

Solutions of Mock CAT – 13 2017

Scorecard (procreview.jsp? qsetId=9jeFZAGqnJo=&qsetName=Mock CAT – 13 2017)	Accuracy (AccSelectGraph.jsp? qsetId=9jeFZAGqnJo=&qsetName=Mock CAT – 13 2017)	Time Analysis (TimeAnalysis.jsp? qsetId=9jeFZAGqnJo=&qsetName=Mock CAT – 13 2017)	Qs Analysis (QsAnalysis.jsp? qsetId=9jeFZAGqnJo=&qsetName=Mock CAT – 13 2017)
VRC	DILR		QA

Sec 1

Directions for questions 1-6: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

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Separatism also fell short in Atwood's view, for it argued that the way women can best care for and/or support one another and combat patriarchy is through the creation of female-only spaces and relationships. These spaces manifested themselves in the form of all-female banks, businesses, and social agencies, and the like. However, the creation of these female-only spaces could be problematic in that women were choosing merely to separate themselves from society instead of attempting to educate men and bring about some social reform. Therefore, Separatism fails to offer a viable alternative to the existing system, which, according to Pollock, trains men "to equate power with power over others, to view aggression as a valid means of problem-solving" thus ensuring the continuance of patriarchal systems for future generations. Hole and Levine characterize the Separatists as women who "took a pro-woman anti-brainwashing position," explaining that "these women rejected the traditional explanations for female behaviour, agreeing with other feminist that women's behaviour is not the result of inherent psychological characteristics". Furthermore, as Hole and Levine point out, Separatists believed women's actions were the result of "continual, daily pressure from men". By removing themselves from the sphere of male influence, expectation, and judgment, women could freely express their true femininity and female identity.

Another potential downfall of Separatism was its tendency to encourage resentment between the sexes. *The Handmaid's Tale* contains hints of Atwood's criticism of Separatism. Offred's mother, a dedicated Second-Wave Feminist comments: "I don't want a man around, what use are they except for ten seconds' worth of half babies. A man is just a woman's strategy for making other women" (Atwood). This marked disdain for the male sex merely reversed the extant social attitudes, without offering solutions to the issue of gender inequalities.

Materialist Feminism had a strong foundation in class-consciousness. This branch may have been initially appealing to Atwood because of her own liberal political leanings. However, Atwood ultimately rejected the Materialist Feminist approach. Members of this branch of feminism were deeply involved with and committed to left-wing politics, and opposed capitalism in favour of socialism. They believed that the path to freedom and equality lay in the abolition of the faulty economic system whose division of labour necessarily privileged men over women, thereby relegating women to positions of inferiority. Hole and Levine point out that for Materialist Feminists, "women's issues" [were viewed] as part of the larger struggle for socialist change". Often this meant that women's issues were submerged within the drive for social, economic, and political revolution.

Radical Feminism, the branch of Second-Wave Feminism, Atwood found most alarming, primarily focused on what prominent Feminist theorist bell hooks calls "the annihilation of sex roles". Radical Feminists drew on Cultural Feminism and Separatism and advocated, as Hedges points out, "nothing less than a complete revolution in terms of gendered oppression and resistance on all fronts, public and private". Radical Feminists were concerned with the implications and effects of women's oppression under the patriarchal social order. Radical Feminists sought to create awareness of the disparate needs of women through the identification and deeper politicization of "women's issues," more specifically, reproductive rights, pornography legislation, sexuality, and equality in relationships.

Q.1

The primary purpose of the passage is to:

- 1 ☐ analyse different definitions of 'Separatism', so as to have a better understanding of the term.
- 2 ☐ analyse the representation of gender in writings of different critics from various eras.
- 3 ☐ analyse how Atwood explores the social myths defining femininity as well as women's relationship with each other and with men.
- 4 ☐ explore Hole and Levine's ideas on Separatists and Material Feminism.

Solution:

Correct Answer : 3

Genre of the passage – Feminism / Political Theory/Cultural Studies/Women's Studies

'Separatism' is discussed only in two paragraphs of the given passage. There are other concepts related to feminism that the author discusses. Hence, option 1 is ruled out. Option 2 is ruled out since it is beyond the scope of the passage. There are a few comments (concerning feminism) by different writers. Most of these writers are quoted to analyse the gender division and not "portrayal of gender". Hole and Levine's ideas have been quoted but they constitute a fragment of the passage. Therefore, that cannot be that primary

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purpose of the passage. Option 3 is the most appropriate since Atwood is the only person discussed in all the paragraphs of the given passage. Through the use of ideas like 'gynocentric culture' and Separatism in *The Handmaid's Tale*, the author is introducing feminine social myths as explored by Atwood. Also 'female only spaces' is about the relationship of women with other women.

FeedBack

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Q.2

Which of the following combinations is incorrect in terms of the ideas associated with that branch as per the passage?

- 1 ☐ Material Feminism – Negligence of women specific issues in favour of the larger goal of socialism
- 2 ☐ Radical Feminism – Advocacy of a complete overhaul of the patriarchal social order
- 3 ☐ Cultural Feminism – Rejection of the notion that women are by nature more empathetic and kind
- 4 ☐ Separatism – Display of scorn for the existing social order without providing any viable alternative

Solution:

Correct Answer : 3

Genre of the passage – Feminism / Political Theory/Cultural Studies/Women's Studies

Option 3 is the correct answer. Option 1 has the correct combination. Refer to the lines "They believed that the path to freedom and equality...of the larger struggle...Often this meant that women's issues were submerged...political revolution." Option 2 is correct. Refer to the lines "Radical Feminists drew on...all fronts, public and private". Option 3 is the incorrect match. According to the passage Cultural feminism wrongly accepts this assumption. "This gynocentric culture is predicated on the assumption that women are inherently kinder and gentler than men." This assumption is criticized by Atwood. Hence, Cultural Feminism doesn't reject but rather advocates this assumption. Option 4 is correct. Refer to the line "This marked disdain for the male sex merely reversed the extant social attitudes, without offering solutions to the issue of gender inequalities."

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Answer key/Solution

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Q.3

On the basis of the given passage, which of the following is true regarding Atwood's views on feminism?

- 1 ☐ While supporting social equality for women, Atwood envisioned antagonistic behaviours or approaches as the means to achieve this.
- 2 ☐ Atwood was captious of the "female-only" spaces.
- 3 ☐ Second-Wave Feminism troubled Atwood due to the lack of female solidarity.
- 4 ☐ The changing definition of the word 'woman' during the second-Wave Feminism posed a great difficulty for Atwood.

Solution:

Correct Answer : 2

Genre of the passage – Feminism / Political Theory/Cultural Studies/Women's Studies

Option 2 is the correct answer. Option 1 is ruled out since Atwood did not aim at antagonistic behaviours. Exactly its opposite has been stated in the passage. Options 3 and 4 are ruled out since they are nowhere stated in the passage. Option 2 is the most appropriate as it is directly stated in the passage. The word 'captious' means critical. The opening sentence of paragraph 2 clearly states that Atwood was not in favour of Separatism due to its support for the creation of female-only spaces. This means that Atwood was against female-only spaces.

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Answer key/Solution

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Q.4

Which of the following is true, according to the passage, regarding the ideas of Material Feminism?

- 1 ☐ Followers of materialist feminism considered capitalism as a force responsible for women's oppression.
- 2 ☐ Materialist feminism views oppression as an unchangeable reality of any woman's life.
- 3 ☐ Due to its focus on capitalism, materialist feminism fails to include women of different ethnicities.
- 4 ☐ Due to its faulty focus on socialism, Material Feminism treats women as the physically and emotionally weaker sex.

Solution:

Correct Answer : 1

Genre of the passage – Feminism / Political Theory/Cultural Studies/Women's Studies

Refer to the fourth paragraph. Option 1 has been clearly stated in the paragraph. Option 2 is incorrect because of the word "unchangeable". It distorts the meaning of the given paragraph. Option 3 is wrong as failure to include certain groups of women has been mentioned with respect to "gynocentrism" in the passage. Option 4 is wrong because this doesn't represent the view of Material Feminists. It simply states one of the main concerns of the same group.

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Q.5

Which of the following ideas can be inferred from the passage?

- 1 ☐ Atwood was opposed to every concept or depiction that pitied the female gender against the male.
- 2 ☐ Radical feminism advocated an extreme measure to achieve its ideological goal.
- 3 ☐ Cultural feminists showed no concern for any political or social agenda.
- 4 ☐ Material feminism, in its quest for a larger and better cause in the society, gave more importance to women empowerment.

Solution:

Correct Answer : 2

Genre of the passage – Feminism / Political Theory/Cultural Studies/Women's Studies

Option 2 is the correct answer. Option 1 is an invalid inference as "every concept or depiction" is too broad a phrase to be factually supported by the passage. Option 2 is correct as Radical Feminism sought a complete revolution, as per the passage. It can be termed "an extreme measure". Option 3 is wrong because it is merely the opinion of Atwood. It can't be inferred that Cultural Feminists too believed in this criticism. Option 4 is wrong because the exact opposite of this statement has been mentioned in the passage.

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Q.6

Based on the third paragraph, which of the following can be inferred about the author's attitude towards Separatism?

- 1 ☐ The author bemoans the existence of a radical concept like Separatism.
- 2 ☐ The author is critical of at least one tenet of Separatism.
- 3 ☐ The author is not critical of Separatism as he/she treats it with respect.
- 4 ☐ The author grudgingly accepts the tenets of Separatism.

Solution:

Correct Answer : 2

Genre of the passage – Feminism / Political Theory/Cultural Studies/Women's Studies

Refer to the first line of the third paragraph. It clearly supports option 2. Option 1 is too extreme. Similarly option 4 can't be inferred as the author has kept an overall critical tone in exposing the flaws of the ideology of Separatism. Option 3 is wrong for the same reason.

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Answer key/Solution

FeedBack

Directions for questions 7-9: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

The legacy of Jaroslav Hašek remains because of one comic masterpiece, *The Adventures of the Good Soldier Švejk*, which was published in 1923. The Czech writer Arnošt Lustig said that Joseph Heller once told him at a New York party for Milos Forman in the late Sixties that he could not have written *Catch-22* without first reading Hašek's unfinished World War One satire.

In Hašek's bitterly funny tale, a crazy state bureaucracy traps a hapless soldier – in much the same way Heller's hero Yossarian is trapped. Bohemian writer Jaroslav Hašek, who was born on April 30, 1883, died of heart failure aged just 39, in the village of Lipnice. His father, Josef, had died from drink when Hašek was 13.

Hašek knew all about the bizarre nature of life in pre and post-war Czechoslovakia. *The Good Soldier Švejk* was a provocative, mickey-taking book and it was removed from Czechoslovak army libraries in 1925. The Polish translation was confiscated in 1928 and the novel (sometimes spelled as Schweik or Schwejk) was also suppressed in Bulgaria. The German translation was burned on Nazi bonfires in 1933.

Writing was Hašek's true vocation after trying other occupations. He had been fired from a job with Slava Bank and was also axed as editor of the magazine *Svet zvířat* (the world of animals) because he invented animals and wrote mock-serious pieces about his creations.

The writer, who spent time in a mental asylum, had a taste for pranks. And he was, like Švejk, a dog-stealer.

The power of Švejk to subvert continued long after the author's death, when he was an overweight and somewhat disconsolate figure.

Gustáv Husák, the General Secretary of the Czechoslovak Communist Party who replaced Prague Spring reformer Alexander Dubček in 1968, told the people in the late Seventies to "stop Svejking!".

In the book, Švejk always had a reason for his strange mishaps, such as joining the enemy by mistake. The incompetent soldier undermines the authority of the Austrian monarchy through his feigned stupidity. "Great times call for great men," was Hašek's ironic comment about Švejk.

Q.7

What early instance of comic prowess did Hasek portray which would later enable him to produce his masterpiece?

- 1 ☐ As an editor of a serious magazine on animals, he would invent animals and produce intricate write-ups on his creations and this penchant for producing mock-serious fantastic situations evolved into his masterpiece.
- 2 ☐ His exploits as a hapless soldier and the way he exploited the bureaucracy to get out of tricky situations earned him a reputation of being mock-serious and this helped him in writing his novel.
- 3 ☐ His father's drunken actions helped him to base Svejck on him and the rest as they say is history.
- 4 ☐ His bohemian lifestyle helped him to come up with the great satire.

Solution:

Correct Answer : 1

Genre of the passage: Literature/Literary Criticism/Review of an author

The correct answer is Option 1. The activity of writing mock-serious articles on imaginary animals for a reputed magazine of animals while serving as the editor is an act of anarchic subversion, something which 'The Good Soldier Svejck' is known for. The other options either go beyond the passage or are logically irrelevant in this context.

Bookmark

Answer key/Solution

FeedBack

Directions for questions 7-9: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

The legacy of Jaroslav Hašek remains because of one comic masterpiece, *The Adventures of the Good Soldier Švejk*, which was published in 1923. The Czech writer Arnošt Lustig said that Joseph Heller once told him at a New York party for Milos Forman in the late Sixties that he could not have written *Catch-22* without first reading Hašek's unfinished *World War One* satire.

In Hašek's bitterly funny tale, a crazy state bureaucracy traps a hapless soldier – in much the same way Heller's hero Yossarian is trapped. Bohemian writer Jaroslav Hašek, who was born on April 30, 1883, died of heart failure aged just 39, in the village of Lipnice. His father, Josef, had died from drink when Hašek was 13.

Hašek knew all about the bizarre nature of life in pre and post-war Czechoslovakia. *The Good Soldier Švejk* was a provocative, mickey-taking book and it was removed from Czechoslovak army libraries in 1925. The Polish translation was confiscated in 1928 and the novel (sometimes spelled as Schweik or Schwejk) was also suppressed in Bulgaria. The German translation was burned on Nazi bonfires in 1933.

Writing was Hašek's true vocation after trying other occupations. He had been fired from a job with Slava Bank and was also axed as editor of the magazine *Svet zvířat* (the world of animals) because he invented animals and wrote mock-serious pieces about his creations.

The writer, who spent time in a mental asylum, had a taste for pranks. And he was, like Švejk, a dog-stealer.

The power of Švejk to subvert continued long after the author's death, when he was an overweight and somewhat disconsolate figure.

Gustáv Husák, the General Secretary of the Czechoslovak Communist Party who replaced Prague Spring reformer Alexander Dubček in 1968, told the people in the late Seventies to "stop Svejking!".

In the book, Švejk always had a reason for his strange mishaps, such as joining the enemy by mistake. The incompetent soldier undermines the authority of the Austrian monarchy through his feigned stupidity. "Great times call for great men," was Hašek's ironic comment about Švejk.

Q.8

From your understanding of the passage, why do you think were Hasek's work banned across Europe?

- 1 ☐ The events which shaped the coming years after the First World War was not conducive to satire and this caused the novel being banned.
- 2 ☐ Hasek was well aware of the pre and post war difficulties of life and his novel subverted most militaristic structures and constantly undermined authoritarian figures.
- 3 ☐ Svjek was overweight and this impacted woefully on the forced militarization of most nations across Europe at that time.
- 4 ☐ Dog stealing, and other anti-social activities grew exponentially and this made life difficult for authorities who saw no other option than banning it outright.

Solution:

Correct Answer : 2

Genre of the passage: Literature/Literary Criticism/Review of an author

The correct answer is Option 2. In the second paragraph it is clearly mentioned how Hasek was aware of the difficulties of pre and post war life. He was also a bohemian who would make fun of authoritarian figures and this was well reflected in his novel. This lead to most European nations, then reeling under military dictatorship to outright ban the novel. The other options are beyond the scope of the passage and hence shall be eliminated.

FeedBack

Bookmark

Answer key/Solution

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Q.9

The positive legacy of Hasek's novel as charted in the passage is that:

- 1 ☐ people from Prague challenged the authorities by acting in an incompetent fashion so as to create disturbances for the authoritarian rule.
- 2 ☐ Hasek's novel served as an inspiration behind a lot of acts of subversion which helped people fight against totalitarian regimes.
- 3 ☐ the novel Catch-22 would not have been created had it not been for Hasek's work, a claim openly acknowledged by Josphe Heller.
- 4 ☐ Hasek has helped in spreading caution against war and governments.

Solution:

Correct Answer : 3

Genre of the passage: Literature/Literary Criticism/Review of an author

The correct answer is Option 3. In the opening passage itself the author talks about how Hasek's legacy is still alive through other literary works. Options 1 and 2 are too extreme. The passage doesn't give sufficient information to support these two options. The other options are beyond the scope of the passage and hence shall be eliminated. Option 4 is misleading. Hasek was not against all sorts of governments.

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Answer key/Solution

Directions for questions 10 and 11: In each question, five sentences are given. Of these, four sentences can be logically sequenced to make a coherent paragraph. One of the sentences does not belong to the paragraph. Type in the sentence number that doesn't fit into the paragraph.

Q.10

1. Manchester City have attempted to break the impasse over Sánchez's future by indicating that they would be prepared to include Raheem Sterling in a deal for the Chilean forward.
2. The Chilean forward bloc looks to take further inspiration from the way the city of Manchester has engaged in changing its future.
3. The deal looks set to take place despite Raheem's understandable qualms regarding shifting base since he looks more than comfortable in the new look City.
4. The England international, 22, is understood to be bemused at the decision, but is open to the idea of moving back to London.
5. Sánchez, who has only one year remaining on his contract and has refused to sign an extension, has been a target for City all summer having indicated he would like to work for their manager, Pep Guardiola.

Solution:

Correct Answer : 2

The correct answer is sentence 2. This sentence talks about politics and has nothing to do with the other ones. The other sentences can be arranged into a concrete paragraph but 2 does not fit. 1453 is the correct order.

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Answer key/Solution

Directions for questions 10 and 11: In each question, five sentences are given. Of these, four sentences can be logically sequenced to make a coherent paragraph. One of the sentences does not belong to the paragraph. Type in the sentence number that doesn't fit into the paragraph.

Q.11

1. Flood control officials in Houston are reporting that water levels behind the Addicks dam have reached the edge of the wall, and floodwater is beginning to spill over.
2. Addicks is one of two dammed Houston reservoirs that officials have feared could begin spilling into Buffalo Bayou, the river that runs through the city, further inundating the surrounding areas.
3. The dam has been a spot of controversy ever since its inception by the erstwhile government and has occasionally engendered passionate protests over the way it was constructed following forceful eviction of impoverished families.
4. Spill over doesn't necessarily mean that the dam will be compromised; however, officials began releasing water from behind the dam yesterday to ease pressure.
5. The more water that sits behind a dam, the more likely the chance of a catastrophic breach.

