, that the first thing most of us like to see when we pick up a newspaper is the cartoon.
C. Simple though it may seems, making a cartoon is an art that requires a combination of hard work, training and a good sense of humour.
D. Cartoonists say that the cartoons that make us laugh the most are in fact the cartoons that are hardest to make.
E. The advice established cartoonists give is that just because you can sketch, don't take it for granted that one will become a cartoonist.

A) C and D only ✓B) C, D and E C) D and E only D) A and B only

Explanation:-
Option 2.
In C, it may seem and not seems.
In D, the superlative hardest will always take the before it.
In E, either "one can sketch...one will become" or " you can sketch.....you will become"

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 22

In 1962, JFK told the country about a dream he had, a dream to put a person on the moon by the end of the decade. The eponymous moonshot. At X -- formerly called Google X – we are dreaming up technologies that we hope can make the world a wonderful place. We use the word "moonshots" to remind us to keep our visions big -- to keep dreaming. And we use the word "factory" to remind ourselves that we want to have concrete visions -- concrete plans to make them real. Here's our moonshot blueprint. Number one: we want to find a huge problem in the world that affects many millions of people. Number two: we want to find or propose a radical solution for solving that problem. And then number three: there has to be some reason to believe that the technology for such a radical solution could actually be built.

But I have a secret for you. The moonshot factory is a messy place. But rather than avoid the mess, pretend it's not there, we've tried to make that our strength. We spend most of our time breaking things and trying to prove that we're wrong. Run at all the hardest parts of the problem first. Get excited and cheer, "Hey! How are we going to kill our project today?"

I want to show you a project that we've had to leave behind on the cutting room floor. Economic development of landlocked countries is limited by lack of shipping infrastructure. The radical solution? A lighter-than-air, variable-buoyancy cargo ship. This has the potential to lower, at least overall, the cost, time and carbon footprint of shipping without needing runways. We came up with this clever set of technical breakthroughs that together might make it possible for us to lower the cost enough that we could actually make these ships -- inexpensively enough in volume. But however cheap they would have been to make in volume it turned out that it was going to cost close to 200 million dollars to design and build the first one. Because X is structured with these tight feedback loops of making mistakes and learning and new designs, we can't spend 200 million dollars to get the first data point about whether we're on the right track or not. If there's an Achilles' heel in one our projects, we want to know it now, up front, not way down the road. So we killed this project.

Discovering a major flaw in a project doesn't always mean that it ends the project. Sometimes it actually gets us onto a more productive path. Probably the craziest sounding project we have is Project Loon. We're trying to make balloon-powered Internet. A network of balloons in the stratosphere that beam an internet connection down to rural and remote areas of the world. But you can't just take a cell tower, strap it to a balloon and stick it in the sky. The winds are too strong, it would be blown away. And the balloons are too high up to tie it to the ground. Here comes the crazy moment. What if, instead, we let the balloons drift and we taught them how to sail the winds to go where the needed to go? It turns out the stratosphere has winds that are going in quite different speeds and directions in thin strata. The idea is to have enough balloons so as one balloon floats out of your area, there's another balloon ready to float into place. But is that good enough for it to navigate through the world? Our latest balloon, can navigate a two-mile vertical stretch of sky and can sail itself to within 500 meters of where it wants to go from 20,000 kilometers away.

Being audacious and working on big, risky things makes people inherently uncomfortable. You cannot yell at people and force them to fail fast. People resist. They worry. "What will happen to me if I fail?" The only way to get people to work on audacious ideas and have them run at all the hardest parts of the problem first, is if you make that the path of least resistance for them. We work hard at X to make it safe to fail. Teams kill their ideas as soon as the evidence is on the table because they're rewarded for it. We have bonused every single person on teams that ended their projects. We believe in dreams at the moonshot factory. But enthusiastic skepticism is not the enemy of boundless optimism. It's optimism's perfect partner.

Excerpted from TED talk by Astro Teller

Because of the adjective eponymous for 'moonshot', in the second sentence of the passage, we can infer that -

A) The idea is more important than the person behind the idea.
✓B) Moonshot has come to mean something big and audacious. C) Having a name to an idea makes it easier to remember.
D) The same words is used to make a reference to the main character as well as a larger story.

Explanation:- *From the context, we see that moonshot is not being used literally at X. It means anything which is like a moonshot – something that represents a real challenge.*

1 – probably the option is trying to confuse eponymous with anonymous.
3 – is true in a narrow sense of the word, but lacks the connect to the context.
4 – is correct in a Hamlet way. Hamlet is both the main character and the title of Shakespeare's play.

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 23

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Excerpted from TED talk by Astro Teller

Here is an example of a X project.

With 1.2 million people dying on the roads globally every year, building a car that drives itself was a natural moonshot to take. Three and a half years ago, when we had these Lexus, retrofitted, self-driving cars in testing, they were doing so well, we gave them out to other Googlers to find out what they thought of the experience. And what we discovered was that our plan to have the cars do almost all the driving and just hand over to the users in case of emergency was a really bad plan.

Which of the following, points to a flaw in the thinking that could have been uncovered in user trials?

A) Traffic regulatory authorities were not convinced of the safety of having such cars on the road.
B) A retrofitted car did not perform as well as a self driving car built from scratch.
✓C) Users didn't stay alert in case the car needed to hand control back to them.

D) Software upgrades had to be issued frequently because of a lot of near-misses.

Explanation:- *The last sentence of the question indicates that handing over to the users in emergency was a bad plan. 3 tells us why it was a bad plan.*

1 – this would have been dealt with before user trials started.
2 – is a design issue. Not connected with usability – as customers did not have a chance to compare two versions of the car.
4 – This is not a flaw – in fact the idea of getting user trials was to generate data points and thereby improve the algorithms.

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

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Based on your understanding of the loon project, which of these would represent appropriate navigational equipment for the balloon?

A) Sensors continuously detect outside wind speed and direction. Solar powered turbines change the direction of the balloon so that it continues to hover in the intended area where it can continue to receive and transmit signals.
✓B)Having two ballons, one inside the other. The outer one is filled with air, the inner with helium. The outer balloon pumps air in to make itself heavier, or lets air out to make it lighter. And these weight changes allow it to rise or fall.
C) A Do-Nothing philosophy which allows balloons to move with the prevailing winds.
D) Most of the difficulties of aerial navigation vanish when two balloons are employed, one aiding the other as in alternate warping. Each one of the two balloons should alternately present a large surface area to offer resistance to the air, and this surface should be quickly reversed when necessary to lessen resistance.

Explanation:- *The hint is in the sentence. It turns out the stratosphere has winds that are going in quite different speeds and directions in thin strata. By raising or lowering the altitude we can catch different streams – and thereby navigate.*

1 – will jack up the cost – also will add to the weight as night time operations will require batteries.
3 – No navigation done here. Also, will require a large number of balloons to ensure that at least one is in coverage area – hence will raise costs.
4 – this method is ok only when the windspeeds are very low.

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

Question No. : 25

1. The majority of those who reject human laws and proclaim their liberty and their decision to "live their own life" do so only in obedience to the most ordinary vital movements which they disguise and try to justify, if not to their own eyes, at least to the eyes of others.
2. The child can be taught, as he grows up, the relativity of all moral and social laws so that he may find in himself a higher and truer law.
3. To give a moral law to a child is evidently not an ideal thing; but it is very difficult to do without it.
4. But here one must proceed with circumspection and insist on the difficulty of discovering that true law.
5. They give a kick to morality, simply because it is a hindrance to the satisfaction of their instincts.

A) 32415 B) C) D)

Explanation:- *The 'they' in 5 refers to the majority in the statement 1. Hence 15 are together. The paragraph is about giving moral law to a child and then allowing him to find the truer law. Hence 324 come together.*

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

Question No. : 26

1. They are prompted to induce it by going to scary movies or engaging in extreme sports or by artificial means such as taking narcotics.
2. The hormone adrenaline is a neurotransmitter, but unlike dopamine, which can push us toward danger in the course of achieving certain goals, adrenaline is designed to help us escape from danger.
3. For some people that adrenaline rush can become a reward the brain seeks.
4. It works like this: When the brain perceives a threat, it triggers the release of adrenaline into the bloodstream, which in turn stimulates the heart, lungs, muscles, and other parts of the body to help flee or fight in a life-threatening situation.
5. This chemical release generates a feeling of exhilaration that continues after the threat has passed, as the adrenaline clears the system.

A) 24531 B) C) D)

Explanation:- *The paragraph is talking about the neurotransmitter adrenaline and comparing it with dopamine. The it in 4 talks about how the neurotransmitter adrenaline works. 5 continues as it talks about the chemical release which generates a feeling of exhilaration. 3 then talks about what happens to people because of the adrenaline rush.*

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

Question No. : 27

1. Although the lizard may stake a claim to its habitat, it exerts total indifference toward the well-being of its young.
2. Listen to the anguished squeal of a dolphin separated from its pod or witness the sight of elephants mourning their dead, however, and it is clear that a new development is at play.
3. Scientists have identified this as the limbic cortex.
4. Unique to mammals, the limbic cortex impels creatures to nurture their offspring by delivering feelings of tenderness and warmth to the parent when children are nearby.
5. These same sensations also cause mammals to develop various types of social relations and kinship networks.

A) 12345 B) C) D)

Explanation:- *The paragraph is talking about the feelings that animals have for their young ones. It begins by talking about a lizard that is indifferent to the well being of its young, but the dolphin or elephant care for their young ones. The scientist link this to the limbic cortex which delivers feelings of tenderness and warmth to the parent when children are nearby.*

DIRECTIONS for question: *Four sentences related to a topic are given below. Three of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.*

Question No. : 28

1. In the "bigger is better" climate, calisthenics was relegated to groups perceived to be vulnerable, such as women, people recuperating from injuries and school students.
2. The body builders also relied on free weights and machines, which allowed them to target and bloat the size of individual muscles rather than develop a naturally proportioned body.
3. Although some of the strongest and most physically developed human beings ever to have lived acquired their abilities through the use of sophisticated calisthenics, a great deal of this knowledge was discarded and the method was reduced to nothing more than an easily accessible and readily available activity.
4. Those who mastered the rudimentary skills of calisthenics could expect to graduate to weight training rather than advanced calisthenics.

A) 2 B) C) D)

Explanation:- *The paragraph is talking about the fact that though some of the strongest and most physically developed human beings ever to have lived acquired their abilities through the use of sophisticated calisthenics, it was relegated to vulnerable groups and for people who were recuperating. People studied rudimentary skills but not the advanced ones.*
Statement 2 talks about developing a good body through weight training and machines than on calisthenics, which is different point from what the other three statements.

DIRECTIONS for question: *Four sentences related to a topic are given below. Three of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.*

Question No. : 29

1. Yes, it's taken for granted that creating is hard, but also that it's somehow fundamentally unserious.
2. In the popular imagination, artists tend to exist either at the pinnacle of fame and luxury or in the depths of penury and obscurity — rarely in the middle, where most of the rest of us toil and dream.
3. But the elevation of the amateur over the professional trivializes artistic accomplishment and helps to undermine the already precarious living standards that artists have been able to enjoy.
4. They are subject to admiration, envy, resentment and contempt, but it is odd how seldom their efforts are understood as work.

A) 3 B) C) D)

Explanation:- *The paragraph talks about artists and how they are perceived by people. Statement 3 talks about the amateur*

and professional which though related to the same topic does not go with the other three sentences.

DIRECTIONS for the question: *In each sentence, the highlighted word is used in different ways. Choose the option/ options in which the usage of the word is incorrect.*

Question No. : 30

FLAT

A) The team had the smoothest possible path laid out at the World Cup yet still fell flat on their face.
✓B) He has been totally objective and even flat rejected some of the sample devices.
C) The ex-chief of command was lying flat out on the small bunk, eyes boring a hole into the ceiling.
D) Some of the dialogue falls flat with some forced jokes, but overall the writing is clever enough to propel the movie.

Explanation:- *The correct usage is* ***flat out*** *- As fast or as hard as possible.*
Fall flat on one's face - fail in an embarrassingly obvious way.
Fall flat - fail completely to produce the intended or expected effect.
Lying flat - Lying stretched out, especially asleep or in a state of exhaustion.

DIRECTION for the question: *Answer the question based on the information given in the passage.*

Question No. : 31

The option of arbitration involves the police officer giving each party an opportunity to explain his/her side and, based on the facts presented, rendering a decision. There are situations in which arbitration, maybe appropriate, for example, a case in which there is absolutely no doubt that a piece of property belongs to another. If I were to strike you over the head and take your Walkman, not only would I be guilty of battery but I also would have created a dispute. The dispute is suited for arbitration, since upon examination of the facts, it will become clear that I am not entitled to the property. The Walkman belongs to you. The officer has the legitimate right to order me to return your Walkman. Many interpersonal disputes in society are not so cut-and-dry. Often, both parties/disputants have a legitimate claim to the (identical) outcome sought by the other. Since identical outcomes for each Party are not always feasible, it is through collective and integrative problem-solving that parties often compromise. Most mediated agreements are compromises. For this reason, mediation is a preferred conflict-resolution method, since the parties get to have control over the contents of the agreement-they make the agreement, themselves. In this way, both parties walk away from the process, winners and with dignity intact, although they may walk away with less than what they originally sought.

Which of the following can you infer from the paragraph given above?

A) Whenever the facts are clear, arbitration should be used for conflict resolution, else use mediation.
B) Mediation is a process that should be used only if arbitration has failed to resolve the conflict.
✓C) Mediation should be preferred over arbitration as a dispute resolving mechanism, as it allows both parties to maintain their self-respect.
D) Compromise is the essential thing in any dispute resolution - both parties involved should be ready to lose something to gain something.

Explanation:- *The author mentions that most disputes are not cut-and-dried, so making it difficult for a police officer to do arbitration. In the absence of that, it would make sense to have mediation - where the advantage is that both parties walk away as winners.*
1 - The passage does not mention the order of conflict resolution strategies.
2 - It should actually be the vice-versa,
4 - Does not address the other issue that is also important in the passage - arbitration.

DIRECTIONS for the question: *Identify the most appropriate summary for the paragraph and write the key for most appropriate option.*

Question No. : 32

People of African descent who found themselves enslaved in the New World, and specifically on United States soil, were not

brought to the West to create poems, plays, short stories, essays, and novels. They were brought for the bodies, their physical labor. Denied access to literacy by law and custom, anything they wanted to retain in the way of cultural creation had to be passed down by word of mouth, or, in terms of crafts, by demonstration and imitation. After long hours of work in cotton and tobacco fields, therefore, blacks would occasionally gather in the evenings for storytelling. Tales they shared during slavery were initially believed to focus almost exclusively on animals. However, as more and more researchers became interested in African American culture after slavery and in the early twentieth century, they discovered a strand of tales that focused on human actors. It is generally believed that enslaved persons did not share with prying researchers the tales containing human characters because the protagonists were primarily tricksters, and the tales showcased actions that allowed those tricksters to get the best of their so-called masters.