Solution:

Correct Answer : 3

The correct answer is 3. While the other sentences form a passage, 3 sticks out because it steers into a different topic altogether. 5214 is the correct order.

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Answer key/Solution

Directions for questions 12-17: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

Imagine this. In late 1936, shortly after the publication of his classic *General Theory of Employment, Interest and Money*, Keynes is cryogenically frozen so he can return 80 years later.

Things were looking grim when Keynes went into cold storage. The Spanish civil war had just begun, Stalin's purges were in full swing, and Hitler had flouted the Treaty of Versailles by remilitarising the Rhineland. The recovery from the Great Depression was fragile. It was the year of Franklin Roosevelt's second presidential election victory.

Waking up in 2016, Keynes wants to know what's happened in the past eight decades. He's told that the mass unemployment of the 1930s finally came to an end but only because military production was ramped up by the great powers as they came to blows for the second time in a quarter of a century.

The good news, Keynes hears, is that lessons were learned from the 1930s. Governments committed themselves to maintaining demand at a high enough level to secure full employment. They recycled the tax revenues that accrued from robust growth into higher spending on public infrastructure. They took steps to ensure that there was a narrowing of the gap between rich and poor.

The bad news was that the lessons were eventually forgotten. The period between Franklin Roosevelt's second win and Donald Trump's arrival in the White House can be divided into two halves: the 40 years up until 1976 and the 40 years since.

Keynes discovers that governments deviate from his ideas. Instead of running budget surpluses in the good times and deficits in the bad times, they run deficits all the time. They fail to draw the proper distinction between day-to-day spending and investment. In Britain, December 1976 was the pivotal moment. Matters came to a head in early December when a divided and fractious cabinet agreed that austerity was a price that had to be paid for a loan from the International Monetary Fund, which was needed to prop up the crashing pound.

Subsequently, Keynes is informed, there was a paradigm shift. Labour had been reluctant converts to monetarism; the Thatcherites who followed were true believers. Controls on capital were lifted, full employment was abandoned as the prime policy goal, trade union power was curbed, taxes for the better off were cut, inequality was allowed to widen, finance waxed as manufacturing waned.

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That explains why the headlines I can see from 2016 bear so much resemblance to those from 1936: high unemployment and a lack of growth that has bred deep public resentment. That explains the referendum results in the UK and Italy, the outcome of the US presidential election and the growing support for far-right parties in Germany and France.

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The answer given is that initially central banks slashed official interest rates to levels never seen before. In the UK, borrowing costs were reduced to 0.5% even lower than the trough of 2% reached after the pound came off the Gold Standard in 1931.

But that was not all. Central banks also bought bonds from private institutions, with the aim of increasing the supply of money and reducing market – or so called long-term – interest rates. Both initiatives meet with Keynes's approval. His works advised the use of aggressive monetary policy because lower interest rates should help to stimulate higher private sector investment, because in most cases this is what lifts economies out of recession.

But, he adds, if this was a really serious slump then monetary policy might not have been enough on its own. In certain circumstances, it doesn't really matter how low interest rates go – private companies feel so uncertain about the future they are reluctant to invest. People hoard cash rather than spend it. Monetary policy becomes like the drug soma in my friend Aldous Huxley's book *Brave New World* – it calms people down and disguises the fact that something untoward is happening.

Q.12

Which of the following assumptions can be one of the factors for the drastic reduction of unemployment that occurred in the first half of the nineteenth century?

- ☐ 1 Keynesian strategies regarding the reduction of the extremes between wealth and poverty were applied by governments to reduce unemployment.
- ☐ 2 Employment figures rose because the governments ensured that they had a budgetary deficit during both expansion and contraction of the economy.
- ☐ 3 World war II led to an arms race between the countries which resulted in excessive military spending on arms and ammunition thus slowing the mass unemployment of the 1930s.
- ☐ 4 Rising production of the militaries of the great powers and the increased governmental expenditure, generated employment thus positively affecting unemployment.

Solution:

Correct Answer : 4

Option 4 is the correct choice. Option 1 is incorrect as the fourth paragraph states that lessons were learned thus indicating that reducing the wealth gap was not followed in the 1930s. So, the solution for the unemployment mentioned in the third paragraph could not come from any of the actions mentioned in the fourth paragraph. Option 2 is incorrect as the fourth paragraph again indicates otherwise. Option 3 is incorrect as there is no direct mention of "World War II" and thus this option extends beyond the passage. Option 4 rephrases the last statement in the third paragraph and hence is the correct answer.

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Q.13

According to the passage, which of the following is true regarding the views of Keynes?

- 1 ☐ Falling currencies can be stemmed thorough IMF loans and austerity measures by the government.
- 2 ☐ There is a direct relationship between rate of employment and rate of demand in an economy.
- 3 ☐ There is an inverse relationship between rate of employment and rate of demand in an economy.
- 4 ☐ Accumulation of wealth in an economy must be hemmed in by incentivizing investments in production.

Solution:

Correct Answer : 2

Option 2 is the correct choice. Option 1 is incorrect as it runs counter to the Keynesian ideas as can be seen from the fourth paragraph. Option 3 is incorrect and option 2 is the correct answer as can be seen from "Governments committed themselves to maintaining demand at a high enough level to secure full employment". Option 4 extends beyond the scope of the passage.

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Q.14

Which of the following is a situation in which Keynesian ideas may not yield the expected results?

- 1 ☐ When despite low interest rates, private companies are reluctant towards making investments.
- 2 ☐ When the monetary policy leads to slashing of interest rates by central banks to nearly 0.5%.
- 3 ☐ When the soma like effect of monetary policy hides the fall in demand and the rise in unemployment.
- 4 ☐ When market speculation increases due to cuts in spending by governments.

Solution:

Correct Answer : 1

Option 1 is the correct choice as can be seen from the last paragraph. Option 2 is incorrect low rates are propounded by Keynes. Option 3 is incorrect as it extends beyond the scope of the passage. Option 4 is incorrect as there is no mention of this in the passage.

Feedback

Bookmark

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Q.15

Which of the following actions may lift the economy of a country out of recession?

- 1 ☐ the risk averse attitude of private institutions the government gives a tax break.
- 2 ☐ The government amps up money supply thus reducing long-term interest rates.
- 3 ☐ The government recycles the tax revenues that are accruing from robust growth into higher spending on public infrastructure.
- 4 ☐ The government draws a proper distinction between day-to-day spending and investment.

Solution:

Correct Answer : 2

Option 1 is incorrect as can be seen from the second to last paragraph. Option 2 accurately describes the actions that are stated in the second to last paragraph. Option 3 does not talk about an economy in recession. Option 4 is impartial and also out of context in this case.

Bookmark

Answer key/Solution

FeedBack

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The answer given is that initially central banks slashed official interest rates to levels never seen before. In the UK, borrowing costs were reduced to 0.5% even lower than the trough of 2% reached after the pound came off the Gold Standard in 1931.

But that was not all. Central banks also bought bonds from private institutions, with the aim of increasing the supply of money and reducing market – or so called long-term – interest rates. Both initiatives meet with Keynes's approval. His works advised the use of aggressive monetary policy because lower interest rates should help to stimulate higher private sector investment, because in most cases this is what lifts economies out of recession.

But, he adds, if this was a really serious slump then monetary policy might not have been enough on its own. In certain circumstances, it doesn't really matter how low interest rates go – private companies feel so uncertain about the future they are reluctant to invest. People hoard cash rather than spend it. Monetary policy becomes like the drug soma in my friend Aldous Huxley's book *Brave New World* – it calms people down and disguises the fact that something untoward is happening.

Q.16

Which of the following inferences can be made from the passage?

- 1 ☐ Cuts in public spending on military expenses and instead investment in public infrastructure could've avoided the 1929 market crash.
- 2 ☐ Governments purely followed Keynesian economics after the lessons learnt in the 1930s.
- 3 ☐ Cheaper money leading to stock market speculation caused the bubble to burst even after 1976.
- 4 ☐ In the 40-year period between Trump's election and 1976, governments deviated from Keynes ideas.

Solution:

Correct Answer : 4

Option 4 is the correct choice as can be clearly seen from fifth paragraph. Option 1 is incorrect as it extends beyond the scope of the passage. Option 2 is incorrect as the word 'purely' implies a certainty nowhere reflected in the passage. Option 3 is incorrect as the option does not indicate at what point or how many times after 1976 did the bubble burst as it uses the phrase 'even after'.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 12-17: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

Imagine this. In late 1936, shortly after the publication of his classic *General Theory of Employment, Interest and Money*, Keynes is cryogenically frozen so he can return 80 years later.

Things were looking grim when Keynes went into cold storage. The Spanish civil war had just begun, Stalin's purges were in full swing, and Hitler had flouted the Treaty of Versailles by remilitarising the Rhineland. The recovery from the Great Depression was fragile. It was the year of Franklin Roosevelt's

second presidential election victory.

Waking up in 2016, Keynes wants to know what's happened in the past eight decades. He's told that the mass unemployment of the 1930s finally came to an end but only because military production was ramped up by the great powers as they came to blows for the second time in a quarter of a century.

The good news, Keynes hears, is that lessons were learned from the 1930s. Governments committed themselves to maintaining demand at a high enough level to secure full employment. They recycled the tax revenues that accrued from robust growth into higher spending on public infrastructure. They took steps to ensure that there was a narrowing of the gap between rich and poor.

The bad news was that the lessons were eventually forgotten. The period between Franklin Roosevelt's second win and Donald Trump's arrival in the White House can be divided into two halves: the 40 years up until 1976 and the 40 years since.

Keynes discovers that governments deviate from his ideas. Instead of running budget surpluses in the good times and deficits in the bad times, they run deficits all the time. They fail to draw the proper distinction between day-to-day spending and investment. In Britain, December 1976 was the pivotal moment. Matters came to a head in early December when a divided and fractious cabinet agreed that austerity was a price that had to be paid for a loan from the International Monetary Fund, which was needed to prop up the crashing pound.

Subsequently, Keynes is informed, there was a paradigm shift. Labour had been reluctant converts to monetarism; the Thatcherites who followed were true believers. Controls on capital were lifted, full employment was abandoned as the prime policy goal, trade union power was curbed, taxes for the better off were cut, inequality was allowed to widen, finance waxed as manufacturing waned.

You don't need to go on, Keynes says, because I can tell you what happened next. Bashing organised labour and cutting government spending led to a dearth of effective demand that was glossed over by cuts in interest rates. Cheaper money led to some increase in productive investment but this was overshadowed by speculation in the stock market and real estate. Eventually, the bubble burst and – just as in 1929 – there was a stupendous crash.

That explains why the headlines I can see from 2016 bear so much resemblance to those from 1936: high unemployment and a lack of growth that has bred deep public resentment. That explains the referendum results in the UK and Italy, the outcome of the US presidential election and the growing support for far-right parties in Germany and France.

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But, he adds, if this was a really serious slump then monetary policy might not have been enough on its own. In certain circumstances, it doesn't really matter how low interest rates go – private companies feel so uncertain about the future they are reluctant to invest. People hoard cash rather than spend it. Monetary policy becomes like the drug soma in my friend Aldous Huxley's book *Brave New World* – it calms people down and disguises the fact that something untoward is happening.

Q.17

Which of the following changes happened in Britain after 1976?

- 1 ☐ Reducing unemployment was abandoned as the prime policy goal.
- 2 ☐ The taxes for the rich were reduced and for the poor they were increased.
- 3 ☐ The restrictions on capital, prior to 1976, were now lifted.
- 4 ☐ People hoarded cash rather than spend it.

Solution:

Correct Answer : 3

Option 3 is the correct choice based on the 7th paragraph. The other options are factually inaccurate.

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Bookmark

Answer key/Solution

Directions for questions 18-20: Each of the following questions contains a sentence with two blanks. From the given options, choose the one that best completes the sentence. Type in that option number in the space provided below the question.

Q.18

But _____ between pivotal institutions, such as Parliament and the judiciary can be _____ to a democracy's health.

1. benevolence, acromial
2. acrimony, deleterious
3. acrimony, nonvenomous
4. benign, deleterious

Solution:

Correct Answer : 2

2 is the correct answer. The other pairs do not match the given description of the incidents, hence are incorrect. Options 1, 3 and 4, the pairs they represent define opposite functions thus contradicting the given argument.

Bookmark

Answer key/Solution

FeedBack

Directions for questions 18-20: Each of the following questions contains a sentence with two blanks. From the given options, choose the one that best completes the sentence. Type in that option number in the space provided below the question.

Q.19

Time was when you awaited the _____ 'thwack' of the newspaper every morning with considerable anticipation. Heat's up, tea's brewed and the arrival of the daily, or dailies if you subscribed to more than one, set the seal on the early morning _____.

1. onomatopoeic, burnish
2. alliterative, obscurity
3. philanthropic, metaphor
4. harmonic, ritual

Solution:

Correct Answer : 1

1 is the correct answer. The word 'thwack' represents onomatopoeia, and burnish (which means brighten or shine) readily fits in the given sentence than other options. Therefore option 1 is the correct answer. Other options are out of the scope of the given context.

Bookmark

Answer key/Solution

FeedBack

Directions for questions 18-20: Each of the following questions contains a sentence with two blanks. From the given options, choose the one that best completes the sentence. Type in that option number in the space provided below the question.

Q.20

What felt like an apocalyptic onslaught of _____ rains and rapidly rising floodwaters brought the nation's fourth-largest city to its knees yesterday, as highways and residential streets turned to rivers, waist-high waters choked off access to homes and hospitals, and officials begged boat owners to pitch in with an enormous and _____ rescue operation.

1. hurried, tranquil
2. pounding, frantic
3. thunderous, big
4. drizzling, rapid

Solution:

Correct Answer : 2

2 is the correct answer. Pounding rains fits better than the other options. Along with it comes frantic which completes the pair since the boat owners had to pitch in and it was an emergency. In the third option, big is wrong as enormous is already mentioned in the sentence. Other pairs do not go with the given sentence hence are incorrect.

Bookmark

Answer key/Solution

FeedBack

Directions for questions 21-26: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

"Try not to lose your head," could — quite literally — have been all the medical advice needed for ancient Mayan ball players, for whom losing the game could have resulted in ritual sacrifice. But sports have evolved, and so has science. Modern athletes might not fear outright decapitation, but it's become abundantly clear that they do need to worry about the state of their minds. Although the powers that be in major sports organizations have been woefully slow to acknowledge the problem, let alone address it, a growing body of evidence suggests that even routine rattling of the head can have lasting impacts on the brain.

The good news is that attitudes are starting to change. After years of seemingly willful ignorance, sports authorities have bolstered their educational efforts and altered rules to make games safer. In the United States, the National Football League is experimenting with a rule that results in gridiron footballers' ejection should they commit a pair of dangerous fouls, and college football players are already being sent off for 'targeting' offences. World Rugby is testing new rules to make its games safer, and in Australia, the National Rugby League has introduced a trial involving independent-doctor evaluations when players take a bang to the head.

Whether these and other measures will be enough is doubtful. What is clear is that we are only beginning to understand the extent of the harm that modern-day gladiators can sustain. In a study published in the Journal of the American Medical Association, researchers conducted a posthumous analysis of 202 American-football players who took part in a brain-donation programme. The scientists were looking for signs of chronic traumatic encephalopathy (CTE) — a degenerative brain disease — and they found it in 177 players. Among the 111 players from the National Football League, all but one tested positive for CTE. The tests also came out positive in 91% of college-level players and in 21% of those who played only at high school. The study may not be statistically representative of all American-football players, but the results nonetheless speak for themselves.

Last month, representatives from several of the most violent contact sports — rugby, ice hockey, American football and Australian-rules football — gathered in Dublin to discuss ways of preventing and treating head injuries. Sports officials were there to discuss the implementation of recommendations issued by the international Concussion in Sport Group, which has reviewed more than 60,000 studies since its inception in 2001. The upshot is a detailed guidance document focused on diagnosis and treatment, but the group nonetheless acknowledged a daunting grey area in which sports medics — and individual athletes — must continue to make their own judgements.

Science can help society to understand the problem. It can even provide better tools to help coaches and doctors diagnose brain injuries, particularly among young people who are less likely to recognize the inherent dangers of the sports they are playing. A study published in Scientific Reports last December, for instance, suggests that it may be possible to accurately diagnose concussion using a simple brain scan that focuses on how the brain processes sound. But it seems unlikely that high-contact sports will ever be truly safe; nor are they likely to disappear any time soon. In this respect, science's most important contribution has been to shine a light on the problem.

Sports organizations can no longer claim ignorance, and neither can players. The pernicious macho culture that leads to players who suffer head injuries being patched up and sent back onto the field belongs — just like the sometimes-lethal Mayan game of pok-ta-pok — in the past. And managers, coaches and administrators who fail to accept this have no place in modern sport.

Q.21

In the first paragraph, the author is primarily concerned with:

- ☐ 1 Tracing the evolution of association sports and its evolution from sacrificial origins to the modern day socio-cultural phenomenon which govern the life of most people.
- ☐ 2 Trying to establish the inherent dangers to mental health that ball games possess apart from the effects on the body of sportsmen as they age.
- ☐ 3 Trying to not only establish the aberrations ball games can cause on the cognitive and neurological aspects of the players but also pinning the blame of negligence on the authorities who govern the sports.
- ☐ 4 Creating a general consensus among the masses so that contact sports can finally overcome the necessity of using their head and temples and thus making the sport safer.

Solution:

Correct Answer : 3

Genre of the passage - Science/Sports-Science

The correct answer is Option 3. Only through recent studies, it has become apparent that contact sports pose a threat to the brain. This has somehow eluded most authorities and needs to be addressed sooner rather than later. In the passage it is mentioned that, 'Although the powers that be in major sports organizations have been woefully slow to acknowledge the problem, let alone address it, a growing body of evidence suggests that even routine rattling of the head can have lasting impacts on the brain'. The other options go beyond the scope of the first paragraph and hence shall be eliminated.

Feedback

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Q.22

The fresh evidences of dangers that sportspersons face, has ushered in changes like:

- 1 ☐ Authorities now can be held culpable and thus the scope of the big wigs escaping punishment for negligence cannot take place any longer.
- 2 ☐ Punitive measures against players who target opponents and commit rash fouls.
- 3 ☐ Introduction of trials which players have to go through once they commit a heinous foul on the opponent, a protracted process which would in the long run discourage players from being too rash.
- 4 ☐ Acknowledgement on part of the authorities regarding the physical and mental damages a sportsperson can and thereby tweaking the rules which would make the game safer than before.

Solution:

Correct Answer : 4

Genre of the passage - Science/Sports-Science

The correct answer is Option 4. The authorities having acknowledged the dangers to mental health which contact sports possess tweaked rules which would punish players for violent conduct on the pitch. This has been observed by bodies like the NFL. Option 2 only tells half the story and hence shall be eliminated. The other options go beyond the scope of the passage and hence shall be eliminated.

Bookmark

Answer key/Solution

FeedBack

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Q.23

The most important role of science in the sphere of sports according to the passage is:

- 1 ☐ to eradicate the problem of brain injury.
- 2 ☐ to make contact sports absolutely safe.

3 ☐ to highlight the physical problems sports persons face.

4 ☐ to utilize modern methods in an ancient practice.

Solution:

Correct Answer : 3

Genre of the passage - Science/Sports-Science

The correct answer is Option 3. In the penultimate paragraph the author acknowledges how contact sports can never be completely safe. But at the same time science has helped to highlight the problems and also provide concrete solutions. If followed properly, they can be the difference between lifelong suffering and a healthy life. The other options are factually incorrect and hence shall be eliminated. Refer to the line "In this respect, science's most important contribution has been to shine a light on the problem." This question can be answered by the method of elimination.

 **Bookmark**

 **Answer key/Solution**

FeedBack

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Q.24

Science has also helped to highlight a socio-cultural baggage that sports still carry on. It is:

1 ☐ Sports are controlled by the elites, who can go scot free despite endangering sports persons by not bringing in enough changes that can help players from long term injuries.

2 ☐ It is governed by the machismo will of the masses who would rather enjoy dangerous injuries afflicted on the players than accept changes authorities have been trying to usher in since ages.

3 ☐ It inherently upholds a macho culture which has proved a threat to the players more than anyone.

4 ☐ Most people still think of sports as a link to the past.

Solution:

Correct Answer : 3

Genre of the passage - Science/Sports-Science

The correct answer is Option 3. In the passage it is mentioned that, 'The pernicious macho culture that leads to players who suffer head injuries being patched up and sent back onto the field'. Since science highlighted the issue of brain injuries, the act of going directly to play after a head injury can now be judged in new lights. The so called machismo is making the sport lethal and will not be supported further on is what the author hints at. The other options are logically incorrect and hence shall be eliminated.

 **Bookmark**

 **Answer key/Solution**

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Q.25

What is the main idea of the passage?

- 1 ☐ The need to evolve contact sports with accordance to recent studies on the dangers of the game and keep the players' long term health in mind.
- 2 ☐ The need to establish sports science more thoroughly and thus eradicate the dangers which pose a threat to contact sports.
- 3 ☐ The need to make technology an integral part of contact sports and use science to evolve coaching and management.
- 4 ☐ The need to use the latest techniques in sports science to make the players fitter and thus reduce the risks of injuries which would plague sports persons previously.

Solution:

Correct Answer : 1

Genre of the passage - Science/Sports-Science

The correct answer is Option 1. The passage tries to establish how recent scientific researchers have thrown fresh light on the dangers faced by contact sports players. It also implies clearly the need to remove authorities who do not accept these findings and work accordingly to make the game safer. The other options fail to show the full picture and hence shall be eliminated.

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footballers' ejection should they commit a pair of dangerous fouls, and college football players are already being sent off for 'targeting' offences. World Rugby is testing new rules to make its games safer, and in Australia, the National Rugby League has introduced a trial involving independent-doctor evaluations when players take a bang to the head.

Whether these and other measures will be enough is doubtful. What is clear is that we are only beginning to understand the extent of the harm that modern-day gladiators can sustain. In a study published in the Journal of the American Medical Association, researchers conducted a posthumous analysis of 202 American-football players who took part in a brain-donation programme. The scientists were looking for signs of chronic traumatic encephalopathy (CTE) — a degenerative brain disease — and they found it in 177 players. Among the 111 players from the National Football League, all but one tested positive for CTE. The tests also came out positive in 91% of college-level players and in 21% of those who played only at high school. The study may not be statistically representative of all American-football players, but the results nonetheless speak for themselves.

Last month, representatives from several of the most violent contact sports — rugby, ice hockey, American football and Australian-rules football — gathered in Dublin to discuss ways of preventing and treating head injuries. Sports officials were there to discuss the implementation of recommendations issued by the international Concussion in Sport Group, which has reviewed more than 60,000 studies since its inception in 2001. The upshot is a detailed guidance document focused on diagnosis and treatment, but the group nonetheless acknowledged a daunting grey area in which sports medics — and individual athletes — must continue to make their own judgements.

Science can help society to understand the problem. It can even provide better tools to help coaches and doctors diagnose brain injuries, particularly among young people who are less likely to recognize the inherent dangers of the sports they are playing. A study published in Scientific Reports last December, for instance, suggests that it may be possible to accurately diagnose concussion using a simple brain scan that focuses on how the brain processes sound. But it seems unlikely that high-contact sports will ever be truly safe; nor are they likely to disappear any time soon. In this respect, science's most important contribution has been to shine a light on the problem.

Sports organizations can no longer claim ignorance, and neither can players. The pernicious macho culture that leads to players who suffer head injuries being patched up and sent back onto the field belongs — just like the sometimes-lethal Mayan game of pok-ta-pok — in the past. And managers, coaches and administrators who fail to accept this have no place in modern sport.

Q.26

Which of these would act as an appropriate title for the given passage?

- 1 ☐ The Macho Men: How footballers are posing a threat to themselves
- 2 ☐ The Mayan cult: How sports remain a link to an ancient past
- 3 ☐ The Delusion: How modern coaches refuse treatment to football stars
- 4 ☐ Work and Play: How science is making contact sports safer in a long term basis

Solution:

Correct Answer : 4

Genre of the passage - Science/Sports-Science

The correct answer is Option 4. It captures the essence of the article. The author acknowledges that contact sports can never be completely safe. But a middle ground is slowly being paved thanks to the intervention of science and fresher technologies. The other options do no work in this context and hence shall be eliminated.

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Answer key/Solution

Directions for question 27 and 28: Each of the following questions consists of a paragraph followed by four summaries. Choose the option that best captures the essence of the paragraph. Type in the option number in the space provided below the question.

Q.27

People have played on words and pretended to believe that refusing to grant a meaning to life necessarily leads to declaring that it is not worth living. In truth, there is no necessary common measure between these two judgments. One merely has to refuse to be misled by the confusions, divorces, and inconsistencies. One must brush everything aside and go straight to the real problem. One kills oneself because life is not worth living that is certainly a truth— yet an unfruitful one because it is a truism. But does that insult to existence, that flat denial in which it is plunged come from the fact that it has no meaning? Does its absurdity require one to escape it through hope or suicide—this is what must be clarified, hunted down, and elucidated while brushing aside all the rest.

1. Living with the absurd is a matter of facing the fundamental problem of life and maintaining constant awareness of it.
2. Facing the absurd does not entail suicide, but, on the contrary, allows us to live life to its fullest.
3. Facing the absurdity of life or succumbing to it, after the fundamental problem of life has been identified, is the choice that people need to make.
4. People think that life is inherently meaningless and absurd and therefore they give up on life and commit suicide.

Solution:

Correct Answer : 3

Option (3) is the correct answer. Option (1) is incorrect since it does not talk about the choice and the clarification that man needs to make. Option (2) is ruled out since it is a generic statement. Option (4) is ruled out because it is beyond the scope of the passage. Option (3) is the most appropriate because it covers all the important points stated in the paragraph. "The absurd" and "the absurdity of life" are two different concepts.

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Answer key/Solution

Directions for question 27 and 28: Each of the following questions consists of a paragraph followed by four summaries. Choose the option that best captures the essence of the paragraph. Type in the option number in the space provided below the question.

Q.28

Towards the just performance of a great literary work there remain but three methods that I can think on; whereof the wisdom of our ancestors being highly sensible, has, to encourage all aspiring adventures, thought fit to erect three wooden machines for the use of those writers who desire to talk much without interruption. These are the Pulpit, the Ladder, and the Stage-itinerant. For as to the Bar, though it be compounded of the same matter and designe for the same use, it cannot, however, be well allowed the honor of a fourth, by reason of its level or inferior situation exposing it to perpetual interruption from collaterals. Neither can the Bench itself, though raised to a proper eminency, put in a better claim, whatever its advocates insist on.

1. The authors practice ridiculous habits in order to ensure a successful performance of their works.
2. Authors should feel blessed that fate has flung upon them an age that provides them the Pulpit, the Ladder and the Stage-itinerant.
3. An author can become famous only by using the Pulpit, the Ladder and the Stage-itinerant.
4. The writers rise above the crowd and make their thoughts known to the world by using no stuff other than the Pulpit, the Ladder and the Stage-itinerant.

Solution:

Correct Answer : 4

Option (4) is the correct answer. Option (1) is incorrect since the use of the term 'ridiculous habits' is too extreme. Option (2) is incorrect since it cannot be inferred from the paragraph if the authors feel blessed or not. Option (3) is again an extreme option because neither is the paragraph talking about the popularity of authors, nor is it saying that there is no other way that authors can become famous. Option (4) is the most appropriate since it captures the essence of the paragraph. The paragraph is talking about writers who want to talk and hence make their thoughts known to the world. Option (4) shows that such writers reject other devices apart from the three options mentioned in the paragraph.

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Answer key/Solution

Directions for question 29-31: The following question consists of a set of five sentences. These sentences need to be arranged in a coherent manner to create a meaningful paragraph. Type in the correct order of the sentences in the space provided below the question.

Q.29

1. The raiders are still some days' march away and there is hope they may decide Pibor is too large and too poor to be an attractive target.
2. There are almost no cattle any more, and only one trader retains a few sacks of rice.
3. Even the poorly armed, ill-disciplined soldiers – sent from Juba, the capital, to keep order and fend off the rebels – are hungry.
4. Parents send their children to forage for wild fruit, berries and leaves, not to lessons.
5. There is not much to loot in the town, a few hundred huts made of plastic and wood scattered between a river crossing and a dirt airstrip.

Solution:

Correct Answer : 15234

The paragraph follows a general to specific structure. 1 is clearly the opening sentence. 5 follows with the word "town" which creates a mandatory pair with 1. 2 takes the same idea forward. 3 adds to 5 and 2 with the word "even the poorly armed...". 4 follows 3 as it expands on the idea of "hungry".

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Answer key/Solution

Directions for question 29-31: The following question consists of a set of five sentences. These sentences need to be arranged in a coherent manner to create a meaningful paragraph. Type in the correct order of the sentences in the space provided below the question.

Q.30

1. After completion, a picture remains unnamed for several days until some chance word in conversation or some quite unrelated happening suggests a title.
2. The most amusing come from the Dada period when he composed pictures from medical engravings, scientific diagrams, and items cut from sales catalogues.
3. Max Ernst has never ceased to experiment with new and often bizarre techniques.
4. He is known for his fantastic titles as well as for his techniques.
5. He does not make up a title, he waits for a title to suggest itself.

Solution:

Correct Answer : 34152

3 opens the paragraph by disclosing the name of the protagonist of the discussion. 4 follows 3 as it talks about his techniques. 1 comes next as it talks about suggesting a title. 5 comes after that as 1 and 5 follow a particular order of action. 2 is the last sentence as it takes the idea expressed in 5 forward.

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Answer key/Solution

Directions for question 29-31: The following question consists of a set of five sentences. These sentences need to be arranged in a coherent manner to create a meaningful paragraph. Type in the correct order of the sentences in the space provided below the question.

Q.31

1. A decade ago, in September 2007, the Whitechapel Gallery closed its doors for two years to expand and renovate its exhibition space.
2. While its physical walls were stripped bare, however, the gallery persisted in spirit by embarking on a unique collaborative programme to establish Artists' Film International, with partners in cities in 15 countries, from Kabul to Tromso to Buenos Aires.
3. The goal of this collective was to share and extend the craft of film as an artistic medium, and to bring challenging work from around the world to a gallery audience.
4. In years since, the resultant short films, each suggested by one or other of the partner organisations, have been a fixture in the gallery's programme, like vivid messages in a bottle washing up on Whitechapel Road.
5. The films that have been featured – each year has a theme and a pair of films is shown each month – could hardly have been more diverse, but they share an invitation for a certain kind of looking.

Solution:

Correct Answer : 12345

The given paragraph is in the right order.

Directions for questions 32-34: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

In order to justify my friend, he confessed, that this absurd expedient was put into his head by the famous Salmanaazor, a native of the island Formosa, who came from thence to London, above twenty years ago, and in conversation told my friend, that in his country, when any young person happened to be put to death, the executioner sold the carcass to persons of quality, as a prime dainty; and that, in his time, the body of a plump girl of fifteen, who was crucified for an attempt to poison the Emperor, was sold to his imperial majesty's prime minister of state, and other great mandarins of the court in joints from the gibbet, at four hundred crowns. Neither indeed can I deny, that if the same use were made of several plump young girls in this town, who without one single groat to their fortunes, cannot stir abroad without a chair, and appear at a play-house and assemblies in foreign fineries which they never will pay for; the kingdom would not be the worse.

Some persons of a desponding spirit are in great concern about that vast number of destitute, who are aged, diseased, or maimed; and I have been desired to employ my thoughts what course may be taken, to ease the nation of so grievous an encumbrance. But I am not in the least pain upon that matter, because it is very well known, that they are every day dying, and rotting, by cold and famine, and filth, and vermin, as fast as can be reasonably expected. And as to the young labourers, they are now in almost as hopeful a condition. They cannot get work, and consequently pine away from want of nourishment to a degree, that if at any time they are accidentally hired to common labour, they have not strength to perform it, and thus the country and themselves are happily delivered from the evils to come.

Q.32

Which of the following can be inferred from the given passage?

- a) The author concludes the essay by welcoming any proposition that anyone has to offer.
- b) The author is a humanist, concerned about the welfare of the impoverished public but presents a bleak solution to poverty and starvation.
- c) The author finds a solution, to the problems, that is both humane and economical.

☐ Both a and b

☐ Both b and c

☐ Only b

☐ Only c

Solution:

Correct Answer : 3

Genre of the passage: Abstract/Socio-Political Satire

Option (3) is the correct answer. Statement (a) is ruled since the author is not open to any propositions. Statement (c) is ruled out because the author's suggestion is economical, but not humane. It is bleak and dark. Statement (b) is inferred from the passage as the author is concerned about the public, but hides it under his sarcasm and then offers an absurd solution to it.

Directions for questions 32-34: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

In order to justify my friend, he confessed, that this absurd expedient was put into his head by the famous Salmanaazor, a native of the island Formosa, who came from thence to London, above twenty years ago, and in conversation told my friend, that in his country, when any young person happened to be put to death, the executioner sold the carcass to persons of quality, as a prime dainty; and that, in his time, the body of a plump girl of fifteen, who was crucified for an attempt to poison the Emperor, was sold to his imperial majesty's prime minister of state, and other great mandarins of the court in joints from the gibbet, at four hundred crowns. Neither indeed can I deny, that if the same use were made of several plump young girls in this town, who without one single groat to their fortunes, cannot stir abroad without a chair, and appear at a play-house and assemblies in foreign fineries which they never will pay for; the kingdom would not be the worse.

Some persons of a desponding spirit are in great concern about that vast number of destitute, who are aged, diseased, or maimed; and I have been desired to employ my thoughts what course may be taken, to ease the nation of so grievous an encumbrance. But I am not in the least pain upon that matter,

because it is very well known, that they are every day dying, and rotting, by cold and famine, and filth, and vermin, as fast as can be reasonably expected. And as to the young labourers, they are now in almost as hopeful a condition. They cannot get work, and consequently pine away from want of nourishment to a degree, that if at any time they are accidentally hired to common labour, they have not strength to perform it, and thus the country and themselves are happily delivered from the evils to come.

Q.33

Clearly, the author's tone is satirical. Why do you think does the author makes use of satire in writing this passage?

- ☐ 1 Because the author is afraid of the consequences of discussing such a serious issue directly.
- ☐ 2 Because in this way he is able to find an unjust occurrence (here the poor condition of the destitute) and offer an appropriate solution to it.
- ☐ 3 Because in this way he can freely raise questions about serious matters, like the condition of the poor, that most people find difficult to discuss.
- ☐ 4 Because the author simply wants to mock at the existence of plump girls and poor people.

Solution:

Correct Answer : 3

Genre of the passage: Abstract/Socio-Political Satire

Option (3) is the correct answer. Option (1) is ruled out since the author's fear is nowhere suggested. Option (2) is ruled out since it is partially correct. The author fails to provide an appropriate solution to the problem and says that those people are rotting and dying on their own. In case of plump girls, his solution is really absurd. Option (4) is incorrect since the author is not mocking at the plump girls or poor people, but at those who are least concerned about them.

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Directions for questions 32-34: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

In order to justify my friend, he confessed, that this absurd expedient was put into his head by the famous Salmanaazor, a native of the island Formosa, who came from thence to London, above twenty years ago, and in conversation told my friend, that in his country, when any young person happened to be put to death, the executioner sold the carcass to persons of quality, as a prime dainty; and that, in his time, the body of a plump girl of fifteen, who was crucified for an attempt to poison the Emperor, was sold to his imperial majesty's prime minister of state, and other great mandarins of the court in joints from the gibbet, at four hundred crowns. Neither indeed can I deny, that if the same use were made of several plump young girls in this town, who without one single groat to their fortunes, cannot stir abroad without a chair, and appear at a play-house and assemblies in foreign fineries which they never will pay for; the kingdom would not be the worse.

Some persons of a desponding spirit are in great concern about that vast number of destitute, who are aged, diseased, or maimed; and I have been desired to employ my thoughts what course may be taken, to ease the nation of so grievous an encumbrance. But I am not in the least pain upon that matter, because it is very well known, that they are every day dying, and rotting, by cold and famine, and filth, and vermin, as fast as can be reasonably expected. And as to the young labourers, they are now in almost as hopeful a condition. They cannot get work, and consequently pine away from want of nourishment to a degree, that if at any time they are accidentally hired to common labour, they have not strength to perform it, and thus the country and themselves are happily delivered from the evils to come.

Q.34

According to the passage, which of the following attitudes does the author directly reflect for the poor?

- ☐ 1 The author is at ease and declares himself unworried.
- ☐ 2 The author is unusually anxious about the condition of the poor.
- ☐ 3 The author is prejudiced against the lower classes.
- ☐ 4 The author harbours convivial feelings towards the poor.