1. People of African descent, regaled their stories, sprinkling them with the deception of their masters, in order for more enslaved persons to make use of them to lead a better life.
2. People of African descent, from their cultures, brought with them stories and poems which they narrated or recited to their brethren so that they would remain in contact with their motherland.
3. African Americans, slaves brought to the New World for their physical capabilities and left illiterate, resorted to telling stories in order to keep their culture alive - first about animals and then about characters that pulled the wool over the eyes of their masters.
4. Strenuous work in the field forced the African Americans to devise ways and means of getting the better of their masters and thus creating a life deprived of rigour.

A) 3 B) C) D)

Explanation:- *The paragraph talks about the why the African slaves were got to the new world and how though they were kept illiterate, the slaves could only keep their culture alive by word of mouth. Moreover the tales were about the protagonists who were tricksters who got the better of their masters, i.e. pulled the wool over their eyes*

DIRECTION for the question: *Answer the question based on the information given in the passage.*

Question No. : 33

If it were possible that a people brought up under an intolerant and arbitrary system could subvert that system without acts of cruelty and folly, half the objections to despotic power would be removed. We should, in that case, be compelled to acknowledge that it at least produces no pernicious effects on the intellectual and moral character of a nation. We deplore the outrages which accompany revolutions. But the more violent the outrages, the more assured we feel that a revolution was necessary. The violence of those outrages will always be proportioned to the ferocity and ignorance of the people; and the ferocity and ignorance of the people will be proportioned to the oppression and degradation under which they have been accustomed to live. Thus it was in our civil war. The heads of the church and state reaped only that which they had sown. The government had prohibited free discussion: it had done its best to keep the people unacquainted with their duties and their rights. The retribution was just and natural.

Which of the following can you infer from the paragraph given above?

A) If our rulers suffered from popular ignorance, it was because they had themselves taken away the key of knowledge.
B) If the people were assailed with blind fury, it was because they had unknowingly exacted an equally blind submission.
C) The ignorance of the people led to them being oppressed and hence remaining unacquainted with their rights and duties.
✓D) When people are submissive under a dominating power, and there is a realisation on their part about their rights, a warlike situation is inevitable and justified.

Explanation:- *The paragraph talks about what happens when people who face oppression react – the outrages are violent but justified.*

DIRECTIONS for the question: *Given below are four/five sentences. Identify the sentence(s) that is/are* ***correct*** *in terms of grammar and usage (including spelling, punctuation and logical consistency). Then, choose the* ***most appropriate*** *option.*

Question No. : 34

A. It is a well-known fact that the Chinese regarded the turtle as a supernatural creature blessed with magical qualities and long life.

B. To the fisherman whose livelihood comes from the perilous sea, the turtle is both a protector as well as a symbol of survival.
C. You can thus imagine the excitement in Hong Kong when some fishermen found a giant turtle in the South China Sea one April morning.
D. A fleet of Chinese trawlers had set out in the grey-blue dawn to catch fish.
E. When they drew in their nets, the fishermen noticed something unusual entangled among their fish, prawns and squid - it was a giant turtle.

✓A) C and D only B) C and E only C) A and B only D) All of the above

Explanation:- *A – regard instead of regarded. We are talking of something which is always true.*
B – both is followed by AND.

Section : DI & Reasoning

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 35

In the addition problem stated below has a unique solution. In the problem, each letter of the alphabet represents a unique digit from 1 to 9, both inclusive.

```
  CROSS
+ ROADS
 DANGER
```

What is the value of ROAD + RAGE?

A) GRADE ✓B) DONOA C) SARGE D) AORCD

Explanation:-
Since each of the letters of the alphabet represents a unique digit from 1 to 9, we know that the highest possible sum of any two digits will be 17. So, C + R can be a maximum of 17 if there is no carry over from the previous column and can be a maximum of 18 if there is a carry over of 1 from the previous column. In either case, D = 1.
Now, consider S + S = R, with or without a carry over. If S = 2, then R = 4; if S = 3, then R = 6; if S = 4, then R = 8; if S = 6, then R = 2 with a carry over of 1; if S = 7, then R = 4 with a carry over of 1; if S = 8, then R = 6 with a carry over of 1 and if S = 9, then R = 8 with a carry over of 1.
Suppose S = 2 so that R = 4. Now, S + D = 2 + 1 = 3 = E. Now, C + R = C + 4 should yield a 2-digit answer, with or without a carry over from the previous column. If there is no carry over from the previous column, then C + 4 = 11, 12 or 13 (as C cannot exceed 9). But 1, 2 and 3 have already been used. So, this is not possible. Suppose there was a carry over of 1 from the previous column. Then, C + 4 + 1 = 11, 12, 13 or 14. This is again not possible as these digits have already been used up. This tells us that S ≠ 2.
Suppose S = 3 so that R = 6. Now, S + D = 3 + 1 = 4 = E. Now, C + R = C + 6 should yield a 2-digit answer, with or without a carry over from the previous column. If there is no carry over from the previous column, then C + 6 = 11, 12, 13, 14 or 15 (as C cannot exceed 9). But 1, 3, 4 and 6 have already been used. So, C + 6 can be 12 or 15. If C + 6 = 12, then C = 6, which is not possible. So, C + 6 = 15 so that C = 9 and A = 5. Now, there are 3 letters of the alphabet left, O, N and G and 3 digits left, 2, 7 and 8. With a little bit of trial and error, it is possible to show that O = 2, N = 8 and G = 7. Thus, with values 1 = D, 2 = O, 3 = S, 4 = E, 5 = A, 6 = R, 7 = G, 8 = N and 9 = C, the addition problem is 96233 + 62513 = 158746.

ROAD + RAGE = 6251 + 6574 = 12825 = DONOA.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 36

In the addition problem stated below has a unique solution. In the problem, each letter of the alphabet represents a unique digit from 1 to 9, both inclusive.

```
  CROSS
+ ROADS
DANGER
```

Which of the following numbers cannot be expressed as the sum of the squares of two natural numbers?

✓A) DOCR B) SGOD C) AROA D) GOOA

Explanation:-

Since each of the letters of the alphabet represents a unique digit from 1 to 9, we know that the highest possible sum of any two digits will be 17. So, C + R can be a maximum of 17 if there is no carry over from the previous column and can be a maximum of 18 if there is a carry over of 1 from the previous column. In either case, D = 1.

Now, consider S + S = R, with or without a carry over. If S = 2, then R = 4; if S = 3, then R = 6; if S = 4, then R = 8; if S = 6, then R = 2 with a carry over of 1; if S = 7, then R = 4 with a carry over of 1; if S = 8, then R = 6 with a carry over of 1 and if S = 9, then R = 8 with a carry over of 1.

Suppose S = 2 so that R = 4. Now, S + D = 2 + 1 = 3 = E. Now, C + R = C + 4 should yield a 2-digit answer, with or without a carry over from the previous column. If there is no carry over from the previous column, then C + 4 = 11, 12 or 13 (as C cannot exceed 9). But 1, 2 and 3 have already been used. So, this is not possible. Suppose there was a carry over of 1 from the previous column. Then, C + 4 + 1 = 11, 12, 13 or 14. This is again not possible as these digits have already been used up. This tells us that S ≠ 2.

Suppose S = 3 so that R = 6. Now, S + D = 3 + 1 = 4 = E. Now, C + R = C + 6 should yield a 2-digit answer, with or without a carry over from the previous column. If there is no carry over from the previous column, then C + 6 = 11, 12, 13, 14 or 15 (as C cannot exceed 9). But 1, 3, 4 and 6 have already been used. So, C + 6 can be 12 or 15. If C + 6 = 12, then C = 6, which is not possible. So, C + 6 = 15 so that C = 9 and A = 5. Now, there are 3 letters of the alphabet left, O, N and G and 3 digits left, 2, 7 and 8. With a little bit of trial and error, it is possible to show that O = 2, N = 8 and G = 7. Thus, with values 1 = D, 2 = O, 3 = S, 4 = E, 5 = A, 6 = R, 7 = G, 8 = N and 9 = C, the addition problem is 96233 + 62513 = 158746.

DOCR = 1296 = 36^2; SGOD = 3721 = 61^2; AROA = 5625 = 75^2; GOOA = 7225 = 85^2. Each of the answer choices is a perfect square. If we can express these as the sum of the squares of two natural numbers, then the answer choices represent the hypotenuse in a Pythagorean triplet. Since 36^2 is not the hypotenuse in a Pythagorean triplet, it must be the correct answer.

SGOD = $61^2 = 11^2 + 60^2$; AROA = $75^2 = 21^2 + 72^2$ [3×(7, 24, 25)] and GOOA = $85^2 = 40^2 + 75^2$ [5×(8, 15, 17)]

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 37

In the addition problem stated below has a unique solution. In the problem, each letter of the alphabet represents a unique digit from 1 to 9, both inclusive.

```
  CROSS
+ ROADS
DANGER
```

What is the remainder when GRAND is divided by E?

✓A) D B) A C) N D) O

Explanation:-

Since each of the letters of the alphabet represents a unique digit from 1 to 9, we know that the highest possible sum of any two digits will be 17. So, C + R can be a maximum of 17 if there is no carry over from the previous column and can be a maximum of 18 if there is a carry over of 1 from the previous column. In either case, D = 1.

Now, consider S + S = R, with or without a carry over. If S = 2, then R = 4; if S = 3, then R = 6; if S = 4, then R = 8; if S = 6, then R = 2 with a carry over of 1; if S = 7, then R = 4 with a carry over of 1; if S = 8, then R = 6 with a carry over of 1 and if S = 9, then R = 8 with a carry over of 1.

Suppose S = 2 so that R = 4. Now, S + D = 2 + 1 = 3 = E. Now, C + R = C + 4 should yield a 2-digit answer, with or without a carry over from the previous column. If there is no carry over from the previous column, then C + 4 = 11, 12 or 13 (as C cannot exceed 9). But 1, 2 and 3 have already been used. So, this is not possible. Suppose there was a carry over of 1 from the previous column. Then, C + 4 + 1 = 11, 12, 13 or 14. This is again not possible as these digits have already been used up. This tells us that S ≠ 2.

Suppose S = 3 so that R = 6. Now, S + D = 3 + 1 = 4 = E. Now, C + R = C + 6 should yield a 2-digit answer, with or without a carry over from the previous column. If there is no carry over from the previous column, then C + 6 = 11, 12, 13, 14 or 15 (as C cannot exceed 9). But 1, 3, 4 and 6 have already been used. So, C + 6 can be 12 or 15. If C + 6 = 12, then C = 6, which is not possible. So, C + 6 = 15 so that C = 9 and A = 5. Now, there are 3 letters of the alphabet left, O, N and G and 3 digits left, 2, 7 and 8. With a little bit of trial and error, it is possible to show that O = 2, N = 8 and G = 7. Thus, with values 1 = D, 2 = O, 3 = S, 4 = E, 5 = A, 6 = R, 7 = G, 8 = N and 9 = C, the addition problem is 96233 + 62513 = 158746.

GRAND ¸ E = 76581 /4, which yields a remainder of 1 = D.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 38

In the addition problem stated below has a unique solution. In the problem, each letter of the alphabet represents a unique digit from 1 to 9, both inclusive.

```
  CROSS
+ROADS
DANGER
```

What is the value of SONG + DANCE? (in alphabetical value)

✓A) DCDND B) DCNDD C) DCDRD D) DCRDD

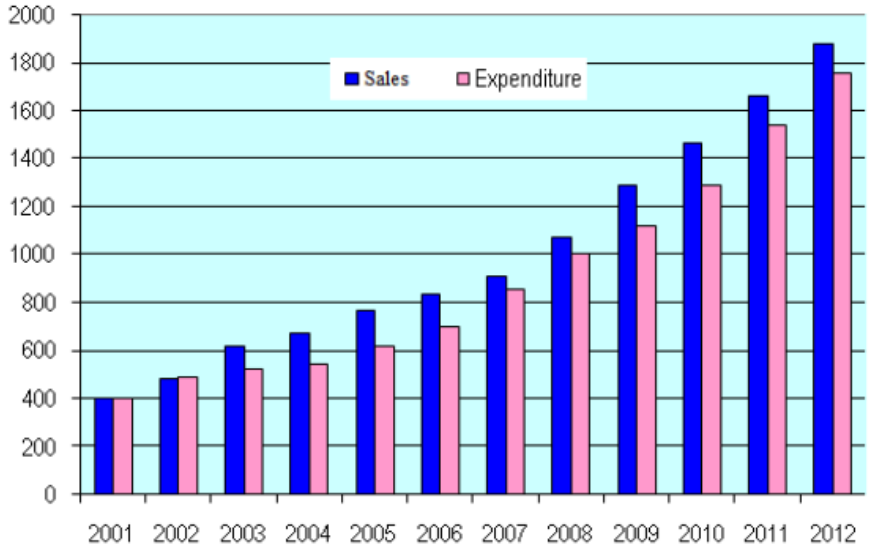
Explanation:-
Since each of the letters of the alphabet represents a unique digit from 1 to 9, we know that the highest possible sum of any two digits will be 17. So, C + R can be a maximum of 17 if there is no carry over from the previous column and can be a maximum of 18 if there is a carry over of 1 from the previous column. In either case, D = 1.
Now, consider S + S = R, with or without a carry over. If S = 2, then R = 4; if S = 3, then R = 6; if S = 4, then R = 8; if S = 6, then R = 2 with a carry over of 1; if S = 7, then R = 4 with a carry over of 1; if S = 8, then R = 6 with a carry over of 1 and if S = 9, then R = 8 with a carry over of 1.
Suppose S = 2 so that R = 4. Now, S + D = 2 + 1 = 3 = E. Now, C + R = C + 4 should yield a 2-digit answer, with or without a carry over from the previous column. If there is no carry over from the previous column, then C + 4 = 11, 12 or 13 (as C cannot exceed 9). But 1, 2 and 3 have already been used. So, this is not possible. Suppose there was a carry over of 1 from the previous column. Then, C + 4 + 1 = 11, 12, 13 or 14. This is again not possible as these digits have already been used up. This tells us that S ≠ 2.
Suppose S = 3 so that R = 6. Now, S + D = 3 + 1 = 4 = E. Now, C + R = C + 6 should yield a 2-digit answer, with or without a carry over from the previous column. If there is no carry over from the previous column, then C + 6 = 11, 12, 13, 14 or 15 (as C cannot exceed 9). But 1, 3, 4 and 6 have already been used. So, C + 6 can be 12 or 15. If C + 6 = 12, then C = 6, which is not possible. So, C + 6 = 15 so that C = 9 and A = 5. Now, there are 3 letters of the alphabet left, O, N and G and 3 digits left, 2, 7 and 8. With a little bit of trial and error, it is possible to show that O = 2, N = 8 and G = 7. Thus, with values 1 = D, 2 = O, 3 = S, 4 = E, 5 = A, 6 = R, 7 = G, 8 = N and 9 = C, the addition problem is 96233 + 62513 = 158746.

SONG + DANCE = 3287 + 15894 = 19181 = DCDND.

DIRECTIONS for the question: *Analyse the graph/s given below and answer the question that follows.*

Question No. : 39

RCF Bearings Ltd. is the leading supplier of bearings to the auto industry. The bar chart below shows the value of sales (in Rs. lakh) and the total expenditure (in Rs. lakhs) of the company over the period 2001 to 2012.