Solution:

Correct Answer : 1

Genre of the passage: Abstract/Socio-Political Satire

Option (1) is the correct answer. Clearly option (2) is incorrect. The author says that there are people who are concerned about the poor, but he does not show that he is himself "unusually anxious" about them. Option (3) is ruled out since 'prejudiced' is too harsh a term. The author simply says that any harm or loss done to the poor brings him no pain. This means that he is at ease and unconcerned about the poor. (Though he says this in a sarcastic tone). This makes option (1) correct. The author's feelings are not amiable towards the poor, and hence (4) is also ruled out.

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Sec 2

Directions for questions 35 to 38: Answer the questions on the basis of the information given below.

The table given below gives the number of people entered and exited Iskon temple at various times on 27th August 2017. Temple opens at 7 am and closes down at 12 : 45 pm and all persons leave before 1 pm. No person left the hall within 1 hour of entering.

Time	Enter	Exit
7 am $\leq x \leq$ 8 am	183	
8 am $< x \leq$ 9 am	160	132
9 am $< x \leq$ 10 am	148	117
10 am $< x \leq$ 11 am	120	157
11 am $< x \leq$ 12 noon	97	176
12 noon $< x \leq$ 1 pm	–	–

where x indicate the time in the given interval

Q.35

The number of people who stayed in the temple for more than 5 hours is atmost

Solution:

Correct Answer : 29

For staying in the temple for more than 5 hours, one should have entered before 8 am and left after 12 noon. Now, out of those 183 who entered before 8 am, 132 must have left between 8 - 9 am. Hence, $183 - 132 = 51$ were left in the temple out of those people, who entered before 8 am.

Now, those who entered between 8 to 11 am are $160 + 148 + 120 = 428$ in number and who left between 9 to 12 noon are $117 + 157 + 176 = 450$. So, $450 - 428 = 22$ out of those whose left the temple between 9 to 12 noon had to be from those 51 people who entered before 8 am. So, the remaining $51 - 22 = 29$ people were those who could stay in temple for more than 5 hours.

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Answer key/Solution

Directions for questions 35 to 38: Answer the questions on the basis of the information given below.

The table given below gives the number of people entered and exited Iskon temple at various times on 27th August 2017. Temple opens at 7 am and closes down at 12 : 45 pm and all persons leave before 1 pm. No person left the hall within 1 hour of entering.

Time	Enter	Exit
7 am $\leq x \leq$ 8 am	183	
8 am $< x \leq$ 9 am	160	132
9 am $< x \leq$ 10 am	148	117
10 am $< x \leq$ 11 am	120	157
11 am $< x \leq$ 12 noon	97	176
12 noon $< x \leq$ 1 pm	–	–

where x indicate the time in the given interval

Q.36

The number of people who left the temple within 2 hours of entering is at least

Solution:

Correct Answer : 449

All 132 people who left between 8 am & 9 am would have left within 2 hours of entering. Now, remaining $183 - 132 = 51$ people could leave between 9 am and 10 am after more than 2 hrs in the temple. So, $117 - 51 = 66$ people who left between 9 am – 10 am would have left within 2 hrs.

Now $160 - 66 = 94$ people of the slot, 8 am – 9 am would have left between 10 am – 11 am after 2 hours in the temple and $157 - 94 = 63$ people who left between 10 am – 11 am would have left within 2 hrs in the temple.

Proceeding in the same way, we get required answer as $132 + 66 + 63 + 91 + 97 = 449$.

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Answer key/Solution

Directions for questions 35 to 38: Answer the questions on the basis of the information given below.

The table given below gives the number of people entered and exited Iskon temple at various times on 27th August 2017. Temple opens at 7 am and closes down at 12 : 45 pm and all persons leave before 1 pm. No person left the hall within 1 hour of entering.

Time	Enter	Exit
7 am $\leq x \leq$ 8 am	183	
8 am $< x \leq$ 9 am	160	132
9 am $< x \leq$ 10 am	148	117
10 am $< x \leq$ 11 am	120	157
11 am $< x \leq$ 12 noon	97	176
12 noon $< x \leq$ 1 pm	–	–

where x indicate the time in the given interval

Q.37

The number of people who entered the temple in the interval 7 am $\leq x \leq$ 8 am and left the temple in the interval 10 am $< x \leq$ 11 am is atmost

Solution:

Correct Answer : 51

All 132 people who left between 8 am – 9 am must have entered between 7 am – 8 am. So, the remaining $183 - 132 = 51$ people could have left between 10 am – 11 am.

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Answer key/Solution

Directions for questions 35 to 38: Answer the questions on the basis of the information given below.

The table given below gives the number of people entered and exited Iskon temple at various times on 27th August 2017. Temple opens at 7 am and closes down at 12 : 45 pm and all persons leave before 1 pm. No person left the hall within 1 hour of entering.

Time	Enter	Exit
7 am $\leq x \leq$ 8 am	183	
8 am $< x \leq$ 9 am	160	132
9 am $< x \leq$ 10 am	148	117
10 am $< x \leq$ 11 am	120	157
11 am $< x \leq$ 12 noon	97	176
12 noon $< x \leq$ 1 pm	–	–

where x indicate the time in the given interval

Q.38

Let 'x' be the minimum number of people who left the temple within 2 hrs of entering, and let 'y' be the number of people who exited in the interval 12 noon $< x \leq$ 1 pm. 'y' is what percent (in nearest integer) of 'x'?

Solution:

Correct Answer : 28

As per question 36, $x = 449$.
Now, total number of people who entered in the temple = 708 (i.e., $183 + 160 + 148 + 120 + 97$)
And total number of people exited the temple till 12 noon = 582 (i.e., $132 + 117 + 157 + 176$)
 \therefore y = number of people exited between 12 noon to 1 pm = 126 . (Because all people left before 1 pm.)

$$\therefore \frac{y}{x} \times 100 = \frac{126}{449} \times 100 \approx 28\%$$

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Answer key/Solution

Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

A train stops at exactly six intermediate stations- A , B, C, D, E and F- in that order- between its originating station and destination station. At each of the intermediate stations, twice as many people get in as that of those get down. The numbers of people getting down at the intermediate stations are all prime numbers, one each between 0 and 10, 10 and 20, 20 and 30, 30 and 40, 40 and 50, 50 and 60, in the order of the stations given above. The absolute difference between the number of people getting in at any two consecutive intermediate stations is at least 20. The total number of passengers getting down at all the intermediate stations together is an even number. Also no person gets in and gets down at the same station.

Q.39

Which of the following cannot be the number of people getting down at any intermediate station?

1 ☐ 47

2 ☐ 3

3 ☐ 17

4 ○ 23

Solution:**Correct Answer : 3**

As the number of people getting down is a prime number, the possible number of people getting in and getting down at different intermediate stations can be shown as below:

Origin	Getting in	Getting down
A	6/10/14	3/5/7
B	26/34/38	13/17/19
C	46/58	23/29
D	74	37
E	94	47
F	118	59

The minimum number of people getting in at A cannot be less than 6. Now, considering the difference in number of people of station C and station D must be 20 or more, the possible number of people getting in and getting down is shown as below:

Origin	Getting in	Getting down
A	6	3
B	26	13
C	46	23
D	74	37
E	94	47
F	118	59

17 people getting down is not possible.
Hence option (3) is correct.

 **Bookmark**
 **Answer key/Solution**

Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

A train stops at exactly six intermediate stations- A, B, C, D, E and F- in that order- between its originating station and destination station. At each of the intermediate stations, twice as many people get in as that of those get down. The numbers of people getting down at the intermediate stations are all prime numbers, one each between 0 and 10, 10 and 20, 20 and 30, 30 and 40, 40 and 50, 50 and 60, in the order of the stations given above. The absolute difference between the number of people getting in at any two consecutive intermediate stations is at least 20. The total number of passengers getting down at all the intermediate stations together is an even number. Also no person gets in and gets down at the same station.

Q.40

What is the minimum number of people with which the train starts from its originating station?

1 ○ 10

2 ○ 11

3 ○ 3

4 ○ 8

Solution:**Correct Answer : 1**
 **Bookmark**
 **Answer key/Solution**

As the number of people getting down is a prime number, the possible number of people getting in and getting down at different intermediate stations can be shown as below:

Origin	Getting in	Getting down
A	6/10/14	3/5/7
B	26/34/38	13/17/19
C	46/58	23/29
D	74	37
E	94	47
F	118	59

The minimum number of people getting in at A cannot be less than 6. Now, considering the difference in number of people of station C and station D must be 20 or more, the possible number of people getting in and getting down is shown as below:

Origin	Getting in	Getting down
A	6	3
B	26	13
C	46	23
D	74	37
E	94	47
F	118	59

To get minimum number of people with which the train would have started, let's look at number of people getting down at B which is 13.

Let train started with x number of people. Now, at the station A, 6 got in & 3 got down which means $x + 6 - 3 = x + 3$ remained in the train. So for 13 to get down at B, the train should have started a minimum $x = 10$ people.

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Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

A train stops at exactly six intermediate stations- A, B, C, D, E and F- in that order- between its originating station and destination station. At each of the intermediate stations, twice as many people get in as that of those get down. The numbers of people getting down at the intermediate stations are all prime numbers, one each between 0 and 10, 10 and 20, 20 and 30, 30 and 40, 40 and 50, 50 and 60, in the order of the stations given above. The absolute difference between the number of people getting in at any two consecutive intermediate stations is at least 20. The total number of passengers getting down at all the intermediate stations together is an even number. Also no person gets in and gets down at the same station.

Q.41

If the train starts from its originating station with the minimum number of people possible, what is the number of people in the train when it reaches its destination station?

1 ☐ 185

2 ☐ 192

3 ☐ 190

4 ☐ 195

Solution:

Correct Answer : 2

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Answer key/Solution

As the number of people getting down is a prime number, the possible number of people getting in and getting down at different intermediate stations can be shown as below:

Origin	Getting in	Getting down
A	6/10/14	3/5/7
B	26/34/38	13/17/19
C	46/58	23/29
D	74	37
E	94	47
F	118	59

The minimum number of people getting in at A cannot be less than 6. Now, considering the difference in number of people of station C and station D must be 20 or more, the possible number of people getting in and getting down is shown as below:

Origin	Getting in	Getting down
A	6	3
B	26	13
C	46	23
D	74	37
E	94	47
F	118	59

As from question 40, minimum people from originating station can be 10.

⇒ Number of people when train reaches its destination station =
 $10 + 6 + 26 + 46 + 74 + 94 + 118 - 3 - 13 - 23 - 37 - 47 - 59 = 192$.

FeedBack

Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

A train stops at exactly six intermediate stations- A , B, C, D, E and F- in that order- between its originating station and destination station. At each of the intermediate stations, twice as many people get in as that of those get down. The numbers of people getting down at the intermediate stations are all prime numbers, one each between 0 and 10, 10 and 20, 20 and 30, 30 and 40, 40 and 50, 50 and 60, in the order of the stations given above. The absolute difference between the number of people getting in at any two consecutive intermediate stations is at least 20. The total number of passengers getting down at all the intermediate stations together is an even number. Also no person gets in and gets down at the same station.

Q.42

If there are 227 people on the train when it reaches its destination station, how many people were on the train when it started from its originating station

1 ☐ 38

2 ☐ 137

3 ☐ 43

4 ☐ 45

Solution:

Correct Answer : 4

Bookmark

Answer key/Solution

As the number of people getting down is a prime number, the possible number of people getting in and getting down at different intermediate stations can be shown as below:

Origin	Getting in	Getting down
A	6/10/14	3/5/7
B	26/34/38	13/17/19
C	46/58	23/29
D	74	37
E	94	47
F	118	59

The minimum number of people getting in at A cannot be less than 6. Now, considering the difference in number of people of station C and station D must be 20 or more, the possible number of people getting in and getting down is shown as below:

Origin	Getting in	Getting down
A	6	3
B	26	13
C	46	23
D	74	37
E	94	47
F	118	59

Let the number of people the train started with be x .
 Then $x + 6 + 26 + 46 + 74 + 94 + 118 - 3 - 13 - 23 - 37 - 47 - 59 = x + 182 = 227$
 $\Rightarrow x = 227 - 182 = 45$.

FeedBack

Directions for questions 43 to 46: Answer the questions on the basis of the information given below.

Six students-A, B, C, D, E, F- wrote an examination having 3 subjects – Maths, Commerce, Accounting. The table shows the performance of these students in this examination. The examination had 2 parts – internal and external.

	Maths		Commerce		Accounting	
	I	II	I	II	I	II
A	20	40	20	10	30	25
B	15	15	30	5	5	10
C	15	25	10	10	10	0
D	30	20	25	10	25	10
E	10	35	10	0	20	5
F	10	30	5	10	10	10

Total marks in a subject of a student equal to his marks in internal of that subject plus external of the same subject.

Column – I : Indicates the total marks scored by the student in that subject as a percentage of the total marks of all the 6 students put together in that subject.

Column – II : Indicates the marks scored by that student in internals as a percentage of total marks scored by that student in that subject.

Q.43

If the marks obtained by A in the internals of the three subjects, in the given order, are in the ratio 32 : 16 : 45, then what is the ratio of marks scored by B in external of these 3 subjects?

1 ☐ 35 : 44 : 17

2 ☐ 17 : 76 : 9

3 ☐ 45 : 16 : 32

4 ☐ cannot be determined

Solution:

Correct Answer : 2

Bookmark

Answer key/Solution

Let $a : b : c$ be the ratio of the total marks scored by all six students put together in Maths, Commerce and Accounting. Then, the ratio of marks scored by A in the internals of these papers will be 40% of (20% of a) : 10% of (20% of b) : 25% of (30% of c)

$$\text{i.e., } \frac{2a}{25} : \frac{b}{50} : \frac{3c}{40} = 16a : 4b : 15c$$

Then, $16a : 4b : 15c = 32 : 16 : 45$ (given)

$$\Rightarrow a : b : c = 2 : 4 : 3$$

Since B scored 15%, 5% and 10% in internals, correspondingly his score in the externals will be 85%, 95%, 90%.

Now, the ratio of marks scored by B in the external of these subjects will be

85% of (15% of 2) : 95% of (30% of 4) : 90% of (5% of 3) = 170 : 760 : 90

\therefore Required ratio = 17 : 76 : 9.

FeedBack

Directions for questions 43 to 46: Answer the questions on the basis of the information given below.

Six students-A, B, C, D, E, F- wrote an examination having 3 subjects – Maths, Commerce, Accounting. The table shows the performance of these students in this examination. The examination had 2 parts – internal and external.

	Maths		Commerce		Accounting	
	I	II	I	II	I	II
A	20	40	20	10	30	25
B	15	15	30	5	5	10
C	15	25	10	10	10	0
D	30	20	25	10	25	10
E	10	35	10	0	20	5
F	10	30	5	10	10	10

Total marks in a subject of a student equal to his marks in internal of that subject plus external of the same subject.

Column – I : Indicates the total marks scored by the student in that subject as a percentage of the total marks of all the 6 students put together in that subject.

Column – II : Indicates the marks scored by that student in internals as a percentage of total marks scored by that student in that subject.

Q.44

If marks scored by 'D' in external of Commerce is less than that scored by him in Maths or Accounting, then what is the ratio of total marks scored by all students in Commerce put together to the total marks scored by all 6 students in all the subjects put together?

1 ☐ 15 : 23

2 ☐ 19 : 31

3 ☐ 52 : 73

4 ☐ Cannot be determined

Solution:

Correct Answer : 4

Let a, b, c be the total marks scored by all the six students put together in Maths, Commerce and Accounting respectively.

We can only find one inequality in a, b, c using the information given in the question and no other information related to the values of these three variables is given.

So, required ratio cannot be determined.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 43 to 46: Answer the questions on the basis of the information given below.

Six students-A, B, C, D, E, F- wrote an examination having 3 subjects – Maths, Commerce, Accounting. The table shows the performance of these students in this examination. The examination had 2 parts – internal and external.

	Maths		Commerce		Accounting	
	I	II	I	II	I	II
A	20	40	20	10	30	25
B	15	15	30	5	5	10
C	15	25	10	10	10	0
D	30	20	25	10	25	10
E	10	35	10	0	20	5
F	10	30	5	10	10	10

Total marks in a subject of a student equal to his marks in internal of that subject plus external of the same subject.

Column – I : Indicates the total marks scored by the student in that subject as a percentage of the total marks of all the 6 students put together in that subject.

Column – II : Indicates the marks scored by that student in internals as a percentage of total marks scored by that student in that subject.

Q.45

If the marks scored by E in internal of Maths is same as marks scored by A in internal of Accounting, then what is the ratio of the total marks scored by all students in Maths put together to that in Accounting put together?

1 ☐ 22 : 9

2 ☐ 15 : 11

3 ☐ 8 : 5

4 ☐ 15 : 7

Solution:

Correct Answer : 4

Let a, b, c be the total marks scored by all the six students put together in Maths, Commerce and Accounting respectively.

Marks scored by E in internals of Maths = 35% of

$$(10\% \text{ of 'a'}) = \frac{35}{1000}a$$

Marks scored by A in internals of Accounting = 25% of

$$(30\% \text{ of c}) = \frac{3}{40}c$$

When both are equal,

$$\frac{35}{1000}a = \frac{3}{40}c \Rightarrow 7a = 15c$$

$$\therefore a : c = 15 : 7.$$

FeedBack

Bookmark

Answer key/Solution

Directions for questions 43 to 46: Answer the questions on the basis of the information given below.

Six students-A, B, C, D, E, F- wrote an examination having 3 subjects – Maths, Commerce, Accounting. The table shows the performance of these students this examination. The examination had 2 parts – internal and external.

	Maths		Commerce		Accounting	
	I	II	I	II	I	II
A	20	40	20	10	30	25
B	15	15	30	5	5	10
C	15	25	10	10	10	0
D	30	20	25	10	25	10
E	10	35	10	0	20	5
F	10	30	5	10	10	10

Total marks in a subject of a student equal to his marks in internal of that subject plus external of the same subject.

Column – I : Indicates the total marks scored by the student in that subject as a percentage of the total marks of all the 6 students put together in that subject.

Column – II : Indicates the marks scored by that student in internals as a percentage of total marks scored by that student in that subject.

Q.46

If F scored 30 marks in Commerce and D scored 140 marks in Accounting, then find the sum of marks (in nearest integer) scored by A, B and D in internals of these 2 subjects.

1 ☐ 95

2 ☐ 98

3 ☐ 904 ☐ 88**Solution:****Correct Answer : 1**

Let a, b, c be the total marks scored by all the six students put together in Maths, Commerce and Accounting respectively.

Marks scored by F in Commerce = 5% of b = 30

$\Rightarrow b = 600$

Marks scored by D in Accounting = 25% of c = 140

$\Rightarrow c = 560$

For Commerce \rightarrow

A = 10% of (20% of 600) = 12

B = 5% of (30% of 600) = 9

D = 10% of (25% of 600) = 15

For Accounting \rightarrow

A = 25% of (30% of 560) = 42

B = 10% of (5% of 560) = 2.8

D = 10% of (25% of 560) = 14

\therefore Required sum = $(12 + 9 + 15) + (42 + 2.8 + 14) = 94.8$

Hence, Answer is 95.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 47 to 50: Answer the questions on the basis of the information given below.

The below table shows the expenditure on five heads as the percentage of the total monthly income of 3 families – Sharma, Mehta & Sahay. There is no other head for expenditure.

	Sharma	Mehta	Sahay
Grocery	35	20	30
Rent	20	25	22.5
Entertainment	10	15	20
Medical	10	5.5	12.5
Transportation	5	12.5	7.5

Monthly Income(in Rs.) of Sharma = 90,000

Monthly Income(in Rs.) of Mehta = 80,000

Monthly Income(in Rs.) of Sahay = 1,10,000

• Monthly Saving = Monthly Income – Expenditure.

Q.47

Sharma family bought a cellphone the cost of which is 40% more than its monthly savings. It paid 6% of its monthly income as down payment (one time payment) cash and rest of the amount it paid in the form of EMI @ 25% p.a. Simple Interest in 4 monthly installments. Find the value of each installment.

1 ☐ 54002 ☐ 52003 ☐ 56004 ☐ None of these**Solution:****Correct Answer : 2**

Bookmark

Answer key/Solution

Monthly savings of Sharma family = 20 % of 90,000 = Rs. 18,000.
 And cost of cell phone = 18000 + 40% of 18000 = Rs. 25,200.
 Down payment given for cell phone = 6% of 90,000 = Rs. 5400
 Balance price to be paid in installments = Rs. 25,200 – 5400 = Rs. 19,800
 At the rate of 25% p.a. after 4 months, Rs. 19800 will amount to Rs $\left(19800 + \frac{19800 \times 4 \times 25}{12 \times 100}\right)$ = Rs. 21,450.
 Let the value of each installment = Rs. P.
 Then the total amount for the 4 installments at the end of 4th month will be

$$P + \left(P + \frac{P \times 25 \times 1}{12 \times 100}\right) + \left(P + \frac{P \times 25 \times 2}{12 \times 100}\right) + \left(P + \frac{P \times 25 \times 3}{12 \times 100}\right) = \frac{33P}{8}$$

$$\text{Now, } \frac{33P}{8} = 21450$$

$$\Rightarrow P = \text{Rs. } 5,200.$$

FeedBack

Directions for questions 47 to 50: Answer the questions on the basis of the information given below.

The below table shows the expenditure on five heads as the percentage of the total monthly income of 3 families – Sharma, Mehta & Sahay. There is no other head for expenditure.

	Sharma	Mehta	Sahay
Grocery	35	20	30
Rent	20	25	22.5
Entertainment	10	15	20
Medical	10	5.5	12.5
Transportation	5	12.5	7.5

Monthly Income(in Rs.) of Sharma = 90,000

Monthly Income(in Rs.) of Mehta = 80,000

Monthly Income(in Rs.) of Sahay = 1,10,000

• Monthly Saving = Monthly Income – Expenditure.

Q.48

Mehta family has taken a loan of Rs. x at 12% p.a. Simple Interest. It paid $\left(\frac{9}{22}\right)$ th part of its monthly savings as monthly installment which cleared the loan amount in one year. Find the approximate value (in Rs.) of x.

1 ☐ 81234

2 ☐ 82431

3 ☐ 81212

4 ☐ 84365

Solution:

Correct Answer : 3

Saving of Mehta family = 22% of 80000 = 17600

$$\text{Monthly installment} = \frac{9}{22} \times 17600 = 7200$$

Rate of interest is 12 percent per annum i.e. 1 percent per month.

$$\text{Principal for the first month} = 7200 \times \frac{100}{101}$$

$$\text{Principal for the first month} = 7200 \times \frac{100}{102}$$

The required sum borrowed will be equal to the sum of principal for all the twelve months

$$\text{The Sum borrowed} = 7200 \times \left(\frac{100}{101} + \frac{100}{102} + \frac{100}{103} + \dots + \frac{100}{112}\right) = 81212$$

FeedBack

Bookmark

Answer key/Solution

Directions for questions 47 to 50: Answer the questions on the basis of the information given below.

The below table shows the expenditure on five heads as the percentage of the total monthly income of 3 families – Sharma, Mehta & Sahay. There is no other head for expenditure.

	Sharma	Mehta	Sahay
Grocery	35	20	30
Rent	20	25	22.5
Entertainment	10	15	20
Medical	10	5.5	12.5
Transportation	5	12.5	7.5

Monthly Income(in Rs.) of Sharma = 90,000

Monthly Income(in Rs.) of Mehta = 80,000

Monthly Income(in Rs.) of Sahay = 1,10,000

• Monthly Saving = Monthly Income – Expenditure.

Q.49

The income tax is given by the function $f(x)$ where 'x' is the income of the family. $f(x) = 0.25x + 1250$ for saving $\geq 10\%$ of the income; $f(x) = 0.3x + 900$ for savings $< 10\%$ of the income. Let A be the tax liability of the Sharma family based on the given information and B be the tax liability of Sharma family's had its expenditure percentage been equal to that of Sahay's. What is the absolute difference (in Rs.) between A and B?

1 ☐ 0

2 ☐ 4150

3 ☐ 6250

4 ☐ 6750

Solution:

Correct Answer : 2

Sharma family's savings = 20% of income

\therefore Sharma's income tax = $0.25(90,000) + 1250 = 23,750$

Sahay's savings = 7.5% (which is less than 10%)

\therefore If Sharma's expenditure is 92.5% of income, then

Income tax = $0.3(90,000) + 900 = 27,900$.

\therefore Difference = $27,900 - 23,750 = 4150$.

FeedBack

Bookmark

Answer key/Solution

Directions for questions 47 to 50: Answer the questions on the basis of the information given below.

The below table shows the expenditure on five heads as the percentage of the total monthly income of 3 families – Sharma, Mehta & Sahay. There is no other head for expenditure.

	Sharma	Mehta	Sahay
Grocery	35	20	30
Rent	20	25	22.5
Entertainment	10	15	20
Medical	10	5.5	12.5
Transportation	5	12.5	7.5

Monthly Income(in Rs.) of Sharma = 90,000

Monthly Income(in Rs.) of Mehta = 80,000

Monthly Income(in Rs.) of Sahay = 1,10,000

• Monthly Saving = Monthly Income – Expenditure.

Q.50

If the expenditure on rent, transportation and medical increases by 7%, 9% and 13% respectively and other expenditure remains the same, for all the 3 families, then what is the average of the monthly savings of the three families? [Assume Income remains same]

1 ☐ 12553.50

2 ☐ 10958.50

3 ☐ 13565.50

4 ☐ 11293.50**Solution:****Correct Answer : 4**

	Sharma	Mehta	Sahay
Grocery	35	20	30
Rent	21.4	26.75	24.075
Entertainment	10	15	20
Medical	11.3	6.215	14.125
Transportation	5.45	13.625	8.175

Sharma family's savings = 16.85 % of 90,000 = 15,165

Mehta family's savings = 18.41 % of 80,000 = 14,728

Sahay family's savings = 3.625 % of 1,10,000 = 3987.50

∴ Required average

$$= \frac{15165 + 14728 + 3987.50}{3} = 11,293.50$$

FeedBack

Bookmark

Answer key/Solution

Directions for questions 51 to 54 : Answer the questions on the basis of the information given below.

Five friends Rahul, Priya, Raman, Sachin, Anjali each bought 1 chocolate of different brands among six available brands of chocolate in the shop – Dairy Milk, Five star, Rochers, Amul, Bournville and Temptation. Anjali bought neither Temptation nor Dairy Milk. Priya bought neither Amul, nor Rochers. If Rahul bought five Star, then Raman bought Bournville. Raman's chocolate was costlier than Sachin's chocolate, which was cheaper than Rahul's chocolate. Either Sachin's chocolate was Temptation or Priya's chocolate was Bournville. Anjali's chocolate was costlier than Priya's chocolate, which was costlier than only Dairy Milk chocolate, which was bought by one of the 5 friends, but cheaper than Amul chocolate. The cheapest chocolate was not Temptation, and the costliest chocolate was Five Star. Only if Raman's chocolate was Rochers, then Rahul's chocolate was not Dairy Milk. The Amul chocolate was costlier than Rochers and Temptation chocolate, neither of which were bought by Rahul.

Q.51**Who among the following bought the cheapest chocolate?**1 ☐ Rahul2 ☐ Raman3 ☐ Anjali4 ☐ Sachin**Solution:****Correct Answer : 4**

Bookmark

Answer key/Solution

The given information can be summarised as follows:

- (i) Anjali bought neither Dairy Milk nor Temptation.
 - (ii) Priya bought neither Amul nor Rochers.
 - (iii) If Rahul bought 5-star, then Raman bought Bournville.
 - (iv) Cost of Raman's Chocolate > cost of Sachin's Chocolate.
Cost of Rahul's Chocolate > cost of Sachin's Chocolate.
 - (v) Either Sachin's Chocolate was Temptation or Priya's Chocolate was Bournville.
 - (vi) Cost of Anjali's Chocolate > cost of Priya's Chocolate, cost of Priya's Chocolate > cost of Dairy Milk Chocolate only.
And cost of Amul Chocolate > cost of Priya's Chocolate. Also, Dairy Milk was bought by one of them.
 - (vii) Temptation was not cheapest and 5-star was costliest.
 - (viii) Only if Raman's Chocolate was Rochers then Rahul's was not Dairy Milk.
 - (ix) Cost of Amul Chocolate > cost of Rochers and Temptation.
 - (x) Rahul bought neither Rochers nor Temptation.
- Using (iv) & (vi), we can conclude that Sachin's Chocolate is Dairy Milk, which is the cheapest of all other Chocolate and cost of Priya's Chocolate was 4th highest.
 - Using (v), we can say that Priya's Chocolate was Bournville.
 - Using (iii), we can say Rahul did not buy 5-star.
 - Using (viii), it can be concluded that Raman's Chocolate was Rochers.
 - Using (vii) & (ix), we get,
5-star > Amul > Rochers / Temptation.
 - Using (iii) & (ix), we can say Rahul did not buy 5-star.
Hence, Anjali bought 5-star & Rahul bought Amul.
Hence, we can conclude

Name	Chocolate
Anjali	5-star
Rahul	Amul
Raman	Rochers
Priya	Bournville
Sachin	Dairy Milk

↑
Cost Increasing

Sachin

FeedBack

Directions for questions 51 to 54 : Answer the questions on the basis of the information given below.

Five friends Rahul, Priya, Raman, Sachin, Anjali each bought 1 chocolate of different brands among six available brands of chocolate in the shop – Dairy Milk, Five star, Rochers, Amul, Bournville and Temptation. Anjali bought neither Temptation nor Dairy Milk. Priya bought neither Amul, nor Rochers. If Rahul bought five Star, then Raman bought Bournville. Raman's chocolate was costlier than Sachin's chocolate, which was cheaper than Rahul's chocolate. Either Sachin's chocolate was Temptation or Priya's chocolate was Bournville. Anjali's chocolate was costlier than Priya's chocolate, which was costlier than only Dairy Milk chocolate, which was bought by one of the 5 friends, but cheaper than Amul chocolate. The cheapest chocolate was not Temptation, and the costliest chocolate was Five Star. Only if Raman's chocolate was Rochers, then Rahul's chocolate was not Dairy Milk. The Amul chocolate was costlier than Rochers and Temptation chocolate, neither of which were bought by Rahul.

Q.52

Who bought the costliest chocolate?

1 ☐ Rahul

2 ☐ Raman

3 ☐ Anjali

4 ☐ Sachine

Solution:

Correct Answer : 3

Bookmark

Answer key/Solution

The given information can be summarised as follows:

- (i) Anjali bought neither Dairy Milk nor Temptation.
 - (ii) Priya bought neither Amul nor Rochers.
 - (iii) If Rahul bought 5-star, then Raman bought Bournville.
 - (iv) Cost of Raman's Chocolate > cost of Sachin's Chocolate.
Cost of Rahul's Chocolate > cost of Sachin's Chocolate.
 - (v) Either Sachin's Chocolate was Temptation or Priya's Chocolate was Bournville.
 - (vi) Cost of Anjali's Chocolate > cost of Priya's Chocolate, cost of Priya's Chocolate > cost of Dairy Milk Chocolate only.
And cost of Amul Chocolate > cost of Priya's Chocolate. Also, Dairy Milk was bought by one of them.
 - (vii) Temptation was not cheapest and 5-star was costliest.
 - (viii) Only if Raman's Chocolate was Rochers then Rahul's was not Dairy Milk.
 - (ix) Cost of Amul Chocolate > cost of Rochers and Temptation.
 - (x) Rahul bought neither Rochers nor Temptation.
- Using (iv) & (vi), we can conclude that Sachin's Chocolate is Dairy Milk, which is the cheapest of all other Chocolate and cost of Priya's Chocolate was 4th highest.
 - Using (v), we can say that Priya's Chocolate was Bournville.
 - Using (iii), we can say Rahul did not buy 5-star.
 - Using (viii), it can be concluded that Raman's Chocolate was Rochers.
 - Using (vii) & (ix), we get,
5-star > Amul > Rochers / Temptation.
 - Using (iii) & (ix), we can say Rahul did not buy 5-star.
Hence, Anjali bought 5-star & Rahul bought Amul.
Hence, we can conclude

Name	Chocolate
Anjali	5-star
Rahul	Amul
Raman	Rochers
Priya	Bournville
Sachin	Dairy Milk

↑
Cost Increasing

Anjali

FeedBack

Directions for questions 51 to 54 : Answer the questions on the basis of the information given below.

Five friends Rahul, Priya, Raman, Sachin, Anjali each bought 1 chocolate of different brands among six available brands of chocolate in the shop – Dairy Milk, Five star, Rochers, Amul, Bournville and Temptation. Anjali bought neither Temptation nor Dairy Milk. Priya bought neither Amul, nor Rochers. If Rahul bought five Star, then Raman bought Bournville. Raman's chocolate was costlier than Sachin's chocolate, which was cheaper than Rahul's chocolate. Either Sachin's chocolate was Temptation or Priya's chocolate was Bournville. Anjali's chocolate was costlier than Priya's chocolate, which was costlier than only Dairy Milk chocolate, which was bought by one of the 5 friends, but cheaper than Amul chocolate. The cheapest chocolate was not Temptation, and the costliest chocolate was Five Star. Only if Raman's chocolate was Rochers, then Rahul's chocolate was not Dairy Milk. The Amul chocolate was costlier than Rochers and Temptation chocolate, neither of which were bought by Rahul.

Q.53

Which chocolate was not bought by any of the 5 friends?

1 ☐ Dairy Milk

2 ☐ Temptation

3 ☐ Amul

4 ☐ Rochers

Solution:

Correct Answer : 2

Bookmark

Answer key/Solution

The given information can be summarised as follows:

- (i) Anjali bought neither Dairy Milk nor Temptation.
 - (ii) Priya bought neither Amul nor Rochers.
 - (iii) If Rahul bought 5-star, then Raman bought Bournville.
 - (iv) Cost of Raman's Chocolate > cost of Sachin's Chocolate.
Cost of Rahul's Chocolate > cost of Sachin's Chocolate.
 - (v) Either Sachin's Chocolate was Temptation or Priya's Chocolate was Bournville.
 - (vi) Cost of Anjali's Chocolate > cost of Priya's Chocolate, cost of Priya's Chocolate > cost of Dairy Milk Chocolate only.
And cost of Amul Chocolate > cost of Priya's Chocolate. Also, Dairy Milk was bought by one of them.
 - (vii) Temptation was not cheapest and 5-star was costliest.
 - (viii) Only if Raman's Chocolate was Rochers then Rahul's was not Dairy Milk.
 - (ix) Cost of Amul Chocolate > cost of Rochers and Temptation.
 - (x) Rahul bought neither Rochers nor Temptation.
- Using (iv) & (vi), we can conclude that Sachin's Chocolate is Dairy Milk, which is the cheapest of all other Chocolate and cost of Priya's Chocolate was 4th highest.
 - Using (v), we can say that Priya's Chocolate was Bournville.
 - Using (iii), we can say Rahul did not buy 5-star.
 - Using (viii), it can be concluded that Raman's Chocolate was Rochers.
 - Using (vii) & (ix), we get,
5-star > Amul > Rochers / Temptation.
 - Using (iii) & (ix), we can say Rahul did not buy 5-star.
Hence, Anjali bought 5-star & Rahul bought Amul.
Hence, we can conclude

Name	Chocolate
Anjali	5-star
Rahul	Amul
Raman	Rochers
Priya	Bournville
Sachin	Dairy Milk

↑
Cost Increasing

Temptation

FeedBack

Directions for questions 51 to 54 : Answer the questions on the basis of the information given below.

Five friends Rahul, Priya, Raman, Sachin, Anjali each bought 1 chocolate of different brands among six available brands of chocolate in the shop – Dairy Milk, Five star, Rochers, Amul, Bournville and Temptation. Anjali bought neither Temptation nor Dairy Milk. Priya bought neither Amul, nor Rochers. If Rahul bought five Star, then Raman bought Bournville. Raman's chocolate was costlier than Sachin's chocolate, which was cheaper than Rahul's chocolate. Either Sachin's chocolate was Temptation or Priya's chocolate was Bournville. Anjali's chocolate was costlier than Priya's chocolate, which was costlier than only Dairy Milk chocolate, which was bought by one of the 5 friends, but cheaper than Amul chocolate. The cheapest chocolate was not Temptation, and the costliest chocolate was Five Star. Only if Raman's chocolate was Rochers, then Rahul's chocolate was not Dairy Milk. The Amul chocolate was costlier than Rochers and Temptation chocolate, neither of which were bought by Rahul.

Q.54

Which of the following statements must be true?

- 1 ☐ Rahul bought Dairy Milk.
- 2 ☐ Raman's chocolate was costlier than Anjali's chocolate.
- 3 ☐ Sachin bought Amul chocolate.
- 4 ☐ The Rochers chocolate was the 3rd costliest among the 5 chocolates bought by the five friends.