If profit is calculated as the difference between sales and expenditure, in which of the following years was the profit (in Rs. lakhs) of RCF Bearings Ltd. the highest?

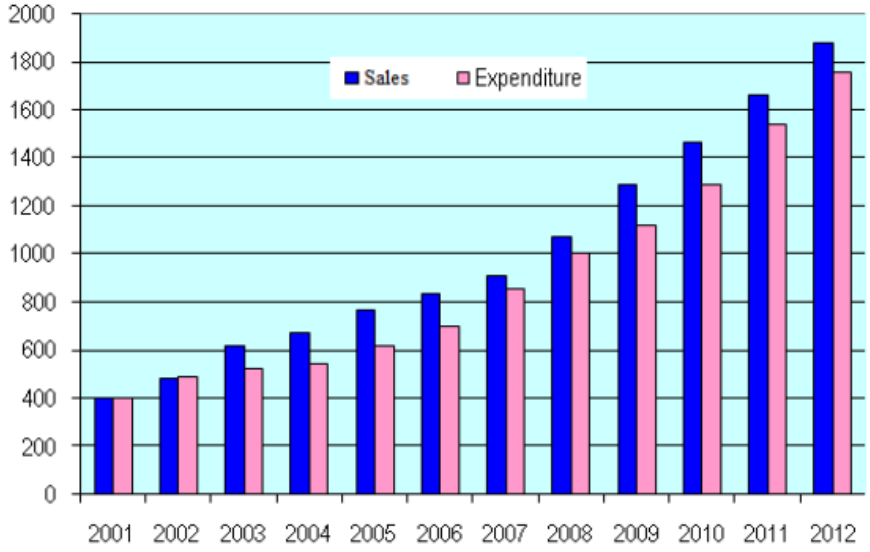
A) 2008 ✓B) 2010 C) 2011 D) 2012

Explanation:-
Profit 2008 = 1080 – 1000 = 80.
Profit 2010 = 1480 – 1270 = 170.
Profit 2011 = 1660 – 1580 = 80.
Profit 2012 = 1890 – 1790 = 100.

DIRECTIONS for the question: *Analyse the graph/s given below and answer the question that follows.*

Question No. : 40

RCF Bearings Ltd. is the leading supplier of bearings to the auto industry. The bar chart below shows the value of sales (in Rs. lakh) and the total expenditure (in Rs. lakhs) of the company over the period 2001 to 2012.



What was the approximate increase in the sales of RCF Bearings Ltd. from 2007 to 2012?

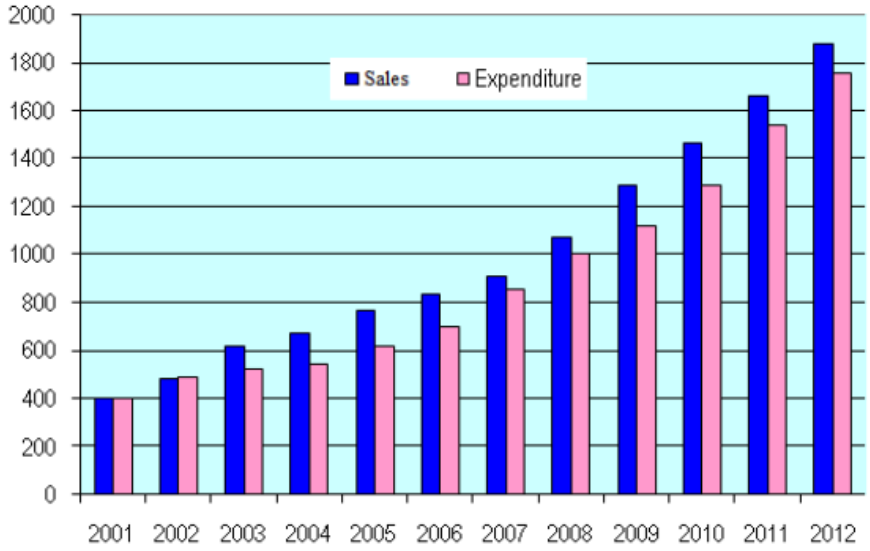
A) 200% ✓B) 110% C) 90% D) 70%

Explanation:-
The increase in sales from 2007 to 2012 is (1880 – 900)/900 = 980/900 ≈ 108%. The best answer is option 2.

DIRECTIONS for the question: *Analyse the graph/s given below and answer the question that follows.*

Question No. : 41

RCF Bearings Ltd. is the leading supplier of bearings to the auto industry. The bar chart below shows the value of sales (in Rs. lakh) and the total expenditure (in Rs. lakhs) of the company over the period 2001 to 2012.



Which of the following periods registered the maximum % increase in the sales of RCF Bearings Ltd.?

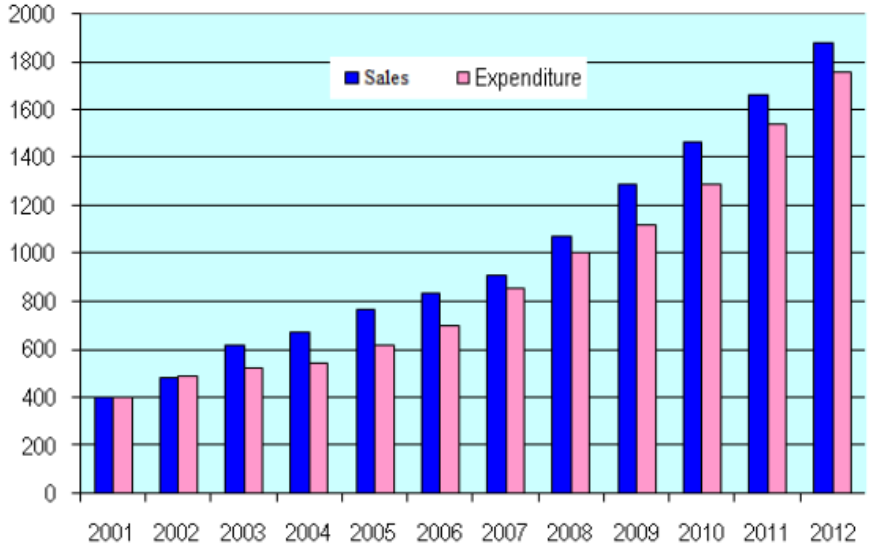
✓A) 2002 – 2003 B) 2005 – 2006 C) 2008 – 2009 D) 2011 – 2012

Explanation:-
Option 1: Increase in sales is (620 – 480)/480 = 140/480 = 29%.
Option 2: Increase in sales is (840 – 760)/760 = 80/760 = 10%.
Option 3: Increase in sales is (1300 – 1070)/1070 = 230/1070 = 21%.
Option 4: Increase in sales is (1880 – 1660)/1660 = 220/1660 = 13%.

DIRECTIONS for the question: *Analyse the graph/s given below and answer the question that follows.*

Question No. : 42

RCF Bearings Ltd. is the leading supplier of bearings to the auto industry. The bar chart below shows the value of sales (in Rs. lakh) and the total expenditure (in Rs. lakhs) of the company over the period 2001 to 2012.



Profit is calculated as the difference between sales and expenditure. By what percent did the profit of RCF Bearings Ltd. increase from 2003 to 2010?

A) 120% B) 105% ✓C) 70% D) 20%

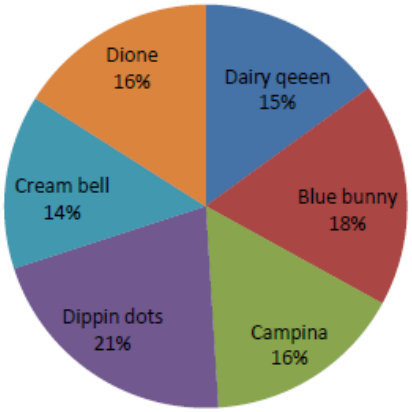
Explanation:-
Profit in 2003 was 620 – 520 = 100.
Profit in 2010 was 1460 – 1290 = 170. This is an increase of 70%.

DIRECTIONS for the question: *Go through the pie chart/s given below and answer the question that follows.*

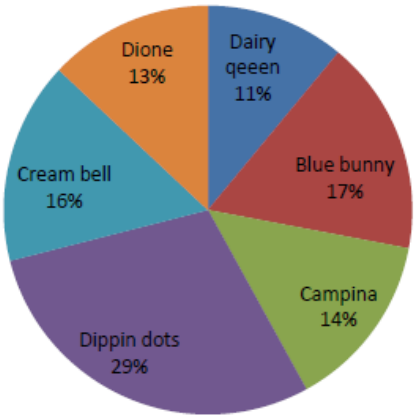
Question No. : 43

The pie charts represent the quantity of ice cream produced and the amount earned by selling them in the year 2012 by six companies respectively. These 6 companies control the complete market.

Total quantity of ice cream produced = 3500 tons



Total sales = Rs. 64 Billion



Which company's ice cream has the highest selling price per ton in the year 2012?

A) Cream Bell B) Campina C) Blue Bunny ✓D) Dippin Dots

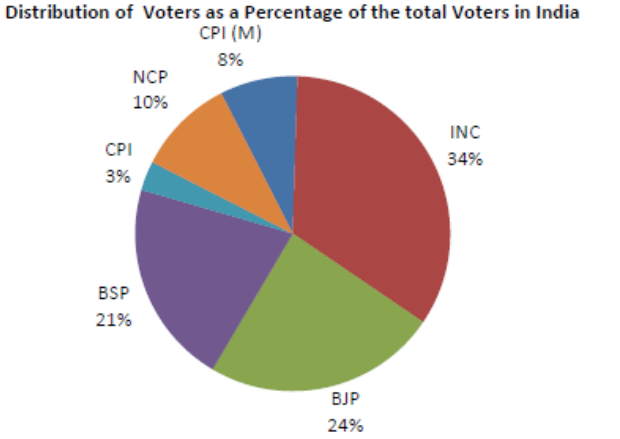
Explanation:-
Since we have to compare the prices, so the fraction 64billion / 3500 ton will play no role as it is common to all fractions. So we have
Cream Bell = 16/14
Campina = 14/16
Blue Bunny = 17/18
Dippin Dots = 29/21

As the fraction for Dippin Dots is largest among all, so Dippin Dots has the highest selling price per ton.

DIRECTIONS for the question: *Go through the pie chart/s given below and answer the question that follows.*

Question No. : 44

Figure 1



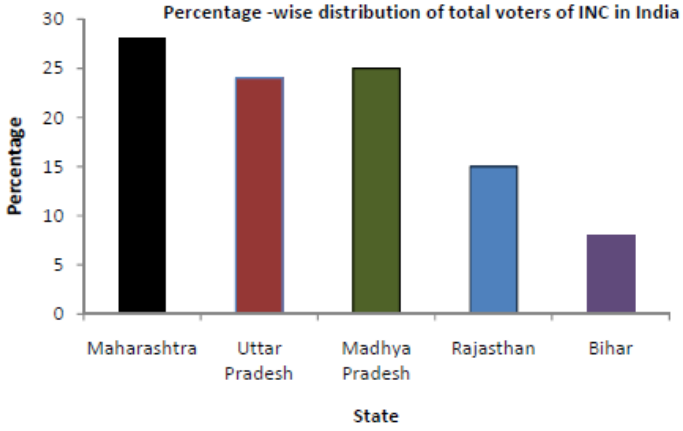


Figure 2

What is the total number of voters in India if the total voters who vote in Maharashtra is 1,530,200?

A) If the question can be answered by figure 1 alone and figure 2 is not required.
B) If the question can be answered by figure 2 alone and figure 1 is not required.
C) If the question can be answered by both of the figures taken together and not by any one of these figures.
✔D) If the question cannot be answered even by using both the figures together.

Explanation:-
Figure 1: It does not provide information about relation between the population of Maharashtra and any national party. So we cannot calculate the total population of India. Figure I alone is not sufficient.

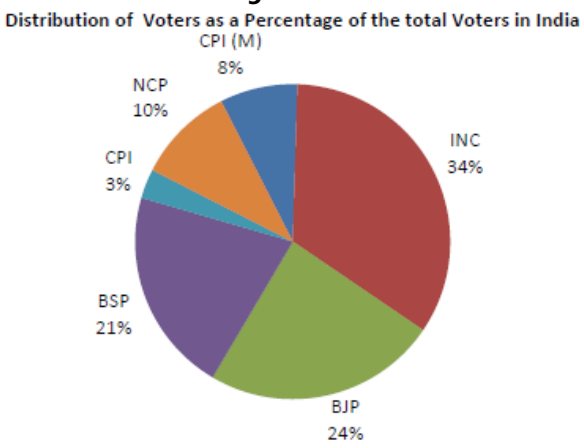
Figure 2: It provides the number of voter of states as percentage of the total INC voters in India. In the question it is given that the total voters of Maharashtra is 1,530,200. But it does not provide information about the number of voters of INC and other parties in Maharashtra. So figure II alone is not sufficient.

Using 1 & 2 both, we get the information about the total voters in Maharashtra but nothing about the total number of states in India or the percentage distribution of voters of states in India. So, using both the figures together also we cannot answer the question.

DIRECTIONS for the question: *Go through the pie chart/s given below and answer the question that follows.*

Question No. : 45

Figure 1



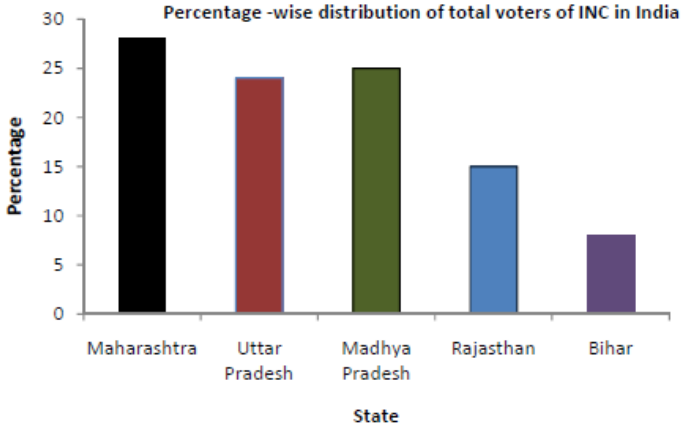


Figure 2

Given that the total population of people whose age is less than 18 years is 1,528,644 in India. What is the total population of India, if the given were to be the only five states of India?

A) If the question can be answered by figure 1 alone and figure 2 is not required.
B) If the question can be answered by figure 2 alone and figure 1 is not required.
C) If the question can be answered by both of the figures taken together and not by any one of these figures.
✓D) If the question cannot be answered even by using both the figures together.

Explanation:-
Given that, total population with an age less than 18 years = 1,528,644
No other information is given to find out the remaining population

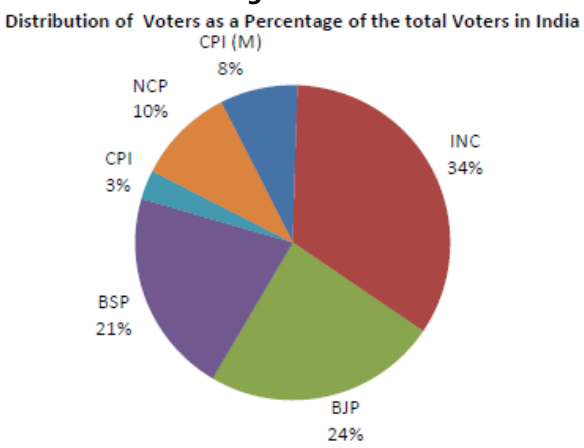
So Figure 1 alone is not sufficient.