Solution:

Correct Answer : 4

Bookmark

Answer key/Solution

The given information can be summarised as follows:

- (i) Anjali bought neither Dairy Milk nor Temptation.
 - (ii) Priya bought neither Amul nor Rochers.
 - (iii) If Rahul bought 5-star, then Raman bought Bournville.
 - (iv) Cost of Raman's Chocolate > cost of Sachin's Chocolate.
Cost of Rahul's Chocolate > cost of Sachin's Chocolate.
 - (v) Either Sachin's Chocolate was Temptation or Priya's Chocolate was Bournville.
 - (vi) Cost of Anjali's Chocolate > cost of Priya's Chocolate, cost of Priya's Chocolate > cost of Dairy Milk Chocolate only.
And cost of Amul Chocolate > cost of Priya's Chocolate. Also, Dairy Milk was bought by one of them.
 - (vii) Temptation was not cheapest and 5-star was costliest.
 - (viii) Only if Raman's Chocolate was Rochers then Rahul's was not Dairy Milk.
 - (ix) Cost of Amul Chocolate > cost of Rochers and Temptation.
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- Using (iv) & (vi), we can conclude that Sachin's Chocolate is Dairy Milk, which is the cheapest of all other Chocolate and cost of Priya's Chocolate was 4th highest.
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 - Using (iii), we can say Rahul did not buy 5-star.
 - Using (viii), it can be concluded that Raman's Chocolate was Rochers.
 - Using (vii) & (ix), we get,
5-star > Amul > Rochers / Temptation.
 - Using (iii) & (ix), we can say Rahul did not buy 5-star.
Hence, Anjali bought 5-star & Rahul bought Amul.
Hence, we can conclude

Name	Chocolate
Anjali	5-star
Rahul	Amul
Raman	Rochers
Priya	Bournville
Sachin	Dairy Milk

↑
Cost Increasing

Rocher's is 3rd costliest chocolate.

FeedBack

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

A wooden cuboid of dimensions 50 cm × 40 cm × 30 cm is cut into smaller cubes of various dimensions in such a way that the whole material of cuboid is utilized and the minimum number of cubes is produced.

Q.55

What is the minimum number of cubes that are produced from the wooden cuboid?

1 ☐ 15

2 ☐ 16

3 ☐ 20

4 ☐ 60

Solution:

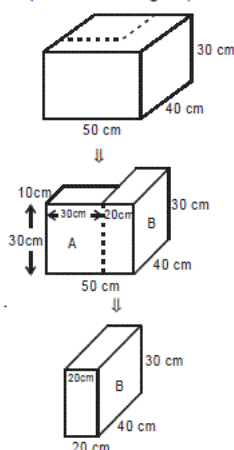
Correct Answer : 3

🔖 Bookmark

🔍 Answer key/Solution

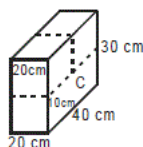
Let us cut the wooden cuboid stepwise to arrive at the minimum number of cubes possible.

Step 1: To find the minimum number of cubes, every time we have to maximize the size of the cube cut. So, from a $50\text{ cm} \times 40\text{ cm} \times 30\text{ cm}$ cuboid, we can cut a cube of dimension $30\text{ cm} \times 30\text{ cm} \times 30\text{ cm}$ (As shown in diagram)



Step 2: Now, let us cut a $30\text{ cm} \times 30\text{ cm} \times 10\text{ cm}$, remaining part of cuboid (labelled as part A in diagram). From this $30\text{ cm} \times 30\text{ cm} \times 10\text{ cm}$ cuboid, we can cut cubes of maximum dimension $10\text{ cm} \times 10\text{ cm} \times 10\text{ cm}$ to get 9 cubes.

Step 3: Now, part B has dimension $20\text{ cm} \times 30\text{ cm} \times 40\text{ cm}$.



From this $20\text{ cm} \times 30\text{ cm} \times 40\text{ cm}$ cuboid we can cut 2 cubes of $20\text{ cm} \times 20\text{ cm} \times 20\text{ cm}$.

Step 4: Now, only part C is left which is a cuboid of dimension $20\text{ cm} \times 40\text{ cm} \times 10\text{ cm}$. Out of this the maximum size of cube we can cut out is $10\text{ cm} \times 10\text{ cm} \times 10\text{ cm}$ and number of cubes we can cut out is 8.

∴ Total number of cubes cut is tabulated below:

Dimension (in cm)	Number of cubes
$30 \times 30 \times 30$	1
$20 \times 20 \times 20$	2
$10 \times 10 \times 10$	8 + 9

Required number of cubes = $1 + 2 + 8 + 9 = 20$.

FeedBack

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

A wooden cuboid of dimensions $50\text{ cm} \times 40\text{ cm} \times 30\text{ cm}$ is cut into smaller cubes of various dimensions in such a way that the whole material of cuboid is utilized and the minimum number of cubes is produced.

Q.56

The number of cubes with the smallest dimension is

1 ☐ 15

2 ☐ 17

3 ☐ 1

4 ☐ 10

Solution:

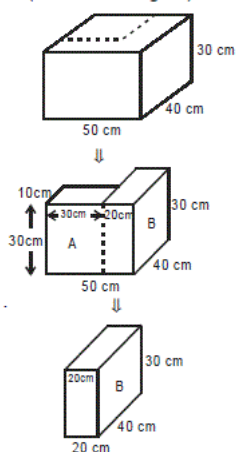
Correct Answer : 2

Bookmark

Answer key/Solution

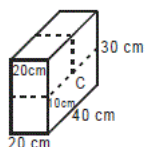
Let us cut the wooden cuboid stepwise to arrive at the minimum number of cubes possible.

Step 1: To find the minimum number of cubes, every time we have to maximize the size of the cube cut. So, from a $50\text{ cm} \times 40\text{ cm} \times 30\text{ cm}$ cuboid, we can cut a cube of dimension $30\text{ cm} \times 30\text{ cm} \times 30\text{ cm}$ (As shown in diagram)



Step 2: Now, let us cut a $30\text{ cm} \times 30\text{ cm} \times 10\text{ cm}$, remaining part of cuboid (labelled as part A in diagram). From this $30\text{ cm} \times 30\text{ cm} \times 10\text{ cm}$ cuboid, we can cut cubes of maximum dimension $10\text{ cm} \times 10\text{ cm} \times 10\text{ cm}$ to get 9 cubes.

Step 3: Now, part B has dimension $20\text{ cm} \times 30\text{ cm} \times 40\text{ cm}$.



From this $20\text{ cm} \times 30\text{ cm} \times 40\text{ cm}$ cuboid we can cut 2 cubes of $20\text{ cm} \times 20\text{ cm} \times 20\text{ cm}$.

Step 4: Now, only part C is left which is a cuboid of dimension $20\text{ cm} \times 40\text{ cm} \times 10\text{ cm}$. Out of this the maximum size of cube we can cut out is $10\text{ cm} \times 10\text{ cm} \times 10\text{ cm}$ and number of cubes we can cut out is 8.

\therefore Total number of cubes cut is tabulated below:

Dimension (in cm)	Number of cubes
$30 \times 30 \times 30$	1
$20 \times 20 \times 20$	2
$10 \times 10 \times 10$	8 + 9

The number of cubes with the smallest dimension
 $8 + 9 = 17$.

FeedBack

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

A wooden cuboid of dimensions $50\text{ cm} \times 40\text{ cm} \times 30\text{ cm}$ is cut into smaller cubes of various dimensions in such a way that the whole material of cuboid is utilized and the minimum number of cubes is produced.

Q.57

What is the volume of the smallest cube cut out from the wooden cuboid?

- 1 ☐ 6000 cm^3
- 2 ☐ 2000 cm^3
- 3 ☐ 8000 cm^3
- 4 ☐ 1000 cm^3

Solution:

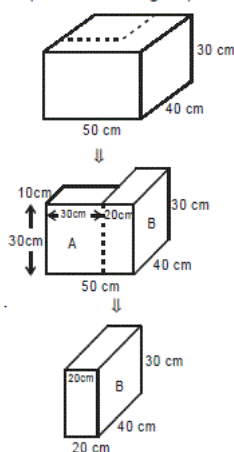
Correct Answer : 4

Bookmark

Answer key/Solution

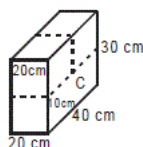
Let us cut the wooden cuboid stepwise to arrive at the minimum number of cubes possible.

Step 1: To find the minimum number of cubes, every time we have to maximize the size of the cube cut. So, from a $50\text{ cm} \times 40\text{ cm} \times 30\text{ cm}$ cuboid, we can cut a cube of dimension $30\text{ cm} \times 30\text{ cm} \times 30\text{ cm}$ (As shown in diagram)



Step 2: Now, let us cut a $30\text{ cm} \times 30\text{ cm} \times 10\text{ cm}$, remaining part of cuboid (labelled as part A in diagram). From this $30\text{ cm} \times 10\text{ cm} \times 30\text{ cm}$ cuboid, we can cut cubes of maximum dimension $10\text{ cm} \times 10\text{ cm} \times 10\text{ cm}$ to get 9 cubes.

Step 3: Now, part B has dimension $20\text{ cm} \times 30\text{ cm} \times 40\text{ cm}$.



From this $20\text{ cm} \times 30\text{ cm} \times 40\text{ cm}$ cuboid we can cut 2 cubes of $20\text{ cm} \times 20\text{ cm} \times 20\text{ cm}$.

Step 4: Now, only part C is left which is a cuboid of dimension $20\text{ cm} \times 40\text{ cm} \times 10\text{ cm}$. Out of this the maximum size of cube we can cut out is $10\text{ cm} \times 10\text{ cm} \times 10\text{ cm}$ and number of cubes we can cut out is 8.

\therefore Total number of cubes cut is tabulated below:

Dimension (in cm)	Number of cubes
$30 \times 30 \times 30$	1
$20 \times 20 \times 20$	2
$10 \times 10 \times 10$	8 + 9

The required volume $= 10\text{ cm} \times 10\text{ cm} \times 10\text{ cm}$
 $= 1000\text{ cm}^3$

FeedBack

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

A wooden cuboid of dimensions $50\text{ cm} \times 40\text{ cm} \times 30\text{ cm}$ is cut into smaller cubes of various dimensions in such a way that the whole material of cuboid is utilized and the minimum number of cubes is produced.

Q.58

What is the length (in cm) of the body diagonal of the cube with maximum possible dimension that cut-out from the wooden cuboid?

1 ☐ $10\sqrt{3}$

2 ☐ $20\sqrt{3}$

3 ☐ $30\sqrt{3}$

4 ☐ $60\sqrt{3}$

Solution:

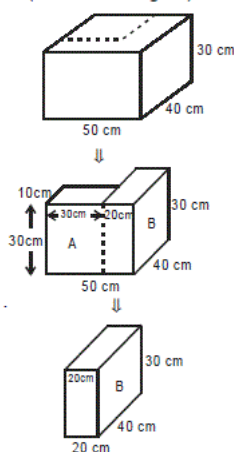
Correct Answer : 3

Bookmark

Answer key/Solution

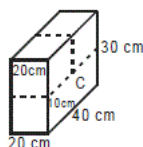
Let us cut the wooden cuboid stepwise to arrive at the minimum number of cubes possible.

Step 1: To find the minimum number of cubes, every time we have to maximize the size of the cube cut. So, from a $50\text{ cm} \times 40\text{ cm} \times 30\text{ cm}$ cuboid, we can cut a cube of dimension $30\text{ cm} \times 30\text{ cm} \times 30\text{ cm}$ (As shown in diagram)



Step 2: Now, let us cut a $30\text{ cm} \times 30\text{ cm} \times 10\text{ cm}$, remaining part of cuboid (labelled as part A in diagram). From this $30\text{ cm} \times 30\text{ cm} \times 10\text{ cm}$ cuboid, we can cut cubes of maximum dimension $10\text{ cm} \times 10\text{ cm} \times 10\text{ cm}$ to get 9 cubes.

Step 3: Now, part B has dimension $20\text{ cm} \times 30\text{ cm} \times 40\text{ cm}$.



From this $20\text{ cm} \times 30\text{ cm} \times 40\text{ cm}$ cuboid we can cut 2 cubes of $20\text{ cm} \times 20\text{ cm} \times 20\text{ cm}$.

Step 4: Now, only part C is left which is a cuboid of dimension $20\text{ cm} \times 40\text{ cm} \times 10\text{ cm}$. Out of this the maximum size of cube we can cut out is $10\text{ cm} \times 10\text{ cm} \times 10\text{ cm}$ and number of cubes we can cut out is 8.

\therefore Total number of cubes cut is tabulated below:

Dimension (in cm)	Number of cubes
$30 \times 30 \times 30$	1
$20 \times 20 \times 20$	2
$10 \times 10 \times 10$	8 + 9

The required length

$$= \sqrt{30^2 + 30^2 + 30^2} = 30\sqrt{3}\text{ cm}$$

FeedBack

Directions for questions 59 to 62: Answer the question on the basis of the information given below.

P, Q, R, S, T, U, V and W are sitting around a square table in such a way that 4 of them are sitting at 4 corners of the square, while 4 are sitting in the middle of each of the 4 sides. People sitting at 4 corners are facing the centre of the table while those are sitting in the middle of the sides are face outside. Each of them has a lucky number out of 4, 9, 13, 22, 35, 57, 92 and 149. 'R' is sitting third to the left of the person whose lucky number is 149, and the person whose lucky number is 149 faces outside. Only 2 persons are sitting between R and W. The one whose lucky number is '4' is sitting to the immediate right of W. The one whose lucky number is 35 sitting second to the right of 'V'. 'V' is an immediate neighbour of neither 'W' nor 'R'. V's lucky number is not 149. Only one person is sitting between 'P' and the person whose lucky number is 35. 'S' is sitting on the immediate left of the person whose lucky number is 57. 'V's lucky number is not 57. T's lucky number is 92. 'T' is not an immediate neighbour of 'P'. The one whose lucky number is '9' is an immediate neighbour of 'T'. The person whose lucky number is 22 is an immediate neighbour of 'U'.

Q.59

What is the position of the one whose lucky number is 57 with respect to 'V'?

1 ☐ 2nd to the left

2 ☐ 3rd to the right

3 ☐ 4th to the left

4 ☐ 3rd to the left

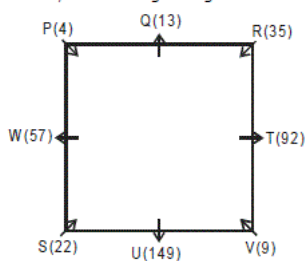
Solution:

Correct Answer : 4

Bookmark

Answer key/Solution

By reading the given information in the given order, the following arrangement can be found.



FeedBack

Directions for questions 59 to 62: Answer the question on the basis of the information given below.

P, Q, R, S, T, U, V and W are sitting around a square table in such a way that 4 of them are sitting at 4 corners of the square, while 4 are sitting in the middle of each of the 4 sides. People sitting at 4 corners are facing the centre of the table while those are sitting in the middle of the sides are face outside. Each of them has a lucky number out of 4, 9, 13, 22, 35, 57, 92 and 149. 'R' is sitting third to the left of the person whose lucky number is 149, and the person whose lucky number is 149 faces outside. Only 2 persons are sitting between R and W. The one whose lucky number is '4' is sitting to the immediate right of W. The one whose lucky number is 35 sitting second to the right of 'V'. 'V' is an immediate neighbour of neither 'W' nor 'R'. V's lucky number is not 149. Only one person is sitting between 'P' and the person whose lucky number is 35. 'S' is sitting on the immediate left of the person whose lucky number is 57. 'V's lucky number is not 57. T's lucky number is 92. 'T' is not an immediate neighbour of 'P'. The one whose lucky number is '9' is an immediate neighbour of 'T'. The person whose lucky number is 22 is an immediate neighbour of 'U'.

Q.60

What is the sum of the lucky numbers of all the persons facing outside?

1 ☐ 333

2 ☐ 311

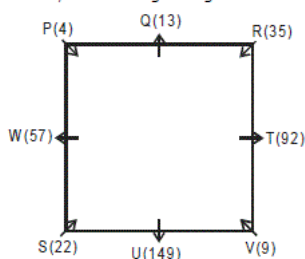
3 ☐ 70

4 ☐ 171

Solution:

Correct Answer : 2

By reading the given information in the given order, the following arrangement can be found.



$$54 + 149 + 92 + 13 = 311$$

FeedBack

Bookmark

Answer key/Solution

Directions for questions 59 to 62: Answer the question on the basis of the information given below.

P, Q, R, S, T, U, V and W are sitting around a square table in such a way that 4 of them are sitting at 4 corners of the square, while 4 are sitting in the middle of each of the 4 sides. People sitting at 4 corners are facing the centre of the table while those are sitting in the middle of the sides are face outside. Each of them has a lucky number out of 4, 9, 13, 22, 35, 57, 92 and 149. 'R' is sitting third to the left of the person whose lucky number is 149, and the person whose lucky number is 149 faces outside. Only 2 persons are sitting between R and W. The one whose lucky number is '4' is sitting to the immediate right of W. The one whose lucky number is 35 sitting second to the right of 'V'. 'V' is an immediate neighbour of neither 'W' nor 'R'. V's lucky number is not 149. Only one person is sitting between 'P' and the person whose lucky number is 35. 'S' is sitting on the immediate left of the person whose lucky number is 57. 'V's lucky number is not 57. T's lucky number is 92. 'T' is not an immediate neighbour of 'P'. The one whose lucky number is '9' is an immediate neighbour of 'T'. The person whose lucky number is 22 is an immediate neighbour of 'U'.

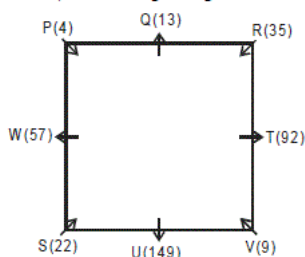
Q.61

Who is sitting diagonally opposite to the person whose lucky number is 35?

1 ☐ P

2 ☐ R3 ☐ S4 ☐ U**Solution:****Correct Answer : 3**

By reading the given information in the given order, the following arrangement can be found.



S

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[Bookmark](#)
[Answer key/Solution](#)

Directions for questions 59 to 62: Answer the question on the basis of the information given below.

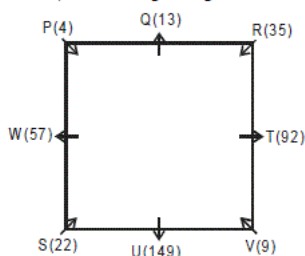
P, Q, R, S, T, U, V and W are sitting around a square table in such a way that 4 of them are sitting at 4 corners of the square, while 4 are sitting in the middle of each of the 4 sides. People sitting at 4 corners are facing the centre of the table while those are sitting in the middle of the sides are face outside. Each of them has a lucky number out of 4, 9, 13, 22, 35, 57, 92 and 149. 'R' is sitting third to the left of the person whose lucky number is 149, and the person whose lucky number is 149 faces outside. Only 2 persons are sitting between R and W. The one whose lucky number is '4' is sitting to the immediate right of W. The one whose lucky number is 35 sitting second to the right of 'V'. 'V' is an immediate neighbour of neither 'W' nor 'R'. V's lucky number is not 149. Only one person is sitting between 'P' and the person whose lucky number is 35. 'S' is sitting on the immediate left of the person whose lucky number is 57. 'V's lucky number is not 57. T's lucky number is 92. 'T' is not an immediate neighbour of 'P'. The one whose lucky number is '9' is an immediate neighbour of 'T'. The person whose lucky number is 22 is an immediate neighbour of 'U'.

Q.62

What is the lucky number of the person sitting 2nd to the left of the person whose lucky number is 149?

1 ☐ 572 ☐ 353 ☐ 924 ☐ 22**Solution:****Correct Answer : 3**

By reading the given information in the given order, the following arrangement can be found.



92

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[Answer key/Solution](#)

Directions for questions 63 to 66: Answer the question on the basis of the information given below.

In an art exhibition held during the 70th Independence Day celebrations in Delhi, five portraits of five wellknown freedom fighters namely Mahatma Gandhi, Bhagat Singh, Lal Bahadur Shastri, Lala Lajpat Rai and Jawaharlal Nehru were displayed. All these portraits were of different colors: red, orange, blue, violet, pink(not necessarily in the same order). All these five portraits were displayed with a different number of story books, with each portrait having at least one story book.

Some additional information is given below:

- The number of story books displayed at the violet colored portrait was equal to two-fifths of the absolute difference between the number of story books displayed at the portraits of Lala Lajpat Rai and Jawaharlal Nehru.
- Portraits of Lala Lajpat Rai and Jawaharlal Nehru were not of violet color.
- The number of story books displayed at the blue colored portrait was one-third of the sum of the number of story books displayed at the portraits of Bhagat Singh and Lal Bahadur Shastri.
- Portraits of Bhagat Singh and Lal Bahadur Shastri were not of blue color.
- The number of story books displayed at the Jawaharlal Nehru portrait was half the number of story books displayed at the pink colored portrait.
- Mahatma Gandhi portrait was neither red colored nor violet colored.
- The number of story books displayed at the Jawaharlal Nehru portrait was equal to the sum of the number of story books displayed at the red and blue colored portraits.
- Jawaharlal Nehru portrait was neither red colored nor blue colored.

Q.63

Color(s) of how many portraits can be determined uniquely?

Fill "1 if your answer is 4"

Fill "2 if your answer is 2"

Fill "3 if your answer is 1"

Fill "4 if your answer is 3"

Solution:

Correct Answer : 3

From the given information:

- No. of story books displayed at the violet colored portrait = $(2/5)$ no. of story books displayed at Lala Lajpat Rai portrait – no. of story books displayed at the Jawaharlal Nehru portrait.
 - No. of story books displayed at the blue colored portrait = $(1/3)$ (number of story books displayed at Bhagat Singh portrait + number of story books displayed at Lal Bahadur Shastri portrait).
 - No. of story books displayed at Jawaharlal Nehru portrait = $(1/2)$ (No. of story books displayed at pink colored portrait)
 - No. of story books displayed at the Jawaharlal Nehru portrait = (No. of story books displayed at the red colored portrait) + (No. of story books displayed the blue colored portrait)
- Also, colours of portrait can be concluded as shown below:

Lala Lajpat Rai	Jawaharlal Nehru	Mahatma Gandhi	Bhagat Singh	Lal Bahadur Shastri
Not violet Not orange	ORANGE	Not red Not violet Not orange	Not blue Not orange	Not blue Not orange

Color of only Jawaharlal Nehru portrait can be determined uniquely.

FeedBack

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Answer key/Solution

Directions for questions 63 to 66: Answer the question on the basis of the information given below.

In an art exhibition held during the 70th Independence Day celebrations in Delhi, five portraits of five wellknown freedom fighters namely Mahatma Gandhi, Bhagat Singh, Lal Bahadur Shastri, Lala Lajpat Rai and Jawaharlal Nehru were displayed. All these portraits were of different colors: red, orange, blue, violet, pink(not necessarily in the same order). All these five portraits were displayed with a different number of story books, with each portrait having at least one story book.

Some additional information is given below:

- The number of story books displayed at the violet colored portrait was equal to two-fifths of the absolute difference between the number of story books displayed at the portraits of Lala Lajpat Rai and Jawaharlal Nehru.
- Portraits of Lala Lajpat Rai and Jawaharlal Nehru were not of violet color.
- The number of story books displayed at the blue colored portrait was one-third of the sum of the number of story books displayed at the portraits of Bhagat Singh and Lal Bahadur Shastri.
- Portraits of Bhagat Singh and Lal Bahadur Shastri were not of blue color.
- The number of story books displayed at the Jawaharlal Nehru portrait was half the number of story books displayed at the pink colored portrait.
- Mahatma Gandhi portrait was neither red colored nor violet colored.
- The number of story books displayed at the Jawaharlal Nehru portrait was equal to the sum of the number of story books displayed at the red and blue colored portraits.
- Jawaharlal Nehru portrait was neither red colored nor blue colored.

Q.64

If Lal Bahadur Shastri portrait was of Pink color and the absolute difference between the number of story books displayed at Lala Lajpat Rai portrait and Jawaharlal Nehru portrait was 10, find the number of story books displayed at Mahatma Gandhi portrait.

Fill "1 if your answer is 10"

Fill "2 if your answer is 12"

Fill "3 if your answer is 15"

Fill "4 if your answer is 8"

Solution:

Correct Answer : 1

Bookmark

Answer key/Solution

From the given information:

- I. No. of story books displayed at the violet colored portrait = $(2/5)$ no. of story books displayed at Lala Lajpat Rai portrait – no. of story books displayed at the Jawaharlal Nehru portrait].
 - II. No. of story books displayed at the blue colored portrait = $(1/3)$ (number of story books displayed at Bhagat Singh portrait + number of story books displayed at Lal Bahadur Shastri portrait).
 - III. No. of story books displayed at Jawaharlal Nehru portrait = $(1/2)$ (No. of story books displayed at pink colored portrait)
 - IV. No. of story books displayed at the Jawaharlal Nehru portrait = (No. of story books displayed at the red colored portrait) + (No. of story books displayed the blue colored portrait)
- Also, colours of portrait can be concluded as shown below:

Lala Lajpat Rai	Jawaharlal Nehru	Mahatma Gandhi	Bhagat Singh	Lal Bahadur Shastri
Not violet Not orange	ORANGE	Not red Not violet Not orange	Not blue Not orange	Not blue Not orange

If Lal Bahadur Shastri's portrait is Pink in color, the following can be summarised:

Lala Lajpat Rai	Jawaharlal Nehru	Mahatma Gandhi	Bhagat Singh	Lal Bahadur Shastri
RED	ORANGE	BLUE	VIOLET	PINK

As it is given that:

Number of story book displayed at Jawaharlal Nehru's portrait - Lala Lajpat Rai = 10

Number of story books displayed at Jawaharlal Nehru's portrait – number of story books displayed at Lala Lajpat Rai portrait = number of story books displayed at blue coloured portrait (i.e., Mahatma Gandhi's portrait).

∴ Required number = 10.

FeedBack

Directions for questions 63 to 66: Answer the question on the basis of the information given below.

In an art exhibition held during the 70th Independence Day celebrations in Delhi, five portraits of five wellknown freedom fighters namely Mahatma Gandhi, Bhagat Singh, Lal Bahadur Shastri, Lala Lajpat Rai and Jawaharlal Nehru were displayed. All these portraits were of different colors: red, orange, blue, violet, pink(not necessarily in the same order). All these five portraits were displayed with a different number of story books, with each portrait having at least one story book.

Some additional information is given below:

- The number of story books displayed at the violet colored portrait was equal to two-fifths of the absolute difference between the number of story books displayed at the portraits of Lala Lajpat Rai and Jawaharlal Nehru.
- Portraits of Lala Lajpat Rai and Jawaharlal Nehru were not of violet color.
- The number of story books displayed at the blue colored portrait was one-third of the sum of the number of story books displayed at the portraits of Bhagat Singh and Lal Bahadur Shastri.
- Portraits of Bhagat Singh and Lal Bahadur Shastri were not of blue color.
- The number of story books displayed at the Jawaharlal Nehru portrait was half the number of story books displayed at the pink colored portrait.
- Mahatma Gandhi portrait was neither red colored nor violet colored.
- The number of story books displayed at the Jawaharlal Nehru portrait was equal to the sum of the number of story books displayed at the red and blue colored portraits.
- Jawaharlal Nehru portrait was neither red colored nor blue colored.

Q.65

Which of the following statement(s) is/are necessarily TRUE?

- (i) The violet colored portrait could not be of Lala Lajpat Rai, Jawaharlal Nehru or Mahatma Gandhi.
- (ii) The blue colored portrait could be of Lal Bahadur Shastri.
- (iii) The red colored portrait could not be of Lala Lajpat Rai.

Fill "1 if your answer is only (i)"

Fill "2 if your answer is only (ii)"

Fill "3 if your answer is only (iii)"

Fill "4 if your answer is only (i) and (iii)"

Solution:**Correct Answer : 1**

From the given information:

- I. No. of story books displayed at the violet colored portrait = $(2/5)$ no. of story books displayed at Lala Lajpat Rai portrait – no. of story books displayed at the Jawaharlal Nehru portrait].
- II. No. of story books displayed at the blue colored portrait = $(1/3)$ (number of story books displayed at Bhagat Singh portrait + number of story books displayed at Lal Bahadur Shastri portrait).
- III. No. of story books displayed at Jawaharlal Nehru portrait = $(1/2)$ (No. of story books displayed at pink colored portrait)
- IV. No. of story books displayed at the Jawaharlal Nehru portrait = (No. of story books displayed at the red colored portrait) + (No. of story books displayed the blue colored portrait)
- Also, colours of portrait can be concluded as shown below:

Lala Lajpat Rai	Jawaharlal Nehru	Mahatma Gandhi	Bhagat Singh	Lal Bahadur Shastri
Not violet Not orange	ORANGE	Not red Not violet Not orange	Not blue Not orange	Not blue Not orange

Only statement (i) is true.

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Answer key/Solution

Directions for questions 63 to 66: Answer the question on the basis of the information given below.

In an art exhibition held during the 70th Independence Day celebrations in Delhi, five portraits of five wellknown freedom fighters namely Mahatma Gandhi Bhagat Singh, Lal Bahadur Shastri, Lala Lajpat Rai and Jawaharlal Nehru were displayed. All these portraits were of different colors: red, orange, blue, violet, pink(not necessarily in the same order). All these five portraits were displayed with a different number of story books, with each portrait having at least one story book.

Some additional information is given below:

- The number of story books displayed at the violet colored portrait was equal to two-fifths of the absolute difference between the number of story books displayed at the portraits of Lala Lajpat Rai and Jawaharlal Nehru.
- Portraits of Lala Lajpat Rai and Jawaharlal Nehru were not of violet color.
- The number of story books displayed at the blue colored portrait was one-third of the sum of the number of story books displayed at the portraits of Bhagat Singh and Lal Bahadur Shastri.
- Portraits of Bhagat Singh and Lal Bahadur Shastri were not of blue color.
- The number of story books displayed at the Jawaharlal Nehru portrait was half the number of story books displayed at the pink colored portrait.
- Mahatma Gandhi portrait was neither red colored nor violet colored.
- The number of story books displayed at the Jawaharlal Nehru portrait was equal to the sum of the number of story books displayed at the red and blue colored portraits.
- Jawaharlal Nehru portrait was neither red colored nor blue colored.

Q.66

Which of the following statements are required, to uniquely determine colours of all the portraits?

- (i) Lala Lajpat Rai portrait is red coloured
 (ii) Portrait of Bhagat Singh is not pink coloured
 (iii) Portrait of Mahatma Gandhi is not orange coloured

Fill "1 if your answer is only (i)"

Fill "2 if your answer is only (i) and (ii)"

Fill "3 if your answer is only (i) and (iii)"

Fill "4 if your answer is only (ii) and (iii)"

Solution:**Correct Answer : 2**

Bookmark

Answer key/Solution

From the given information:

- I. No. of story books displayed at the violet colored portrait = $(2/5)$ no. of story books displayed at Lala Lajpat Rai portrait – no. of story books displayed at the Jawaharlal Nehru portrait.
 - II. No. of story books displayed at the blue colored portrait = $(1/3)$ (number of story books displayed at Bhagat Singh portrait + number of story books displayed at Lal Bahadur Shastri portrait).
 - III. No. of story books displayed at Jawaharlal Nehru portrait = $(1/2)$ (No. of story books displayed at pink colored portrait)
 - IV. No. of story books displayed at the Jawaharlal Nehru portrait = (No. of story books displayed at the red colored portrait) + (No. of story books displayed the blue colored portrait)
- Also, colours of portrait can be concluded as shown below:

Lala Lajpat Rai	Jawaharlal Nehru	Mahatma Gandhi	Bhagat Singh	Lal Bahadur Shastri
Not violet Not orange	ORANGE	Not red Not violet Not orange	Not blue Not orange	Not blue Not orange

Lala Lajpat Rai	Jawaharlal Nehru	Mahatma Gandhi	Bhagat Singh	Lal Bahadur Shastri
Not violet Not orange	ORANGE	Not red Not violet Not orange	Not blue Not orange	Not blue Not orange

If we use first statement, we can conclude colour of Lala Lajpat Rai as red and Mahatma Gandhi as blue. With the help of second statement, we can identify that colour of Lal Bahadur Shastri portrait is Pink and colour of Bhagat Singh portrait is violet. So, first two Statements can together help us to uniquely determine colour of all the portraits. However data of statement (iii) is not helpful as we already knew that portrait of Jawaharlal Nehru is orange coloured.

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Sec 3

Q.67

If S is the sum of all three digit numbers that give a remainder of 5 when they are divided by 11, what is the remainder when S is divided by 7?

Solution:

Correct Answer : 0

Any number that when divided by 11 gives a remainder of 5 will be of the form $11k + 5$.

Since we only need three digit numbers, k will range from 9 to 90, as $11(9) + 5 = 104$ and $11(90) + 5 = 995$.

These numbers form an AP with first term = 104, last term = 995 and number of terms = 82.

Thus, sum of these numbers

$$S = \frac{82}{2} (104 + 995) = 41 (104 + 995) = 41 \times 1099$$

Dividing S by 7, the remainder comes out to be 0.

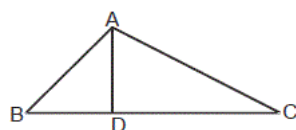
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Answer key/Solution

Q.68

In the figure given below, AB = 11 units, AC = 20 units and AD = 5 units. If AD is perpendicular to BC, what is the area of the circle which circumscribes the $\triangle ABC$?



1 ☐ $49\pi^3$ sq. units

2 ☐ $7\pi^2$ sq. units

3 ☐ $\frac{441}{49}$ sq. units

4 ☐ None of these

Solution:

Correct Answer : 1

Let the circumradius of $\triangle ABC$ be R .

Then, $\text{area}(\triangle ABC) = \frac{abc}{4R}$, where a, b and c are sides of triangles.

$$\Rightarrow \frac{1}{2} \times a \times 5 = \frac{11 \times 20 \times a}{4R}$$

$$\Rightarrow R = 22$$

\therefore Area of the circumcircle

$$= \pi \times 22 \times 22 = \pi \times \frac{22}{7} \times \frac{22}{7} \times 49 = 49\pi^3.$$

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Answer key/Solution

Q.69

The distance from Yeswanthpur (YPR) to Kacheguda (KCG) is 600 km. Two trains A (from YPR to KCG) and B (from KCG to YPR) leave simultaneously. They meet each other exactly after 6 hours. As soon as they meet, train A slows down by 10 kmph and train B speeds up by 10 kmph. If both the trains reach the destinations at the same time, then what is the difference between the initial speeds of the trains A and B (in kmph)?

1 ☐ 0

2 ☐ 10

3 ☐ 20

4 ☐ 15

Solution:

Correct Answer : 2

Let x and y be the initial speeds of the trains A and B respectively. Since the trains meet after 6 hours of travelling and the total distance travelled is 600 km,

$$\therefore x + y = \frac{600}{6} = 100 \text{ kmph} \quad \dots (i)$$

Now train A has to travel the same distance that train B travelled in 6 hr with its speed reduced by 10 kmph and train B has to travel the same distance that train A travelled in 6 hr with its speed increased by 10 kmph. Also, after meeting, the two trains reach their destinations in the same time.

$$\therefore \frac{6y}{(x-10)} = \frac{6x}{(y+10)}$$

$$\Rightarrow x^2 - y^2 = 10(x + y)$$

$$\Rightarrow (x - y) = 10 \quad \dots (ii)$$

Also, solving equations (i) and (ii), we get
 $x = 55, y = 45$.

Alternative Method:

Since both the trains travel for the same amount of time, train A should have covered the second half of its journey in the same time as train B covers the first half of its journey and vice versa. This means, after the change in their speeds, the speeds of the two trains must have interchanged. This is only possible if the difference in their speeds is 10 kmph with A being the one at higher speed.

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Answer key/Solution

Q.70

The number of diagonals of a regular polygon, having n sides, is equal to the square root of the number of its sides. How many values can n take?

Solution:

Correct Answer : 1

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Answer key/Solution

The number of diagonals 'd' of a polygon with n sides

is given by $\frac{n(n-3)}{2}$.

Now, $\frac{n(n-3)}{2} = \sqrt{n}$

$$\Rightarrow n^2 - 3n = 2\sqrt{n}$$

Squaring on both sides and re-arranging, we get

$$n^4 - 6n^3 + 9n^2 - 4n = 0$$

$$\Rightarrow n^3 - 6n^2 + 9n - 4 = 0$$

$$\Rightarrow (n-1)(n-1)(n-4) = 0$$

$$\therefore n = 1 \text{ or } 4$$

Since it is a polygon of n sides, n can take only one value, i.e., 4.

Alternative Method:

For any polygon having more than 5 sides, the number of diagonals will be more than the number of sides.

In this question, the number of diagonals will be less than the number of sides.

Since the number of sides is a perfect square, the perfect squares below 5 are 1 and 4.

Since we cannot have a 1-sided polygon, the only possible value for number of sides is 4.

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Q.71

The nature of the roots of the equation $2x^2 + 2(p+1)x + p = 0$ is

1 ☐ Equal when p is real.