Figure 2 alone is not sufficient as no additional information is given to find the remaining population.

DIRECTIONS for the question: *Go through the pie chart/s given below and answer the question that follows.*

Question No. : 46

Figure 1



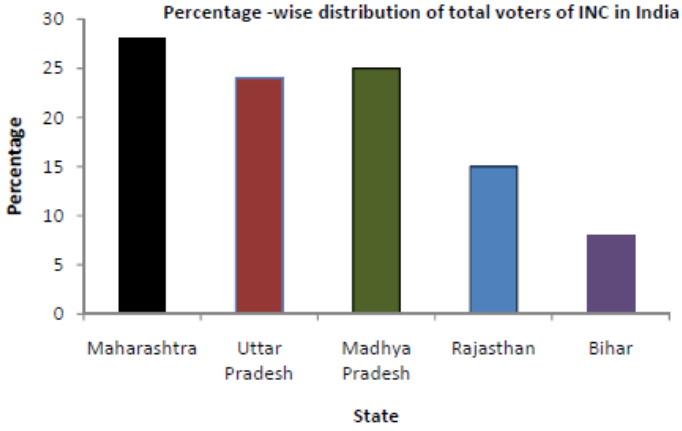


Figure 2

What is the ratio of the total voters of Maharashtra to the total voters of CPI (M)? Given that total number of voters in Maharashtra is 1,530,200 and the total number of voters of CPI in India is 47,022.

✓A) If the question can be answered by figure 1 alone and figure 2 is not required.
B) If the question can be answered by figure 2 alone and figure 1 is not required.
C) If the question can be answered by both of the figures taken together and not by any one of these figures.
D) If the question cannot be answered even by using both the figures together.

Explanation:-
Using Figure 1 alone,
The total number of voters of CPI = 47022
So total voters in India = (47022 × 100)/ 3 = 1,567,400

Total number of voters in Maharashtra = 1,530,200
Total number of voters of CPI (M) = (8 × 1,567,400)/100 = 125,392
(Total of 1,567,400 has been calculated based on CPI's vote)
So the required ratio = 1,530,200 : 125,392
So Figure 1 alone is sufficient.

Using Figure 2 alone,
Total no. of voters in Maharashtra = 1,530,200
But it does not provide information about the total number of voters of CPI (M).
So, figure 2 is not sufficient.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 47

The principal of the Rosemary Public School is preparing for the annual meeting of the PTA of the Kindergarten classes. This year she has chosen six classrooms along the same corridor in the school. The six classrooms, from left to right, are named Daffodil, Tulip, Lily, Primrose, Chrysanthemum and Violet. Five of the classrooms will be assigned one of the teachers – Mrs. Deshmane, Mrs. Kulkarni, Mrs. Mohite, Mrs. Purohit and Mrs. Shinde and one of the assistants – Miss Damini, Miss Ketaki, Miss Manjiri, Miss Padmini and Miss Sharada and the remaining classroom will be used to serve refreshments.
Miss Sharada is assigned to the same classroom as Mrs. Mohite while Mrs. Shinde is not assigned to the same classroom as Miss Damini.
Miss Ketaki is assigned the classroom next to the classroom assigned to Mrs. Mohite.
Mrs. Kulkarni is assigned to Chrysanthemum while Mrs. Purohit is assigned to either Tulip or Lily.
The classroom used to serve refreshments is not at either end of the corridor.

Miss Ketaki cannot be assigned to which of the following rooms?

A) Daffodil B) Lily C) Chrysanthemum ✓D) Violet

Explanation:-
We know that Miss Ketaki is assigned the classroom next to the classroom assigned to Mrs. Mohite and Mrs. Kulkarni is assigned to Chrysanthemum.
Since Mrs. Mohite is not assigned to Chrysanthemum, Miss Ketaki cannot be assigned Violet.
The best answer is option 4.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 48

The principal of the Rosemary Public School is preparing for the annual meeting of the PTA of the Kindergarten classes. This year she has chosen six classrooms along the same corridor in the school. The six classrooms, from left to right, are named Daffodil, Tulip, Lily, Primrose, Chrysanthemum and Violet. Five of the classrooms will be assigned one of the teachers – Mrs. Deshmane, Mrs. Kulkarni, Mrs. Mohite, Mrs. Purohit and Mrs. Shinde and one of the assistants – Miss Damini, Miss Ketaki, Miss Manjiri, Miss Padmini and Miss Sharada and the remaining classroom will be used to serve refreshments.
Miss Sharada is assigned to the same classroom as Mrs. Mohite while Mrs. Shinde is not assigned to the same classroom as Miss Damini.
Miss Ketaki is assigned the classroom next to the classroom assigned to Mrs. Mohite.
Mrs. Kulkarni is assigned to Chrysanthemum while Mrs. Purohit is assigned to either Tulip or Lily.
The classroom used to serve refreshments is not at either end of the corridor.

If Mrs. Shinde is assigned to Lily, which of the following must be true?

✓A) Mrs. Purohit is assigned to Tulip B) Miss Padmini is assigned to Lily C) Miss Manjiri is assigned to Primrose
D) Miss Damini is assigned to Chrysanthemum

Explanation:-
We know that Mrs. Purohit is assigned to either Tulip or Lily.
Since Mrs. Shinde is assigned to Lily, Mrs. Purohit must be assigned to Tulip.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 49

The principal of the Rosemary Public School is preparing for the annual meeting of the PTA of the Kindergarten classes. This year she has chosen six classrooms along the same corridor in the school. The six classrooms, from left to right, are named Daffodil, Tulip, Lily, Primrose, Chrysanthemum and Violet. Five of the classrooms will be assigned one of the teachers – Mrs. Deshmane, Mrs. Kulkarni, Mrs. Mohite, Mrs. Purohit and Mrs. Shinde and one of the assistants – Miss Damini, Miss Ketaki, Miss Manjiri, Miss Padmini and Miss Sharada and the remaining classroom will be used to serve refreshments.
Miss Sharada is assigned to the same classroom as Mrs. Mohite while Mrs. Shinde is not assigned to the same classroom as Miss Damini.
Miss Ketaki is assigned the classroom next to the classroom assigned to Mrs. Mohite.
Mrs. Kulkarni is assigned to Chrysanthemum while Mrs. Purohit is assigned to either Tulip or Lily.
The classroom used to serve refreshments is not at either end of the corridor.

If Tulip is used to serve refreshments, which of the following could be true?

A) Mrs. Shinde is assigned a classroom next to that of Mrs. Deshmane's
B) Miss Ketaki is assigned to the same classroom as Mrs. Deshmane
✓C) Mrs. Shinde is assigned to a classroom at one of the ends of the corridor
D) Miss Ketaki is assigned to a classroom at one of the ends of the corridor

Explanation:-
If Tulip is used to serve refreshments, then Mrs. Purohit is assigned to Lily.
We know that Mrs. Kulkarni is assigned to Chrysanthemum.
So, the remaining three teachers – Mrs. Deshmane, Mrs. Mohite and Mrs. Shinde could be assigned to any of the classrooms – Daffodil, Primrose and Violet.
The best answer is option 3.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 50

The principal of the Rosemary Public School is preparing for the annual meeting of the PTA of the Kindergarten classes. This year she has chosen six classrooms along the same corridor in the school. The six classrooms, from left to right, are named Daffodil, Tulip, Lily, Primrose, Chrysanthemum and Violet. Five of the classrooms will be assigned one of the teachers – Mrs. Deshmane, Mrs. Kulkarni, Mrs. Mohite, Mrs. Purohit and Mrs. Shinde and one of the assistants – Miss Damini, Miss Ketaki, Miss Manjiri, Miss Padmini and Miss Sharada and the remaining classroom will be used to serve refreshments.
Miss Sharada is assigned to the same classroom as Mrs. Mohite while Mrs. Shinde is not assigned to the same classroom as Miss Damini.
Miss Ketaki is assigned the classroom next to the classroom assigned to Mrs. Mohite.
Mrs. Kulkarni is assigned to Chrysanthemum while Mrs. Purohit is assigned to either Tulip or Lily.
The classroom used to serve refreshments is not at either end of the corridor.

If Mrs. Shinde is assigned to a classroom next to that of Mrs. Deshmane's, which of the following must be true?

A) Miss Padmini is assigned to Tulip B) Miss Damini is assigned to Lily C) Lily is used to serve refreshments

✔D) Primrose is used to serve refreshments

Explanation:-
If Mrs. Shinde is assigned a classroom next to that of Mrs. Deshmane's, then there are two possible arrangements:

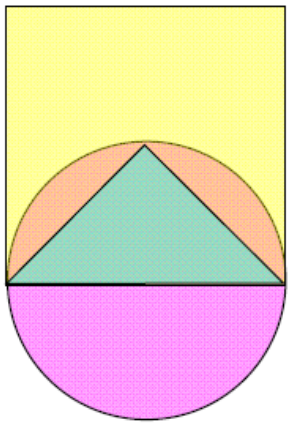
Daffodil	Tulip	Lily	Primrose	Chrysanthemum	Violet
Mrs. Shinde	Mrs. Deshmane	Mrs. Purohit	Refreshments	Mrs. Kulkarni	Mrs. Mohite
Mrs. Deshmane	Mrs. Shinde	Mrs. Purohit	Refreshments	Mrs. Kulkarni	Mrs. Mohite

In either case, Primrose is used for serving refreshments.

DIRECTIONS for the question: *Go through the following graph/information and answer the question that follows.*

Question No. : 51

The 2730 families in a township own at least one vehicle from amongst Activa, Pulsar and Royal Enfield. In the diagram below, the square depicts the number of families who own an Activa each, the circle depicts the number of families who own a Pulsar each and the isosceles right triangle depicts the number of families who own a Royal Enfield each. The overlaps account for families who own more than one of the three vehicles.



What is the total number of vehicles? (in numerical value)

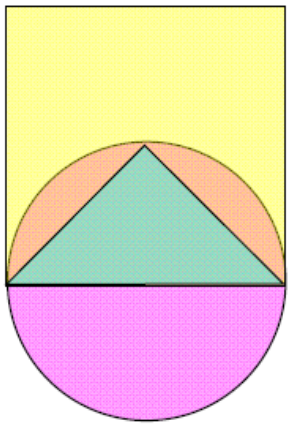
A) 3990 B) C) D)

Explanation:-
From the diagram, the number of families who own an Activa equals the area of the square, the number of families who own a Pulsar equals the area of the circle and the number of families who own a Royal Enfield equals the area of the triangle. The number of families who own an Activa only equals the yellow part of the square, the number of families who own a Pulsar only equals the pink part of the circle, the number of families who own an Activa and a Pulsar only equals the orange region common to the square and the circle and the number of families who own an Activa, a Pulsar and a Royal Enfield equals the area of the triangle.
Suppose the equal sides of the triangle are 14 each. The area of the triangle is ½ × 14 × 14 = 98. The hypotenuse of this triangle is 14√2 so that the side of the square is 14√2 and the radius of the circle is 7√2. The area of the circle is $\pi(7\sqrt{2})^2$ = 308 and the area of the pink part of the circle is 308/2 = 154. The orange part of the circle equals 154 – 98 = 56. The area of the square is $(14\sqrt{2})^2$ = 392. The yellow part of the square is 392 – 154 = 238.
The total number of families represented in the diagram equals the area of the square and the area of the semicircle = 392 + 154 = 546. This represents 2730 families, which gives us a multiplication factor of 5.
The total number of vehicles is (98 + 308 + 392) × 5 = 798 × 5 = 3990.

DIRECTIONS for the question: *Go through the following graph/information and answer the question that follows.*

Question No. : 52

The 2730 families in a township own at least one vehicle from amongst Activa, Pulsar and Royal Enfield. In the diagram below, the square depicts the number of families who own an Activa each, the circle depicts the number of families who own a Pulsar each and the isosceles right triangle depicts the number of families who own a Royal Enfield each. The overlaps account for families who own more than one of the three vehicles.



How many more families own exactly one vehicle than families who own at least two vehicles? (in numerical value)

A) 1190 B) C) D)

Explanation:-

From the diagram, the number of families who own an Activa equals the area of the square, the number of families who own a Pulsar equals the area of the circle and the number of families who own a Royal Enfield equals the area of the triangle. The number of families who own an Activa only equals the yellow part of the square, the number of families who own a Pulsar only equals the pink part of the circle, the number of families who own an Activa and a Pulsar only equals the orange region common to the square and the circle and the number of families who own an Activa, a Pulsar and a Royal Enfield equals the area of the triangle.

Suppose the equal sides of the triangle are 14 each. The area of the triangle is ½ × 14 × 14 = 98. The hypotenuse of this triangle is $14\sqrt{2}$ so that the side of the square is $14\sqrt{2}$ and the radius of the circle is $7\sqrt{2}$. The area of the circle is $\pi(7\sqrt{2})^2 = 308$ and the area of the pink part of the circle is 308/2 = 154. The orange part of the circle equals 154 – 98 = 56. The area of the square is $(14\sqrt{2})^2 = 392$. The yellow part of the square is 392 – 154 = 238.

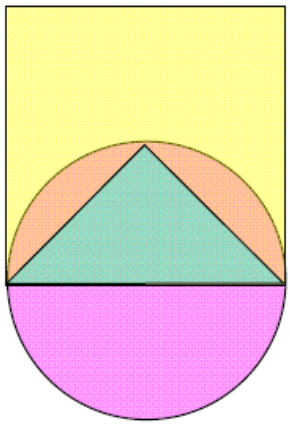
The total number of families represented in the diagram equals the area of the square and the area of the semicircle = 392 + 154 = 546. This represents 2730 families, which gives us a multiplication factor of 5.

The number of families who own exactly one vehicle is (238 + 154) × 5 = 392 × 5 = 1960 and the number of families who own at least two vehicles is 2730 – 1960 = 770. The required difference is 1960 – 770 = 1190.

DIRECTIONS for the question: *Go through the following graph/information and answer the question that follows.*

Question No. : 53

The 2730 families in a township own at least one vehicle from amongst Activa, Pulsar and Royal Enfield. In the diagram below, the square depicts the number of families who own an Activa each, the circle depicts the number of families who own a Pulsar each and the isosceles right triangle depicts the number of families who own a Royal Enfield each. The overlaps account for families who own more than one of the three vehicles.



What is the ratio of the number of families who own exactly one vehicle to the number of families who own exactly two vehicles?

✔A) 7 : 1 B) 14 : 3 C) 17 : 11 D) 17 : 4

Explanation:-

From the diagram, the number of families who own an Activa equals the area of the square, the number of families who own a Pulsar equals the area of the circle and the number of families who own a Royal Enfield equals the area of the triangle. The number of families who own an Activa only equals the yellow part of the square, the number of families who own a Pulsar only equals the pink part of the circle, the number of families who own an Activa and a Pulsar only equals the orange region common to the square and the circle and the number of families who own an Activa, a Pulsar and a Royal Enfield equals the area of the triangle.

Suppose the equal sides of the triangle are 14 each. The area of the triangle is ½ × 14 × 14 = 98. The hypotenuse of this triangle is 14√2 so that the side of the square is 14√2 and the radius of the circle is 7√2. The area of the circle is $\pi(7\sqrt{2})^2$ = 308 and the area of the pink part of the circle is 308/2 = 154. The orange part of the circle equals 154 – 98 = 56. The area of the square is $(14\sqrt{2})^2$ = 392. The yellow part of the square is 392 – 154 = 238.

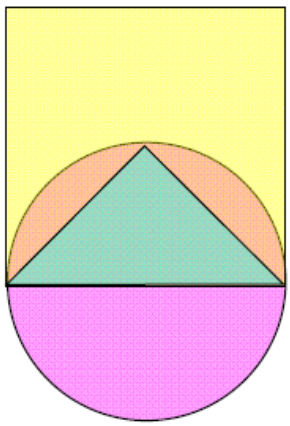
The total number of families represented in the diagram equals the area of the square and the area of the semicircle = 392 + 154 = 546. This represents 2730 families, which gives us a multiplication factor of 5.

The number of families who own exactly one vehicle is (238 + 154) × 5 = 392 × 5 = 1960. The number of families who own exactly two vehicles is 56 × 5 = 280. The required ratio is 1960 : 280 = 7 : 1.

DIRECTIONS for the question: *Go through the following graph/information and answer the question that follows.*

Question No. : 54

The 2730 families in a township own at least one vehicle from amongst Activa, Pulsar and Royal Enfield. In the diagram below, the square depicts the number of families who own an Activa each, the circle depicts the number of families who own a Pulsar each and the isosceles right triangle depicts the number of families who own a Royal Enfield each. The overlaps account for families who own more than one of the three vehicles.



If an Activa costs Rs.60,000, a Pulsar costs Rs.90,000 and a Royal Enfield costs Rs.120,000, what is the value, in lakhs, of all the vehicles owned by all the families? (in lakh Rs.)

A) 3150 B) C) D)

Explanation:-
From the diagram, the number of families who own an Activa equals the area of the square, the number of families who own a Pulsar equals the area of the circle and the number of families who own a Royal Enfield equals the area of the triangle. The number of families who own an Activa only equals the yellow part of the square, the number of families who own a Pulsar only equals the pink part of the circle, the number of families who own an Activa and a Pulsar only equals the orange region common to the square and the circle and the number of families who own an Activa, a Pulsar and a Royal Enfield equals the area of the triangle.
Suppose the equal sides of the triangle are 14 each. The area of the triangle is ½ × 14 × 14 = 98. The hypotenuse of this triangle is 14√2 so that the side of the square is 14√2 and the radius of the circle is 7√2. The area of the circle is $\pi(7\sqrt{2})^2$ = 308 and the area of the pink part of the circle is 308/2 = 154. The orange part of the circle equals 154 – 98 = 56. The area of the square is $(14\sqrt{2})^2$ = 392. The yellow part of the square is 392 – 154 = 238.
The total number of families represented in the diagram equals the area of the square and the area of the semicircle = 392 + 154 = 546. This represents 2730 families, which gives us a multiplication factor of 5.
The number of Activa is 392 × 5 = 1960 and the value is 1960 × 60000 = 1176 lakhs. The number of Pulsar is 308 × 5 = 1540 and the value is 1540 × 90000 = 1386 lakhs. The number of Royal Enfield is 98 × 5 = 490 and the value is 490 × 120000 = 588 lakhs. Thus the total value is 1176 + 1386 + 588 = Rs.3150 lakhs.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 55

The Metro Project was up for voting before the standing committee of the PMC. Each of the seven corporators on the standing committee voted either for or against the project. Of the seven corporators, two belong to the AFA, two belong to the IMA and three belong to the NDA. No corporator belongs to more than one party. A journalist reported the following about the way the corporators voted.

- Of the seven corporators, at least two voted for the Metro Project and at least two voted against the Metro Project.
- If the three NDA corporators voted the same way as each other, then no AFA corporator voted the same way.
- At least one AFA corporator voted against the Metro Project.
- If the two AFA corporators and at least one NDA corporator voted the same way as each other, then both IMA corporators voted that way

If the two IMA corporators did not vote the same way as each other, then which of the following could be true?

✓A) Exactly one AFA corporator and one NDA corporator voted for the Metro Project
B) Exactly one AFA corporator and all three NDA corporators voted for the Metro Project
C) Exactly two AFA corporators and one NDA corporator voted for the Metro Project
D) Exactly two AFA corporators and two NDA corporators voted for the Metro Project

Explanation:-
Option 1 seems to satisfy all the given criteria.
In option 2, if the three NDA corporators voted for the Metro Project, then both AFA corporators must vote against the Metro Project.
In option 3, if the the AFA corporators and one NDA corporator voted for the Metro Project, then both IMA corporators should have voted for the Metro Project.
In option 4, if the the AFA corporators and two NDA corporator voted for the Metro Project, then both IMA corporators should have voted for the Metro Project.
Hence option 1 is the best answer.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 56

The Metro Project was up for voting before the standing committee of the PMC. Each of the seven corporators on the standing

committee voted either for or against the project. Of the seven corporators, two belong to the AFA, two belong to the IMA and three belong to the NDA. No corporator belongs to more than one party. A journalist reported the following about the way the corporators voted.

- Of the seven corporators, at least two voted for the Metro Project and at least two voted against the Metro Project.
- If the three NDA corporators voted the same way as each other, then no AFA corporator voted the same way.
- At least one AFA corporator voted against the Metro Project.
- If the two AFA corporators and at least one NDA corporator voted the same way as each other, then both IMA corporators voted that way

If the three NDA corporators voted the same way as each other, which of the following must be true?

A) Both IMA corporators voted for the Metro Project ✓B) All three NDA corporators voted for the Metro Project
C) Of the two AFA corporators, one voted for the Metro Project and one voted against it
D) Of the two IMA corporators, one voted for the Metro Project and one voted against it

Explanation:-
It is given that "If the three NDA corporators voted the same way as each other, then no AFA corporator voted the same way" and "At least one AFA corporator voted against the Metro Project". From this, we can conclude that both AFA corporators voted against the Metro Project and the three NDA corporators voted for the Metro Project. Hence option 2 is true.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 57

The Metro Project was up for voting before the standing committee of the PMC. Each of the seven corporators on the standing committee voted either for or against the project. Of the seven corporators, two belong to the AFA, two belong to the IMA and three belong to the NDA. No corporator belongs to more than one party. A journalist reported the following about the way the corporators voted.

- Of the seven corporators, at least two voted for the Metro Project and at least two voted against the Metro Project.
- If the three NDA corporators voted the same way as each other, then no AFA corporator voted the same way.
- At least one AFA corporator voted against the Metro Project.
- If the two AFA corporators and at least one NDA corporator voted the same way as each other, then both IMA corporators voted that way

If exactly two of the seven corporators voted against the Metro Project, which of the following must be true?

✓A) Both IMA corporators voted for the Metro Project B) Exactly one AFA corporator voted for the Metro Project
C) Exactly two NDA corporators voted for the Metro Project D) Both AFA corporators voted against the Metro Project

Explanation:-
In option 1, if both IMA corporators vote for the Metro Project, then both AFA corporators will vote against the Metro Project while all three NDA corporators will vote for the Metro Project so that all conditions are satisfied. Hence the correct answer is option 1.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 58

The Metro Project was up for voting before the standing committee of the PMC. Each of the seven corporators on the standing committee voted either for or against the project. Of the seven corporators, two belong to the AFA, two belong to the IMA and three belong to the NDA. No corporator belongs to more than one party. A journalist reported the following about the way the corporators voted.

- Of the seven corporators, at least two voted for the Metro Project and at least two voted against the Metro Project.
- If the three NDA corporators voted the same way as each other, then no AFA corporator voted the same way.
- At least one AFA corporator voted against the Metro Project.
- If the two AFA corporators and at least one NDA corporator voted the same way as each other, then both IMA corporators voted that way

If both AFA corporators voted the same way as each other, but the three NDA corporators did not vote the same way as each other, which of the following cannot be true?

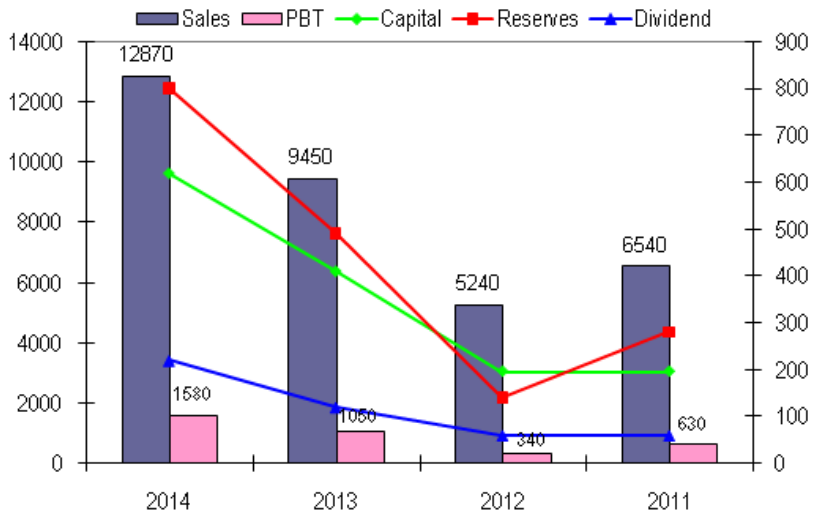
A) Both AFA corporators voted against the Metro Project ✓B) Both IMA corporators voted for the Metro Project
C) Exactly two NDA corporators voted for the Metro Project
D) Exactly five of the seven corporators voted against the Metro Project

Explanation:-
If both AFA corporators voted the same way as each other, but the three NDA corporators did not vote the same way as each other, then we know that at least one NDA corporator voted the same way as the AFA corporators and therefore, both IMA corporators voted the same way. From this, we can conclude that at least five corporators voted the same way and the remaining two corporators voted the other way. Since at least one AFA corporator voted against the Metro Project, we know that five corporators voted against the Metro Project. Since both the IMA corporators voted against the Metro Project, option 2 cannot be true.

DIRECTIONS for the question: *Analyse the graph/s given below and answer the question that follows.*

Question No. : 59

The bar graph below (left scale) shows information about the Sales and Profit Before Tax (PBT), while the line graph (right scale) shows information about the Capital, Reserves and Dividend of a company over four years from 2011 to 2014. All figures are in Rs. lakhs. Tax is paid as a percentage of PBT and part of the remaining amount is paid as Dividend and the rest is moved to Reserves.



In which year was Sales as a percentage of Capital the lowest? (in numerical value)

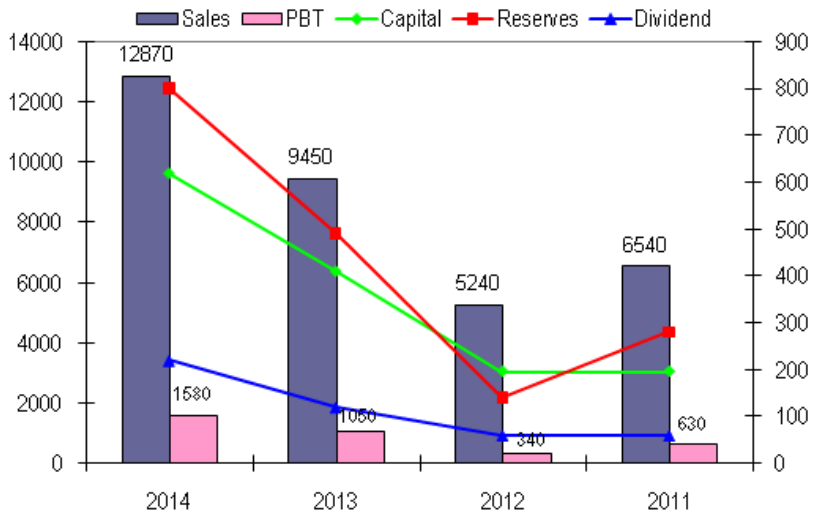
A) 2014 B) C) D)

Explanation:-
2011: Sales / Capital = 6540 / 200 = 32.7.
2012: Sales / Capital = 5240 / 200 = 26.2.
2013: Sales / Capital = 9450 / 400 = 23.625
2014: Sales / Capital = 12870 / 600 = 21.45.
Thus Sales as a percentage of Capital was the lowest in 2014.

DIRECTIONS for the question: *Analyse the graph/s given below and answer the question that follows.*

Question No. : 60

The bar graph below (left scale) shows information about the Sales and Profit Before Tax (PBT), while the line graph (right scale) shows information about the Capital, Reserves and Dividend of a company over four years from 2011 to 2014. All figures are in Rs. lakhs. Tax is paid as a percentage of PBT and part of the remaining amount is paid as Dividend and the rest is moved to Reserves.



Reserve Ratio is defined as the ratio of the Reserves in a particular year to the Accumulated Reserves over all previous years. In which year from 2011 to 2014 was the Reserve Ratio the highest? (in numerical value)

A) 2013 B) C) D)

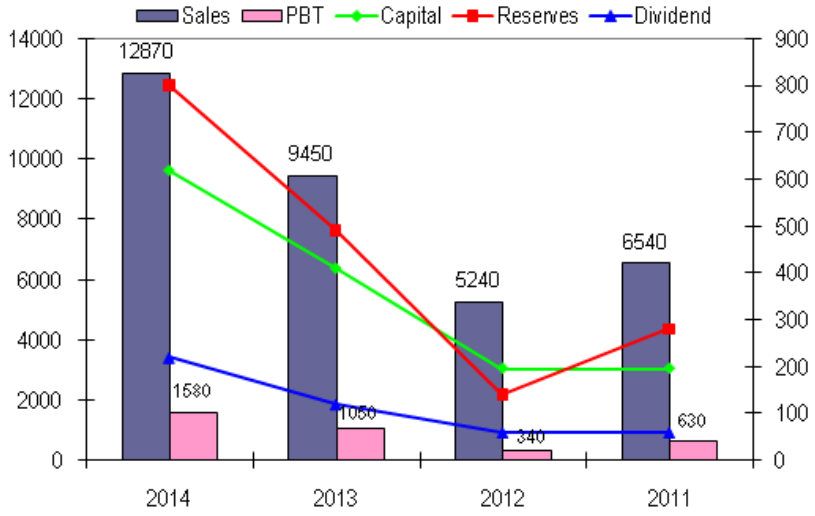
Explanation:-

Reserves in 2011, 2012, 2013 and 2014 were 300, 150, 500 and 800 respectively. So, accumulated Reserves in 2012, 2013 and 2014 were 300, 450 and 950 respectively.
Reserve Ratio for 2012: 150/300 = 0.5.
Reserve ratio for 2013: 500/450 = 1.11.
Reserve Ratio for 2014: 800/950 = 0.84.
Thus the Reserve Ratio was highest for 2013.

DIRECTIONS for the question: *Analyse the graph/s given below and answer the question that follows.*

Question No. : 61

The bar graph below (left scale) shows information about the Sales and Profit Before Tax (PBT), while the line graph (right scale) shows information about the Capital, Reserves and Dividend of a company over four years from 2011 to 2014. All figures are in Rs. lakhs. Tax is paid as a percentage of PBT and part of the remaining amount is paid as Dividend and the rest is moved to Reserves.



In which year was Tax as a percentage of Profit Before Tax the highest? (in numerical value)

A) 2011 B) C) D)

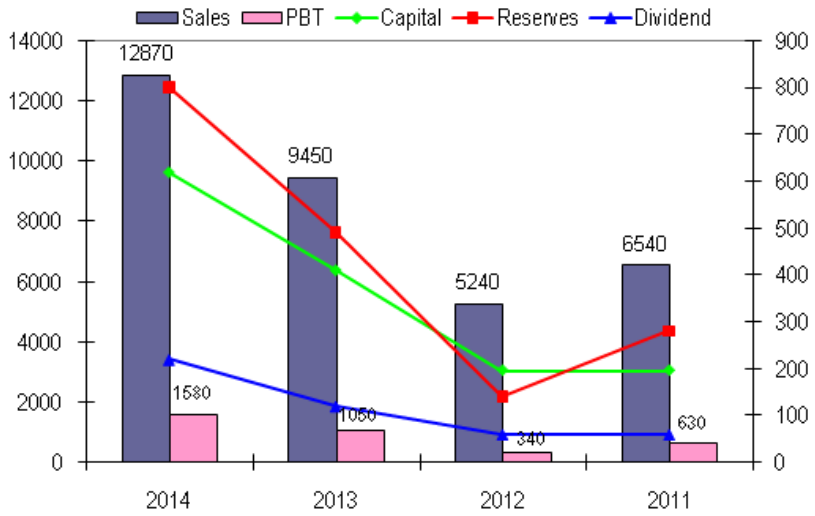
Explanation:-

2011: PBT = 630. Dividend + Reserves = 60 + 300 = 360. Tax is 630 – 360 = 270. So, Tax as a percentage of PBT = 270/630 = 42.85%.
2012: PBT = 340. Dividend + Reserves = 60 + 150 = 210. Tax is 340 – 210 = 130. So, Tax as a percentage of PBT = 130/340 = 38.23%.
2013: PBT = 1050. Dividend + Reserves = 120 + 500 = 620. Tax is 1050 – 620 = 430. So, Tax as a percentage of PBT = 430/1050 = 40.95%.
2014: PBT = 1580. Dividend + Reserves = 210 + 800 = 1010. Tax is 1580 – 1010 = 570. So, Tax as a percentage of PBT = 570/1580 = 36.07%.
Thus Tax as a percentage of PBT is the highest in 2011.

DIRECTIONS for the question: *Analyse the graph/s given below and answer the question that follows.*

Question No. : 62

The bar graph below (left scale) shows information about the Sales and Profit Before Tax (PBT), while the line graph (right scale) shows information about the Capital, Reserves and Dividend of a company over four years from 2011 to 2014. All figures are in Rs. lakhs. Tax is paid as a percentage of PBT and part of the remaining amount is paid as Dividend and the rest is moved to Reserves.



In which year was the Profit Before Tax as a percentage of Sales the lowest? (in numerical value)

A) 2012 B) C) D)

Explanation:-
2011: PBT / Sales = 630/6540 = 9.63%.
2012: PBT / Sales = 340/5240 = 6.49%.
2013: PBT / Sales = 1050/9450 = 11.11%.
2014: PBT / Sales = 1580/12870 = 12.28%.
Thus PBT as a percentage of Sales was the lowest in 2012.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 63

In November, Charu would be working only five days a week – Mondays, Tuesdays, Wednesdays, Fridays and Saturdays. On each of these days, she will work in two shifts, the morning shift from 8:00 a.m. to 11:00 a.m. and the afternoon shift from 2:00 p.m. to 5:00 p.m. Each day, she will conduct exactly one session in the morning shift and exactly one session in the afternoon shift from amongst ACT, CAT, GMAT and SAT. When conducting these sessions, Charu must ensure that:

- She conducts CAT sessions in exactly three morning shifts.
- If she conducts a CAT session on Monday, she does not conduct a CAT session on Tuesday.
- She conducts ACT sessions in the afternoon shift on exactly two consecutive calendar days.
- She conducts GMAT sessions in exactly one morning shift and exactly three afternoon shifts.
- She conducts SAT sessions in exactly one morning shift.
- On Saturday, she neither conducts an ACT session nor conducts a CAT session.

Which of the following sessions could Charu conduct on Wednesday?

A) SAT session in the morning shift and CAT session in the afternoon shift
B) ACT session in the morning shift and GMAT session in the afternoon shift
✓C) CAT session in the morning shift and ACT session in the afternoon shift
D) CAT session in the morning shift and SAT session in the afternoon shift

Explanation:-
On Saturday, Charu must conduct a SAT session in the morning shift and a GMAT session in the afternoon shift. If she conducts a CAT session on Monday, then the other two CAT sessions are conducted on Wednesday and Friday, otherwise the three CAT sessions are conducted on Tuesday, Wednesday and Friday. The remaining morning shift would be a GMAT session. The two ACT sessions could be conducted on Monday and Tuesday or on Tuesday and Wednesday and the other afternoon shifts would be GMAT sessions.
Based on this, we have the following possibilities:

	Mon	**Tue**	**Wed**	**Fri**	**Sat**
Case I	CAT	GMAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case II	CAT	GMAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT
Case III	GMAT	CAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case IV	GMAT	CAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT
Case V	CAT	SAT	CAT	CAT	GMAT
	ACT	ACT	GMAT	GMAT	GMAT

Case VI	CAT	GMAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case VII	CAT	SAT	CAT	CAT	GMAT
	GMAT	ACT	ACT	GMAT	GMAT
Case VIII	CAT	GMAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT
Case IX	SAT	CAT	CAT	CAT	GMAT
	ACT	ACT	GMAT	GMAT	GMAT
Case X	GMAT	CAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case XI	SAT	CAT	CAT	CAT	GMAT
	GMAT	ACT	ACT	GMAT	GMAT
Case XII	GMAT	CAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT

On Wednesday, Charu can conduct a CAT session in the morning shift and an ACT session in the afternoon shift.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 64

In November, Charu would be working only five days a week – Mondays, Tuesdays, Wednesdays, Fridays and Saturdays. On each of these days, she will work in two shifts, the morning shift from 8:00 a.m. to 11:00 a.m. and the afternoon shift from 2:00 p.m. to 5:00 p.m. Each day, she will conduct exactly one session in the morning shift and exactly one session in the afternoon shift from amongst ACT, CAT, GMAT and SAT. When conducting these sessions, Charu must ensure that:

- She conducts CAT sessions in exactly three morning shifts.
- If she conducts a CAT session on Monday, she does not conduct a CAT session on Tuesday.
- She conducts ACT sessions in the afternoon shift on exactly two consecutive calendar days.
- She conducts GMAT sessions in exactly one morning shift and exactly three afternoon shifts.
- She conducts SAT sessions in exactly one morning shift.
- On Saturday, she neither conducts an ACT session nor conducts a CAT session.

If Charu conducts a CAT session on Tuesday, when could she schedule GMAT sessions?

A) Morning shift on Monday and Saturday and afternoon shift on Friday and Saturday
B) Morning shift on Wednesday and afternoon shift on Monday, Wednesday and Saturday
C) Morning shift on Wednesday and afternoon shift on Wednesday, Friday and Saturday
✔D) Morning shift on Monday and afternoon shift on Wednesday, Friday and Saturday

Explanation:-
On Saturday, Charu must conduct a SAT session in the morning shift and a GMAT session in the afternoon shift. If she conducts a CAT session on Monday, then the other two CAT sessions are conducted on Wednesday and Friday, otherwise the three CAT sessions are conducted on Tuesday, Wednesday and Friday. The remaining morning shift would be a GMAT session. The two ACT sessions could be conducted on Monday and Tuesday or on Tuesday and Wednesday and the other afternoon shifts would be GMAT sessions.
Based on this, we have the following possibilities:

	Mon	**Tue**	**Wed**	**Fri**	**Sat**
Case I	CAT	GMAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
	CAT	GMAT	CAT	CAT	SAT

Case II	GMAT	ACT	ACT	GMAT	GMAT
Case III	GMAT	CAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case IV	GMAT	CAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT
Case V	CAT	SAT	CAT	CAT	GMAT
	ACT	ACT	GMAT	GMAT	GMAT
Case VI	CAT	GMAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case VII	CAT	SAT	CAT	CAT	GMAT
	GMAT	ACT	ACT	GMAT	GMAT
Case VIII	CAT	GMAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT
Case IX	SAT	CAT	CAT	CAT	GMAT
	ACT	ACT	GMAT	GMAT	GMAT
Case X	GMAT	CAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case XI	SAT	CAT	CAT	CAT	GMAT
	GMAT	ACT	ACT	GMAT	GMAT
Case XII	GMAT	CAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT

If Charu conducts a CAT session on Tuesday, she can conduct GMAT sessions in the morning shift on Monday and afternoon shifts on Wednesday, Friday and Saturday.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 65

In November, Charu would be working only five days a week – Mondays, Tuesdays, Wednesdays, Fridays and Saturdays. On each of these days, she will work in two shifts, the morning shift from 8:00 a.m. to 11:00 a.m. and the afternoon shift from 2:00 p.m. to 5:00 p.m. Each day, she will conduct exactly one session in the morning shift and exactly one session in the afternoon shift from amongst ACT, CAT, GMAT and SAT. When conducting these sessions, Charu must ensure that:

- She conducts CAT sessions in exactly three morning shifts.
- If she conducts a CAT session on Monday, she does not conduct a CAT session on Tuesday.
- She conducts ACT sessions in the afternoon shift on exactly two consecutive calendar days.
- She conducts GMAT sessions in exactly one morning shift and exactly three afternoon shifts.
- She conducts SAT sessions in exactly one morning shift.
- On Saturday, she neither conducts an ACT session nor conducts a CAT session.

On which of the following pairs of days must Charu conduct GMAT sessions?

A) Monday and Saturday B) Tuesday and Friday C) Tuesday and Saturday ✓D) Friday and Saturday

Explanation:-

On Saturday, Charu must conduct a SAT session in the morning shift and a GMAT session in the afternoon shift. If she conducts a CAT session on Monday, then the other two CAT sessions are conducted on Wednesday and Friday, otherwise the three CAT sessions are conducted on Tuesday, Wednesday and Friday. The remaining morning shift would be a GMAT session. The two ACT sessions could be conducted on Monday and Tuesday or on Tuesday and Wednesday and the other afternoon shifts would be

GMAT sessions.
Based on this, we have the following possibilities:

	Mon	Tue	Wed	Fri	Sat
Case I	CAT	GMAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case II	CAT	GMAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT
Case III	GMAT	CAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case IV	GMAT	CAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT
Case V	CAT	SAT	CAT	CAT	GMAT
	ACT	ACT	GMAT	GMAT	GMAT
Case VI	CAT	GMAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case VII	CAT	SAT	CAT	CAT	GMAT
	GMAT	ACT	ACT	GMAT	GMAT
Case VIII	CAT	GMAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT
Case IX	SAT	CAT	CAT	CAT	GMAT
	ACT	ACT	GMAT	GMAT	GMAT
Case X	GMAT	CAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case XI	SAT	CAT	CAT	CAT	GMAT
	GMAT	ACT	ACT	GMAT	GMAT
Case XII	GMAT	CAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT

Charu must conduct a GMAT session on Friday and Saturday.

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 66

In November, Charu would be working only five days a week – Mondays, Tuesdays, Wednesdays, Fridays and Saturdays. On each of these days, she will work in two shifts, the morning shift from 8:00 a.m. to 11:00 a.m. and the afternoon shift from 2:00 p.m. to 5:00 p.m. Each day, she will conduct exactly one session in the morning shift and exactly one session in the afternoon shift from amongst ACT, CAT, GMAT and SAT. When conducting these sessions, Charu must ensure that:

- She conducts CAT sessions in exactly three morning shifts.
- If she conducts a CAT session on Monday, she does not conduct a CAT session on Tuesday.
- She conducts ACT sessions in the afternoon shift on exactly two consecutive calendar days.
- She conducts GMAT sessions in exactly one morning shift and exactly three afternoon shifts.
- She conducts SAT sessions in exactly one morning shift.
- On Saturday, she neither conducts an ACT session nor conducts a CAT session.

Which of the following statements cannot be true? (write the correct option)

1. Charu conducts a SAT session on one of the days on which she conducts a GMAT session
2. Charu conducts an ACT session on one of the days on which she conducts a CAT session
3. Charu conducts a SAT session on one of the days on which she conducts an ACT session
4. Charu conducts an ACT session on one of the days on which she conducts a GMAT session

A) 3 B) C) D)

Explanation:- *On Saturday, Charu must conduct a SAT session in the morning shift and a GMAT session in the afternoon shift. If she conducts a CAT session on Monday, then the other two CAT sessions are conducted on Wednesday and Friday, otherwise the three CAT sessions are conducted on Tuesday, Wednesday and Friday. The remaining morning shift would be a GMAT session. The two ACT sessions could be conducted on Monday and Tuesday or on Tuesday and Wednesday and the other afternoon shifts would be GMAT sessions.*
Based on this, we have the following possibilities:

	Mon	**Tue**	**Wed**	**Fri**	**Sat**
Case I	CAT	GMAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case II	CAT	GMAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT
Case III	GMAT	CAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case IV	GMAT	CAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT
Case V	CAT	SAT	CAT	CAT	GMAT
	ACT	ACT	GMAT	GMAT	GMAT
Case VI	CAT	GMAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case VII	CAT	SAT	CAT	CAT	GMAT
	GMAT	ACT	ACT	GMAT	GMAT
Case VIII	CAT	GMAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT
Case IX	SAT	CAT	CAT	CAT	GMAT
	ACT	ACT	GMAT	GMAT	GMAT
Case X	GMAT	CAT	CAT	CAT	SAT
	ACT	ACT	GMAT	GMAT	GMAT
Case XI	SAT	CAT	CAT	CAT	GMAT
	GMAT	ACT	ACT	GMAT	GMAT
Case XII	GMAT	CAT	CAT	CAT	SAT
	GMAT	ACT	ACT	GMAT	GMAT

Charu cannot conduct a SAT and an ACT session on the same day.

Section : Quantitative Ability

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 67

Given that $\frac{1}{(2!17!)}+\frac{1}{(3!16!)}+\frac{1}{(4!15!)}+\frac{1}{(5!14!)}+\frac{1}{(6!13!)}+\frac{1}{(7!12!)}+\frac{1}{(8!11!)}+\frac{1}{(9!10!)}=\frac{N}{1!18!}$

Find the greatest integer that is less than $\frac{N}{100}$. (in numerical value)

A) 137 B) C) D)

Explanation:-

Examining the fractions appearing on both sides of the relation, we see that if the numerators were 19!, we would have expressions of the form n! / {k! (n – k)!}= ${}^{n}C_{k}$.

Therefore, multiplying the given relation through by 19!, we have that 19N = ${}^{19}C_{2}$ + ${}^{19}C_{3}$ + ... + ${}^{19}C_{9}$ which is the same as 19N = ${}^{19}C_{17}$ + ${}^{19}C_{16}$ + ... + ${}^{19}C_{10}$

Adding the two equations above yields

38N = ${}^{19}C_{2}$ + ${}^{19}C_{3}$ + ...+ ${}^{19}C_{16}$ + ${}^{19}C_{17}$

We can rewrite this as 38N = 2^{19} – ${}^{19}C_{0}$ – ${}^{19}C_{1}$ – ${}^{19}C_{18}$ – ${}^{19}C_{19}$ = 2^{19} – 1 – 19 – 19 – 1

Solving for N gives N = 13796, so the answer is 137.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 68

Let $n > 6$ be an integer and $a_1; a_2; : : : ; a_k$ be all the natural numbers less than n and relatively prime to n. If $a_2 - a_1 = a_3 - a_2 = ... = a_k - a_{k-1} > 0$ then n must be

A) odd B) multiple of 3 C) prime ✓D) None of these

Explanation:-

Suppose n = 7. Then numbers that are relatively prime to 7 are 1, 2, 3, 4, 5 and 6. These numbers form an AP with common difference 1. So, n is odd and n is prime.

Suppose n = 9. Then numbers that are relatively prime to 9 are 1, 2, 4, 5, 7 and 8. These numbers do not form an AP. So, we know that n is not an odd composite number.

If we take n = 8, then the numbers which are relatively prime to 8 are 1, 3, 5 and 7. Hence they also form an A.P. So n may be an even number. Hence answer is option 4.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 69

10% of a vessel full of milk is drawn off and replaced with water. Then 10% of this mixture is drawn off and replaced with milk. 10% of the mixture is again drawn off and replaced with water. If the vessel now contains 199.1 litres of water, what is the volume of the vessel? (in litres)

A) 1100 B) C) D)

Explanation:-

Suppose the volume of the milk in the vessel is 100 litres.

10 litres is drawn off and replaced with water. The ratio of milk to water in the mixture is now 9 : 1.

When 10 litres of this mixture is drawn off, 9 litres of milk and 1 litre of water are drawn off.

This is then replaced with milk. So, the quantity of milk is now 90 – 9 + 10 = 91 litres and the volume of water is 9 litres.

When 10 litres of this mixture is drawn off, 9.1 litres of milk and 0.9 litres of water are drawn off. This is then replaced with water.

So the final quantity of milk is 91 – 9.1 = 81.9 litres and the final quantity of water is 9 – 0.9 + 10 = 18.1 litres.

We know that the actual quantity of water is 199.1 litres.

So, the actual volume must be (100 × 199.1)/18.1 = 1100 litres.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 70

In Arun's opinion, his weight is greater than 65 kg but less than 72 kg. His brother does not agree with Arun and he thinks that Arun's weight is greater than 60 kg but less than 70 kg. His mother's view is that his weight cannot be greater than 68 kg. If all of them are correct in their estimation and if the weight is taken in whole numbers so that all the above conditions are satisfied, what is the average of different probable weights of Arun?

A) 66.5 kg ✓B) 67 kg C) 68 kg D) Data inadequate

Explanation:-
Let Arun's weight be x kg.
According to Arun: 65 < x <72
According to Arun's brother: 60 < x < 70.
According to Arun's mother: x ≤ 68
The values satisfying all the above conditions are 66, 67 and 68.

$$\text{Required Average } \frac{66+67+68}{3}=\frac{201}{3}=67\text{kg}$$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 71

The terms of an arithmetic sequence add to 715. The first term of the sequence is increased by 1, the second term is increased by 3, the third term is increased by 5, and in general, the kth term is increased by the kth odd positive integer. The terms of the new sequence add to 836. What is the sum of the first, last, and middle terms of the original sequence? (in numerical value)

A) 195 B) C) D)

Explanation:-
As per the given condition, for m number of terms 715 + [1 + 3 + 5 + _ _ _ + (2m – 1)] = 836
Now the sum of the first m odd positive integers is m^2. Thus, 715 + m^2 = 836
That is, m^2 = 121:
We conclude that m = 11. So we are being asked to compute a_1 +a_6 +a_{11}.
Now the average of the first and the last term is equal to the average of all the terms in an AP.
Hence,
(a1 + a11)/2 = 715/11 = 65
(a1 + a11) = 2 × 65 = 130

Now observe that because the sequence is arithmetic, the middle term a6 is the average of the first and last terms a6 = (a1 + a11)/2:
Thus, we have a1 + a6 + a11 = (3/2) (a1 + a11) = 3 × 130/2 = 195

DIRECTIONS for the question *: Solve the following question and mark the best possible option.*

Question No. : 72

It is given that $\log_6 a + \log_6 b + \log_6 c = 6$, where a, b, and c are positive integers that form an increasing geometric sequence and (b – a) is the square of an integer. Find a + b + c. (in numerical value)

A) 111 B) C) D)

Explanation:-

Since a, b, and c form an increasing geometric sequence, we can write $b = ar$ and $c = ar^2$ for some constant $r > 1$.
$6 = \log_6 a + \log_6 b + \log_6 c = \log_6(abc)$
Thus,
$abc = 6^6$
$a(ar)(ar^2) = 6^6$
$(ar)^3 = 6^6$
$(ar)^3 = 36^3$
$ar = 36$
$b = 36$

Since (b – a) must be a square of an integer and a is positive, b – a must be one of the following 1, 4, 9, 16, or 25. That is,
$a = 35, 32, 27, 20,$ or 11
Now, $c = ar^2 = br = 36r = 36^2/a$ is an integer, which means that a divides $36^2 = 2^4 \times 3^4$. Among the five possible values of a listed above, only $a = 27$ works.
Then $c = 36^2/27 = 48$. Therefore, $a + b + c = 27 + 36 + 48 = 111$.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 73

Ankita sold an article to Bhavna at 30 % profit. Bhavna in turn sold it to Harsha at 20 % profit. Harsha sold it to Tapsi at 20 % loss and Tapsi sold it to Jatin at 10% loss. By what percentage was Jatin's cost price more/less than Ankita's cost price?

A) 12.32 % less ✓B) 12.32 % more C) 6.16 % less D) 6.16 % more

Explanation:-

Let the cost price for Ankita be Rs. 100:
Thus, we form the following table

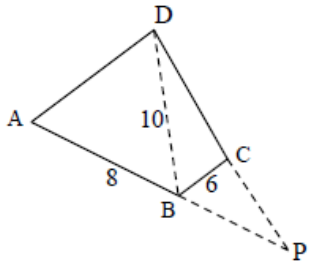
	Cost Price	Profit/Loss	Selling Price
Ankita	100	30	130
Bhavna	130	26	156
Harsha	156	31.2	124.8
Tapsi	124.8	12.48	112.32
Jatin	112.32		

112.32 is more than 100 by 12.32 %.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 74

In quadrilateral ABCD, ∠BAD = ∠ADC and ∠ABD = ∠BCD, AB = 8, BD = 10, and BC = 6. If the length of CD may be written in the reduced form m/n, what is the value of m + n? (in numerical value)



A) 69 B) C) D)

Explanation:-

Notice that ∠PAD is isosceles (the sides PA and PD are congruent), since m ∠PAD = m ∠PDA.

Notice that ∠P is shared by several triangles, including ∠PBC and ∠PDB. In fact, since ∠ABD = ∠BCD, the corresponding angles

that are supplementary to each of these are also congruent: ∠PBD = ∠PCB. Thus, ∆PBC and ∆PDB are in fact similar, since they

have two (and hence, three) congruent angles. Thus, the ratios of corresponding sides must be the same:
BC/BD = PC/PB = PB/PD

Since BC/BD = 6/10 = 3/5

PC =3/5 PB and PB = 3/5 PD
However, note that we can relate PD to PB in a different way:
PD = PA = PB + BA = PB + 8
Thus, PB = 3/5 PD = (3/5) (PB + 8);
which implies that PB = 12.
Thus, PA = PD = 20 and PC = 3/5 PB = (3/5) (12) = 36/5
Thus, CD = PD – PC = 20 – (36 /5) = 64/5
Therefore, m = 64 and n = 5. Hence, m + n = 64 + 5 = 69

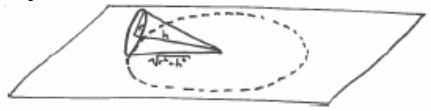
DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 75

A right circular cone has base radius r and height h. The cone lies on its side on a table. As the cone rolls on the surface of the table without slipping, the point where the cone's base meets the table traces a circular arc centered at the point where the vertex touches the table. The cone first returns to its original position on the table after making 17 complete rotations. What is the value of the ratio h/r?

A) 14 ✓B) 12√2 C) 34 D) 41

Explanation:-



Consider the circular arc traced by the cone on the table. Its radius is the slant height of the cone.
Since the cone has radius r and height h, its slant height is √(r^2 + h^2). Therefore, the circular arc traced by the cone has radius√(r^2

+ h^2).
On the other hand, the base of the cone has circumference 2πr. Since the base of the cone makes 17 complete revolutions before making the circular arc into a complete circle, the circumference of the circular arc is 17(2πr) = 34πr.
Therefore, we have $34\pi r = 2\pi \sqrt{(r^2 + h^2)}$
That is, $17r = \sqrt{(r^2 + h^2)}$
Squaring both sides, we have $289 r^2 = r^2 + h^2$ or $h^2 = 288 r^2$. Hence, $h = \sqrt{288}r = 12\sqrt{2}\, r$. Therefore, $h/r = 12\sqrt{2}$.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 76

If $2x^2 - 6x + 6 > x^2 + 2x - 9$, which of the following represents a range for x where this inequality must hold true? (write the correct option)

1. (1, 5) 2. (5, ∞) 3. (3, 5) 4. (3, ∞)

A) 2 B) C) D)

Explanation:-
$x^2 - 8x + 15 > 0$
$(x - 3)(x - 5) > 0$
So either $x > 5$ Or $x < 3$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 77

A water tank is in the shape of an inverted right circular cone. The tank is standing on horizontal ground on its vertex. The axis of the conical tank is perpendicular to the horizontal surface of ground. The height of the tank is 6 m. The tank is completely filled with water and the volume of the water is 216 liters. There are three outlet taps, one at the bottom, second at a height of 2 m and third at a height of 4m. The rate of outflow of each of the three taps is 2 liters/minute. If all the three taps are opened simultaneously at 2:00 pm, at what approximate time will the tank get completely empty?

A) 2:10 pm B) 2:32 pm ✓C) 2: 44 pm D) 2: 19 pm

Explanation:-
The ratio of volumes of cones up to height 2 m, 4 m and 6 m = $2^3 : 4^3 : 6^3 = 8 : 64 : 216$
The ratio of volumes of water in the tank above 4m, between 4m and 2 m, and below 2 m.
$= (216 - 64) : (64 - 8) : 8 = 152 : 56 : 8$
Since the total volume of water in the tank is 216 liters, therefore the volume of the water above 4 m, between 4 m and 2 m, and below 2 m is 152 L, 56 L and 8 L resp.
When the water level is above 4 m height all the three taps contribute to empty the tank, but when water level is between 4 m and 2 m only two taps contribute and when the water level is below 2 m, only 1 tap will contribute to empty the tank.

Total time required to empty the tank = $152/6 + 56/4 + 8/2 \approx 44$ min
Thus the tank will be emptied at approx. 2:44 pm

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 78

The sum of the squares of three positive integers a, b and c is also a perfect square. Which of the following cannot be the value of $a^2 + b^2 + c^2$?

A) 15625 B) 28561 ✓C) 33049 D) 10000

Explanation:-

This question can be solved by trial and error. $15625 = 125^2 = 45^2 + 60^2 + 100^2$. $28561 = 169^2 = 25^2 + 60^2 + 156^2$. 33049 is not a perfect square and $10000 = 100^2 = 36^2 + 48^2 + 80^2$.

Alternate solution: Suppose $a^2 + b^2 + c^2 = x^2$ and $a^2 + b^2 = d^2$. We can rewrite this as $a^2 + b^2 + c^2 = d^2 + c^2 = x^2$. This means that we can make use of Pythagorean triplets. $(a^2 + b^2) = d^2$ will yield a Pythagorean triplet (a, b, d) and $(d^2 + c^2) = x^2$ will yield a Pythagorean triplet (d, c, x) i.e. In the first example, having a knowledge of triplets it can be stated that $75^2 = 45^2 + 60^2$ and when it is $125^2 = 45^2 + 60^2 + 100^2$, it can be further thought of as $125^2 = 75^2 + 100^2$. So that method can also be applied.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 79

Viraaj and Siraaj started travelling towards each other from their home towns Delhi and Jammu respectively by car at uniform speeds. They met at a point X in between. They exchanged their cars (in practically no time) and returned back towards their respective home towns. On reaching their home towns they at once started travelling back towards each other and met at a point Y this time. What was the ratio of their speeds such that the distance XY is the highest, if they don't meet anywhere before reaching their respective home towns?

A) 2:5 ✓B) 1:2 C) 2:3 D) 5:6

Explanation:-

They are exchanging the cars and coming back to their respective hometowns means that the direction and speed of cars remains the same. Thus, the car which started from Delhi will reach X and from there move towards Jammu at the same uniform speed. Similarly the car started from Jammu reaches X and from there moves towards Delhi at the same uniform speed.

Solving by options

For option 1, if the distance between Delhi and Jammu is 7x, then they will meet at point X which is 2x distance from Delhi. If we consider the cars covering these distances in the next equal intervals of time, we see that the car which is at 5x speed would catch up the other in the midway before the later reaches its destination. Thus, the option is ruled out.

For option 2, if the distance between Delhi and Jammu is 3x, then they will meet at point X which is x distance from Delhi. If we consider the cars covering these distances in the next equal intervals of time, we see that the car which is at 2x speed would catch up the other at the later's hometown. As per condition they do not meet anywhere in between before reaching their hometowns implies they can meet at hometowns. Therefore, this option is valid.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 80

In a plane there are 300 seats. The price of each ticket when the plane is full is Rs. 60. For every Rs. 5 increase in the ticket, the number of tickets sold goes down by 10. Find the price of ticket for which the plane's owner earns the maximum revenue.

A) 95 B) 100 ✓C) 105 D) 110

Explanation:-

Let the price of the ticket be Rs. (60 + 5X)

The number of people in the plane would be 300 – 10X

The revenue of the plane owner would be : (60 + 5X) × (300 – 10X)

$= (18000 + 900X – 50X^2) = 18000 + 50 X[(18 – X)]$

When the sum of 2 or more quantities is constant, then the sum of their product is maximum when the quantities are equal.

In $X(18 – X)$, X and $18 – X$ have a constant sum of 18 .

So, X(18– X) would be maximum when X = 18 – X = 9.
Thus, maximum revenue would be at a price = 60 + (5 × 9) = 105.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 81

If a and b are real numbers such that one of the roots of the equation $x^{12} - abx + a^2 = 0$ is greater than 2, then |b| is _____ (write the correct option)

1. < 16 2. < 32 3. ≥ 64 4. < 64

A) 3 B) C) D)

Explanation:-
The equation can be rewritten as $x^{12} + \{(bx/2) - a\}^2 = b^2x^2/4$

whence $b^2x^2 = 4x^{12} + (bx - 2a)^2 \geq 4x^{12}$ *and* $b^2 \geq 4x^{10}$.
If $|x| > 2$, *then* $b^2 \geq 2^{12}$ *and so* $|b| \geq 2^6$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 82

Aditya thinks of a two-digit number, which is equal to the sum of the squares of its digits. What is the sum of the digits of that number?

A) 7 B) 5 C) 6 ✓D) Such a number is not possible

Explanation:-
Let the two digit number be ab, then
$10a + b = a^2 + b^2$
$10a - a^2 = b^2 - b$
$a(10 - a) = b(b - 1)$
→ Now $b(b - 1)$ is always even as the product of two consecutive digits is also even.
⇒ $a(10 - a)$ can be → $2 \times 8 = 16$ or $4 \times 6 = 24$
Neither 16 nor 24 can be the product of two consecutive numbers such as $(b - 1)$ and b.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 83

Find the number of ways of dealing n cards to two persons (n ≥ 2 and is odd), where the persons may receive unequal (positive) number of cards disregarding the order in which the cards are received.

A) 2^n B) $2^n - 1$ ✓C) $2^n - 2$ D) $2^n - 3$

Explanation:-
If we allow hands with no cards, there are 2^n *ways in which they may be dealt (each card may go to one of two people). There are two cases in which a person gets no cards. Subtracting these gives the result:* $2^n - 2$.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 84

If $x^5 - x^3 + x = a$, which of the following is true? (write the correct option)

1. $x^6 > 2a$ 2. $x^6 \le 2a$ 3. $x^6 \ge 2a - 1$ 4. $x^6 = 2a + 1$

A) 3 B) C) D)

Explanation:-

The given expression can be rewritten as $a = x^5 - x^3 + x = \frac{x(x^6+1)}{(x^2+1)}$. Now, if $x \le 0$, then $a \le 0$ and therefore, $2a - 1 < 0 < x^6$. If $x > 0$, then $a > 0$ and $x^6 + 1 = a\left(\frac{x^2+1}{x}\right) = a\left(x + \frac{1}{x}\right) \ge 2a$. In either case, $x^6 \ge 2a - 1$.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 85

Consider A = {1, 11, 21, 31, ..., 551}. A subset S of A is defined so that the sum of any two elements of S is not more than 552. What is the maximum number of elements that are contained in S? (in numerical value)

A) 29 B) C) D)

Explanation:-

All the numbers end in 1.
We know that 271 + 281 = 552
Since the sum of any two elements cannot be more than 552, the last element of the set has to be 281.
So the number of elements in S will be 1, 11, 21 ..... 281.
This would have 29 elements.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 86

Find the last two digits of 2^{324} ? (in numerical value)

A) 16 B) C) D)

Explanation:-

We have $2^{324} = (2^{10})^{32} \times 2^4 = (24)^{32} \times 16 = 76 \times 16 = 1216$. So, the last two digits of 2^{324} is 16.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 87

Train A, travelling at 60 km/hr, leaves Mumbai for Delhi at 6 P.M. Train B, travelling at 90 km/hr, also leaves Mumbai for Delhi at 9 P.M. Train C leaves Delhi for Mumbai at 9 P.M. If all three trains meet at the same time between Mumbai and Delhi, what is the speed of Train C, if the distance between Delhi and Mumbai is 1260 km? (ans in kmph)

A) 120 B) C) D)

Explanation:-

All three trains meet at the same time between Delhi and Mumbai. This means Train A and Train B are at the same point at that time.
This will happen when B is overtaking Train A. Train A starts 3 hours before Train B. Therefore, by the time Train B leaves Mumbai, Train A has covered 3 × 60 = 180 km. The relative speed between Train A and Train B = 90 – 60 = 30 kmph. Therefore, Train B will overtake train A in 180/30 = 6 hours from the time B leaves Mumbai. That is at 3 A.M, B will overtake A. The point between Mumbai and Delhi at which Train B overtakes Train A will be 6 ´ 90=540 km from Mumbai. Train C will also be at that point at 3 A.M while Train B is overtaking Train A. And Train C would have travelled 1260 - 540 = 720 km in these 6 hours. Therefore, the speed of C = 720/6 = 120 km/hr.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 88

36 men can reap a field in 22 days working 9 hrs a day. In how many days would 18 women do the same work, working 8 hrs a day, if 4 women do as much work as 3 men? (in days)

A) 66 B) C) D)

Explanation:-
Solution: *Work done by 36 men in 22 days working 9 hrs a day = 36 × 22 × 9.*
Since 4 women do as much work as 3 men, So, 18 women are equivalent to 18 × 3/4 men.
Let the no. of days required by women be D, hence, we will balance the work equation.
Work = Men × Days × Hours
→ 36 × 22 × 9 = 18 × 3/4 × D × 8
→ D = 66 days.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 89

In 1997, the fourth day after Gandhi Jayanti (2nd October) was Monday. In that month all of the days below occurred 5 times, except

✓A) Tuesday B) Wednesday C) Thursday D) Friday

Explanation:-
Gandhi Jayanti is on 2-Oct. Given that 6-Oct was Mon, we find that 1-Oct was Wed. Since Oct is a month of 31 days, the 1st, 2nd and 3rd days i.e. Wednesday, Thursday and Friday occur five times.

DIRECTIONS for the question *: Solve the following question and mark the best possible option.*

Question No. : 90

What is the value of $\sqrt{10^{\left[2+\frac{1}{2}\log_{10}16\right]}}$?

A) 30 B) 35 C) 40 ✓D) 20

Explanation:-

$$A = \sqrt{10^{\left[2+\frac{1}{2}\log_{10} 16\right]}}$$

$$= \sqrt{10^{[\log_{10} 100+\log_{10} 4]}} = \sqrt{10^{[\log_{10} 400]}} = \sqrt{400} = 20.$$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 91

What is the remainder when 19^{92} is divided by 92? (in numerical value)

A) 49 B) C) D)

Explanation:-

Since 92 and 19 are co-prime and 92 = 2^2 × 23, we know that the remainder will be 1 when the power is $92\times\left(1-\frac{1}{2}\right)\left(1-\frac{1}{23}\right)=44$. *(By using Euler no.)*

So, the remainder when 19^{44} and 19^{88} are divided by 92 is 1.

The remaining 19^4 will give remainders 361 × 361 = (–7) (–7) = 49.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 92

A square has two of its vertices at (–1, –1) and (4, 2). What is the area of the square?

A) 34 B) 43 C) 17 ✓D) Cannot be determined

Explanation:-

Suppose the two vertices are A(–1, –1) and C(4, 2). $l(AC) = \sqrt{(4-(-1))^2+(2-(-1))^2} = \sqrt{25+9} = \sqrt{34}$.

If AC is the side of the square, its area is 34. However, if AC is the diagonal of the square, its area is ½ × $(\sqrt{34})^2$ = 17. The best answer is option 4.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 93

Two functions, $f(x)$ and $g(x)$, are defined for all non-negative x as $f(x) = |6 - x|$ and $g(x) = ½\ x$. The graphs of $f(x)$ and $g(x)$ intersect in the points A and B. Which of the following represents the equation of AB and the coordinates of the mid-point of AB respectively?

A) $x = 2y$, (12, 4) ✓B) $x - 2y = 0$, (8, 4) C) $4x + 8y - 16 = 0$, (2, 2) D) $x - 2y - 4 = 0$, (2, 6)

Explanation:-

The points of intersection will satisfy both the functions. So, $6 - x = \frac{1}{2}x$ gives $x = 4$ and $y = 2$ and $x - 6 = \frac{1}{2}x$ gives $x = 12$ and $y = 6$. Thus, the mid-point of A(4, 2) and B(12, 6) must be (8, 4)

Using the 2-points form, the equation of AB is $\frac{y-2}{6-2}=\frac{x-4}{12-4} \Rightarrow 8y-16=4x-16$

$\Rightarrow 4x=8y \Rightarrow x-2y=0$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 94

For real numbers a and b, $f(a, b) = ½ (a + b) + ½ |a – b|$. If $a_n = 1 – 2 + 3 + … + n(–1)^{n-1}$, what is the value of $f(a_1, f(a_2, f(a_3, a_4)))$?

✓A) 2 B) -1 C) 4 D) 6

Explanation:-

$a_1 = 1 \times (-1)^{1-1} = 1 \times (-1)^0 = 1.$
$a_2 = 1 + 2 \times (-1)^{2-1} = 1 + 2 \times (-1)^1 = 1 - 2 = -1.$
$a_3 = 1 - 2 + 3 \times (-1)^{3-1} = 1 - 2 + 3 \times (-1)^2 = 1 - 2 + 3 = 2.$
$a_4 = 1 - 2 + 3 + 4 \times (-1)^{4-1} = 1 - 2 + 3 + 4 \times (-1)^3 = 1 - 2 + 3 - 4 = -2.$

$f(a_3, a_4) = f(2, -2) = ½ (2 - 2) + ½ |2 - (-2)| = 2.$
$f(a_2, f(a_3, a_4)) = f(-1, 2) = ½ (-1 + 2) + ½ |-1 - 2| = 1/2 + 3/2 = 2.$
$f(a_1, f(a_2, f(a_3, a_4))) = f(1, 2) = ½ (1 + 2) + ½ |1 - 2| = 3/2 + 1/2 = 2.$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 95

What is the value of a if $x^2 – 4x + 3$ is a factor of $x^3 + (a – 4)x^2 + (3 – 4a)x + 3$? (in numerical value)

A) 1 B) C) D)

Explanation:-

The factors of $x^2 – 4x + 3$ are also factors of $x^3 + (a – 4)x^2 + (3 – 4a)x + 3$.
In other words, $(x – 3)$ and $(x – 1)$ are factors of $x^3 + (a – 4)x^2 + (3 – 4a)x + 3$.
Substituting $x = 1$ in the expression, we get $1 + (a – 4) + (3 – 4a) + 3 = 0$
$\rightarrow -3a + 3 = 0$
$\rightarrow 3a = 3$
$\rightarrow a = 1$.

Alternately, we could also substitute $x = 3$ in the expression to get $a = 1$.

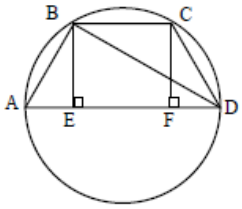
DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 96

An isosceles trapezium is inscribed in a circle of radius 10 cm so that the non-parallel sides are 10 cm each. What is the area of the trapezium if one of its sides is the diameter of the circle?

A) $100\sqrt{2}$ cm^2 B) $50\sqrt{3}$ cm^2 ✓C) $75\sqrt{3}$ cm^2 D) $25\sqrt{2}$ cm^2

Explanation:-



Since AD is the diameter of the circle, we know that ∠ABD = 90°. In ΔABD, since AB = ½ AD, we can conclude that ∠D = 30° and ∠A = 60°.
Drop BE ⊥ AD and CF ⊥ AD. Since ΔBEA is a 30°–60°–90° triangle, BE = $5\sqrt{3}$ cm and AE = 5 cm.
Since ABCD is an isosceles trapezium, we get AE = FD = 5 cm and EF = BC = 10 cm.
Thus the area of trapezium ABCD = ½ × (10 + 20) × $5\sqrt{3}$ = $75\sqrt{3}$ cm^2.

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 97

A trades man charges 20% above cost price. He then allows a discount of 10%. After the whole trasaction what will be his gain% or loss%?

A) 12% loss B) 10% gain ✓C) 8% gain D) None of these

Explanation:-
Let CP= 100
Marked price = 120
Discount $= 120 \times \frac{10}{100} = 12$ Rs
Find SP = 120-12=108 Rs
∴ profit = 108-100=8%

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 98

Two equal sums were borrowed at 8% simple interest per annum for 2 years and 3 years respectively. The difference in the interest was Rs. 56. The sums borrowed were (in Rs.)

A) 700 B) C) D)

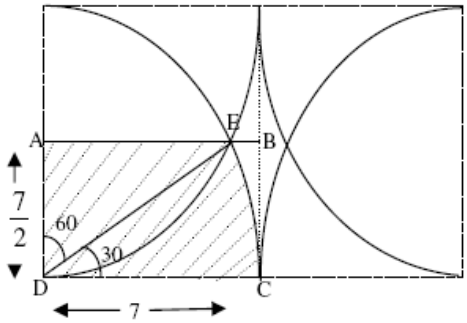
Explanation:-
SI = P×R×T/100
SI_1 - SI_2 = (P×8×3)/100 - (P×8×2)/100
56 = 0.24P - 0.16P
P = 700
Thus, the sums borrowed were Rs.700 each.

DIRECTIONS for the question: *Mark the best option:*
Question No. : 99

In a rectangle of size 7 cm by 14 cm, quarter circles of radius 7 cm are drawn at each of the 4 vertices. What is the area of the rectangle which is not covered by any of the circles (in cm^2)?

A) 2.17 B) 6.73 ✓C) 4.76 D) 12.44

Explanation:-



Let us look at only one of the halves – because by symmetry the same shall apply to the other half.
We have a square of side 7cm. So area = $49cm^2$. In fact let us concentrate on an area which is half of this square i.e. the rectangle ABCD (= 24.5 cm^2). This is occupied by a sector EDC of arc length 30° and a triangle AED of base 3.5 cm and height where the sector cuts the edge i.e at point E.
Height AE = $7 \cos 30 = 7\sqrt{3}/2$. So the unshaded area of the rectangle ABCD will be equal to area of rectangle – area of the sector – area of the triangle = $24.5 - 22/7 \times 1/12 \times 49 - 1/2 \times 3.5 \times 7\sqrt{3}/2 = 49/2 - 22 \times 1/12 \times 7 - 49\sqrt{3}/8 = 7\ (7/2 - 11/6 - 7\sqrt{3}/8)$
$= 7(3.5 - 1.83 - 1.5) = 1.19$.
So total area not covered will be $4 \times 1.19 = 4.76$.

DIRECTINOS for the question: *Mark the best option:*
Question No. : 100

An aquarium and a fountain of circular shapes are built in a circular park of diameter 12 metres. The fountain and aquarium are tangential to each other and also tangential to the circular park. The area of the park outside the aquarium and fountain is 4/9 of the area of the circular park. What is the difference between the radii of the fountain and the aquarium, if it is known that their radii are integers?

A) 6 B) 0 ✓C) 2 D) 4

Explanation:-

Suppose the radius of the fountain is f and that of the aquarium is a.
Then the sum of their areas is $\pi(f^2 + a^2) = (5/9) \times \pi \times 36 = 20\pi$.
Since a and f are integers, a^2 and f^2 are perfect squares. The only possible values are 4^2 and 2^2.
The required difference is 2.