2 ☐ Real for all real values of p.

3 ☐ Complex conjugates for all values of p.

4 ☐ None of these.

Solution:

Correct Answer : 2

The nature of the roots is determined by the discriminant.

The discriminant of the equation is

$$[2(p+1)]^2 - 4 \times 2 \times p = 4(p+1)^2 - 8p$$

$$= 4[(p+1)^2 - 2p]$$

$$= 4[p^2 + 2p + 1 - 2p] = 4(p^2 + 1)$$

So for all real values of p, it can never be negative or zero.

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Answer key/Solution

Q.72

The sum of the 3rd and 17th elements of an Arithmetic Progression is equal to the sum of the 7th, 11th and 13th elements of the same progression. If the sum of n terms of such a progression is zero then what is the value of n?

Solution:

Correct Answer : 21

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Answer key/Solution

Assume that the first term of the progression is 'a' and the common difference is 'd'.

$$T_3 + T_{17} = T_7 + T_{11} + T_{13}$$

$$\Rightarrow (a + 2d) + (a + 16d) = (a + 6d) + (a + 10d) + (a + 12d)$$

$$\Rightarrow a + 10d = 0 \text{ or } 2a + 20d = 0 \dots (i)$$

Now, the sum of n terms of the Arithmetic Progression is 0.

$$\text{i.e., } \left(\frac{n}{2}\right)[2a + (n-1)d] = 0$$

$$\text{As } \frac{n}{2} \neq 0$$

$$\therefore 2a + (n-1)d = 0$$

Comparing with (i)

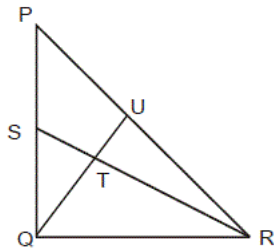
$$n-1 = 20$$

$$\Rightarrow n = 21$$

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Q.73

In the figure given below, QS = QT and RU = RT, angle QPR = 36°. Find the measure of angle STU.



1 ☐ 108°

2 ☐ 120°

3 ☐ 100°

4 ☐ 90°

Solution:

Correct Answer : 1

Given $\angle QPR = 36^\circ$

Let $\angle QST = x$. Therefore, $\angle QTS = x$.

Also, $\angle RTU = x$ (Vertically opposite angle).

Then $\angle RUT = x$

From the above statements $\angle PUT = 180^\circ - x$ and

$\angle PST = 180^\circ - x$

And $\angle STU = 180^\circ - x$

But the sum of the angles in the quadrilateral PSTU is 360° .

Therefore $3 \times (180^\circ - x) + 36^\circ = 360^\circ$

Therefore $x = 72^\circ$

$\Rightarrow \angle STU = 108^\circ$

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Answer key/Solution

Q.74

Let $f(n) = \sqrt{(f(n-1)f(n+1))}$. What is the value of $f(1) + f(2) + f(3) + f(4) + \dots$, if $f(0) = \frac{1}{2}$, $f(1) = \frac{1}{4}$?

1 ☐ 1/4

2 ☐ 1/2

3 ☐ 1

4 ☐ 1/8

Solution:

Correct Answer : 2

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Answer key/Solution

$$f(n+1) = \frac{f(n)^2}{f(n-1)}$$

$$f(0) = \frac{1}{2} \text{ and } f(1) = \frac{1}{4} \quad (\text{Given})$$

$$f(2) = \frac{f(1)^2}{f(0)} = \frac{1}{8}$$

$$\text{Similarly, } f(3) = \frac{1}{16}$$

Therefore $f(1) + f(2) + f(3) + \dots$

$$= \left(\frac{1}{2}\right)^2 + \left(\frac{1}{2}\right)^3 + \left(\frac{1}{2}\right)^4 + \dots = \frac{\left(\frac{1}{4}\right)}{\left[1 - \left(\frac{1}{2}\right)\right]} = \left(\frac{1}{2}\right)$$

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Q.75

Find the remainder when $x^{79} + y^{79}$ is divided by 200, if $x + y = 100$ and x and y are even integers.

1 ☐ 100

2 ☐ 0

3 ☐ 99

4 ☐ Cannot be determined

Solution:

Correct Answer : 2

$x^{79} + y^{79} = (x + y) \times (x^{78} + \dots + y^{78})$. Second bracket will always be even as x and y are even and $x + y$ is 100 (Given). Hence, the product is a multiple of 200. Thus, the remainder will be 0 when divided by 200.

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Answer key/Solution

Q.76

The total number of multiple choice questions in a paper is 35. It comprises 10 marker, 5 marker and 2 marker questions. The maximum marks that a student can secure in this paper is 100. Find the number of 5 marker questions in the paper.

Solution:

Correct Answer : 2

Let x, y, z be the number of 10 marker, 5 marker and 2 marker questions respectively.

Then, $x + y + z = 35$

and $10x + 5y + 2z = 100$.

Adding both the equations, we get

$11x + 6y + 3z = 135$

Now, 135, 3z and 6y are multiple of 3. Thus, 11x has to be multiple of 3. Thus, x has to be multiple of 3 (as x can take only integer values).

Similarly, from, $10x + 5y + 2z = 100$, y has to be a multiple of 2 and z has to be a multiple of 5.

The possible values of x, y and z are tabulated below:

When $x = 3$, then $y + z = 32$ and $5y + 2z = 70$.

Therefore, $y = 2$ and $z = 30$

When $x > 3$ (i.e. 6, 9, 12 and so on) no solutions for y and z are possible.

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Answer key/Solution

Q.77

Find the ten's place digit of $625^{246} - 441^{128}$.

1 ☐ 4

2 ☐ 0

3 ☐ 34 ☐ 6**Solution:****Correct Answer : 2**

The expression $625^{246} - 441^{128}$ can be rewritten as $(25)^{492} - (21)^{256}$.

Since 25 any positive integral power has the last two digits equal to 25, 25^{492} will also have the last two digits as 25.

Now,
 $21^{256} = (1 + 20)^{256} = 1 + 256 \times 20 + {}^{256}C_2 \times 20^2 + \dots$
 $= 1 + 5120 + {}^{256}C_2 \times 400 + {}^{256}C_3 \times 8000 + \dots$ Thus the last two digits of 21^{256} will be 21.

Thus, the last two digits of $25^{492} - 21^{256}$ will be $25 - 21$ i.e. 04.

\therefore Digit in 10's place will be 0.

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Q.78

If length and breadth of a cuboid increase by 10% each and surface area increases by 33.1%, then find percentage change in the height of the cuboid.

1 ☐ 10%2 ☐ 11.11%3 ☐ 9.09%4 ☐ Cannot be determined**Solution:****Correct Answer : 4**

Let S, L, B and H be the surface area, length, breadth and height of the cuboid respectively.

$$S = 2(L \times B + H \times B + H \times L)$$

After increase,

$$1.331S = 2(1.1L \times 1.1B + H' \times 1.1B + H' \times 1.1L)$$

$$\Rightarrow 1.21S = 2(1.1L \times B + H' \times B + H' \times L), \text{ where } H' \text{ is the height of the cuboid after increase.}$$

We cannot solve this further to get value of H' . Thus, cannot be determined.

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Q.79

If $10^a = 72$ and $10^b = 108$, then what is the value of $10^{(a+b)/5}$?

Solution:**Correct Answer : 6**
 $10^a = 72$
 $10^b = 108$
 $\therefore 10^a \times 10^b = 72 \times 108$

i.e., $10^{(a+b)} = 6^5$.

$$\therefore 10^{\frac{a+b}{5}} = \left(6^5\right)^{\frac{1}{5}} = 6.$$
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Q.80

On a particular day due to increase in the price of petrol by 10%, there is a drop of 10% in number of consumers buying it and those customers buy 10% less petrol as compared to previous day. Find the percentage change in the revenue received by the petrol pump on that day compare to the previous day. (Assume that each customer buy equal quantity of petrol in a single day)

1 ☐ 10%2 ☐ 8.91%3 ☐ 9.1%4 ☐ 10.9%

Solution:**Correct Answer : 4**

Let us assume originally a total of 100 people and each buy 100 L of petrol at rate of Rs. 100 per litre.
 So, revenue received by shopkeeper earlier = $100 \times 100 \times 100 = \text{Rs. } 10,00,000$.
 After the changes in percentage, price of petrol became Rs. 110 per litre, number of people buying it are 90 and petrol bought by each person is 90 litre.
 Hence, revenue received after change = $110 \times 90 \times 90 = \text{Rs. } 8,91,000$
 Thus, percentage change in revenue of shopkeeper = 10.9 %

Q.81

A shopkeeper bought three varieties of apples: one costing Rs. 147 per kg, second costing Rs. 150 per kg and third costing Rs. 153 per kg and he mixed these apples in the ratio (in term of weight) 17 : 19 : 21 respectively. If he sold all the apples at Rs. 151 per kg, then what is his overall profit/ loss?

1 ☐ 0.45% loss2 ☐ 0.526% profit3 ☐ 0.45% profit4 ☐ no profit no loss**Solution:****Correct Answer : 2**

Average cost per kg of buying apples

$$= \frac{(147 \times 17 + 150 \times 19 + 153 \times 21)}{(17 + 19 + 21)} = 150.2105.$$

Selling price = Rs. 151

Thus, total profit = $151 - 150.2105 = 0.7895$

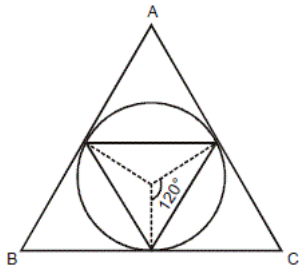
Thus, profit percentage

$$= \frac{0.7895}{150.2105 \times 100} = 0.525\%$$

Q.82

A circle is drawn circumscribing an equilateral triangle ABC. Now, another equilateral triangle is drawn circumscribing the circle. If the radius of the circle is 10 cm, then find the absolute difference between the area (in cm^2) of these two triangles.

1 ☐ $25\sqrt{3}$ 2 ☐ $100\sqrt{3}$ 3 ☐ $225\sqrt{3}$ 4 ☐ $75\sqrt{3}$ **Solution:****Correct Answer : 3**



Area of the inner triangle = $3\left(\frac{1}{2} \times r^2 \times \sin 120^\circ\right)$

$$\Rightarrow \frac{3}{2} \times 10^2 \times \frac{\sqrt{3}}{2}$$

$$= 75\sqrt{3} \text{ m}^2$$

The area of the outer triangle will be 4 times that of inner triangle i.e., $300\sqrt{3} \text{ cm}^2$.

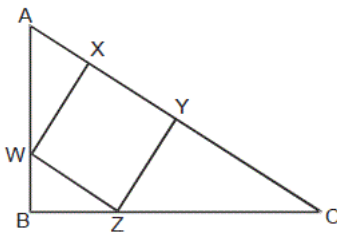
\therefore The required difference

$$= (300 - 75)\sqrt{3} = 225\sqrt{3}.$$

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Q.83

Find the area (in cm^2) of square WXYZ which is drawn inside a right angle triangle ABC right angled at B with side AB = 3 cm and BC = 4 cm.



1 ☐ $\frac{6400}{1369}$

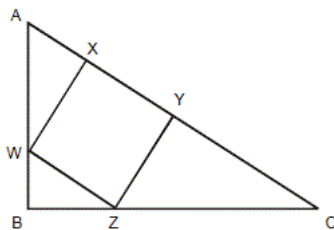
2 ☐ $\frac{3600}{1521}$

3 ☐ $\frac{3600}{1369}$

4 ☐ $\frac{6400}{1521}$

Solution:

Correct Answer : 3



If sides of ABC are in the ratio 3 : 4 : 5, then sides of all the triangles (i.e. $\triangle AXW$, $\triangle BWZ$, $\triangle CYZ$) will be in the ratio 3 : 4 : 5.

Side opposite to angle C is 3, that opposite to angle A is 4 and that opposite to angle B is 5.

We will use this for finding sides of triangles.

If side of square is 5k, then $WZ = 5k$, $BZ = 4k$ and $BW = 3k$. If $YZ = 5k$, then $CZ = 25k/3$.

Now, $BZ + CZ = 4 \Rightarrow 4k + 25k/3 = 4$

$k = 12/37$

Thus, side of square = $5k = 60/37$

Thus, area of square = $(60/37)^2$ i.e. $3600/1369$

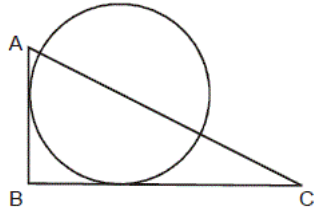
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Answer key/Solution

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Q.84

In the figure given below, ABC is a right angle triangle, right angled at B such that AC passes through the center of the circle and AB and BC are tangents to the circle. If AB = 5 cm and BC = 12 cm, then the radius (in cm) of the circle is



1 ☐ 3/2

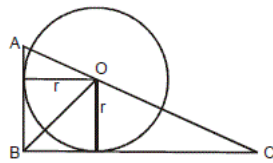
2 ☐ 60/17

3 ☐ 2

4 ☐ 5/2

Solution:

Correct Answer : 2



Let 'O' be the centre of the circle and 'r' be the radius.
Also, Area of $\triangle ABC$ = Area of $\triangle AOB$ + Area of $\triangle BOC$

$$\Rightarrow \frac{1}{2} \times AB \times BC = \frac{1}{2} \times r \times AB + \frac{1}{2} \times r \times BC$$

$$\Rightarrow \frac{1}{2} (5 \times 12) = \frac{1}{2} (5 \times r) + \frac{1}{2} (12 \times r)$$

$$\Rightarrow r = 60/17.$$

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Answer key/Solution

Q.85

If $m^a = n^b = p^c$, where m, n and p are in a Geometric Progression, which of the following expression depicts the correct relationship among a, b and c?

1 ☐ $b = \frac{2(a+c)}{ac}$

2 ☐ $b = \frac{2ac}{(a+c)}$

3 ☐ $c = \frac{(a^2 + b^2)}{ab}$

4 ☐ $c = \frac{(ab)^2}{(a+b)}$

Solution:

Correct Answer : 2

Let, $m^a = n^b = p^c = k$.

Hence, $m = k^{1/a}$, $n = k^{1/b}$, $p = k^{1/c}$

Also, since m, n and p are in G.P., $n^2 = m \times p$

i.e., $(k^{1/b})^2 = k^{1/a} \times k^{1/c}$

Or, $k^{2/b} = k^{1/a} \times k^{1/c} \Rightarrow k^{2/b} = k^{1/a + 1/c} \Rightarrow k^{2/b} = k^{(a+c)/ac}$

i.e. $b = 2ac / (a+c)$.

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Answer key/Solution

Q.86

Find the arithmetic mean of all three digit numbers whose rightmost digit is twice of left most digit.

1 ☐ 290

2 ☐ 300

3 ☐ 285

4 ☐ 325

Solution:

Correct Answer : 2

First number will be 102 and last number be 498.
(because a three digit number abc with $a \geq 5$ makes $c \geq 10$ which is not possible)

Numbers – 102, 112, 122, 132, ... 192 – form an AP.

Numbers – 204, 214, 224, 234, ... 294 – form an AP.

Numbers – 306, 316, 326, 336, ... 396 – form an AP.

Numbers – 408, 418, 428, 438, ... 498 – form an AP.

Also,

sum of 102 + 112 + 122 + ... + 192 = 1470,

sum of 204 + 214 + 224 + ... + 294 = 2490,

sum of 306 + 316 + 326 + ... + 396 = 3510,

sum of 408 + 418 + 428 + ... + 498 = 4530

sum of all numbers = 12000 with total 40 numbers.

\therefore Average = 300.

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 **Answer key/Solution**

Q.87

Find the number of digits in 2^{2013} ? ($\log 2 = 0.30102$)

1 ☐ 610

2 ☐ 606

3 ☐ 605

4 ☐ 612

Solution:

Correct Answer : 2

Number of digits in 2^{2013} can be found by taking its logarithm.

\therefore the number of digits = $\log 2^{2013}$

= $2013 \times \log 2 = 2013 \times 0.30102 \approx 606$.

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 **Answer key/Solution**

Q.88

Number of two-digit numbers which are equal to the sum of the product of their digits and the sum of their digits is

Solution:

Correct Answer : 9

Let the two digit number be 'ab' i.e., $10a + b$.

$\Rightarrow 10a + b = ab + a + b$

$\Rightarrow ab - 9a = 0$

$\Rightarrow a(b - 9) = 0$

b can take only one value 9 (as a can not be 0).

Also, a can take value from 1 to 9

\therefore Required numbers are 9.

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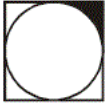
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 **Answer key/Solution**

Q.89

The figure shows a circle drawn into a square. If the perimeter of the shaded region is 25 cm, find the

area (in cm^2) of the circle. ($\pi = \frac{22}{7}$)



1 ☐ 77

2 ☐ 105

3 ☐ 154

4 ☐ 126

Solution:

Correct Answer : 3

Let r be the radius of the circle.
Perimeter of the shaded region

$$= 2r + \frac{1}{4} \left[2 \times \frac{22}{7} \times r \right] = 25$$

$$\Rightarrow 2r + \frac{11}{7} r = \frac{25}{7} \times r = 25$$

$$\Rightarrow r = 7$$

Area of the circle = $\pi \times r^2 = 154 \text{ cm}^2$

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Answer key/Solution

Q.90

A polynomial yields a remainder of 2 when divided by $(x - 1)$ and a remainder of 1 when divided by $(x - 2)$. If this polynomial is divided by $(x - 1)(x - 2)$, the remainder is

1 ☐ 2

2 ☐ 3

3 ☐ $(x + 1)$

4 ☐ $-x + 3$

Solution:

Correct Answer : 4

Let $F(x)$ be the unknown polynomial.
 $F(x) = Q(x) \times (x - 1) \times (x - 2) + (ax + b)$
Now, $F(1) = a + b = 2$
and $F(2) = 2a + b = 1$
Solving the above equations, we get
 $a = -1$ and $b = 3$
Thus, the remainder when $F(x)$ is divided by $(x - 1)(x - 2)$ is $-x + 3$

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Answer key/Solution

Q.91

When Anuj substitutes $x = 1$ into the expression $ax^3 - 2x + c$ its value is -5 . When he substitutes $x = 4$, the expression has value 52. One of the values of x that makes the expression equal to zero is

1 ☐ -1

2 ☐ 2

3 ☐ 0

4 ☐ 3

Solution:

Correct Answer : 2

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Answer key/Solution

$F(x) = ax^3 - 2x + c$
 Substituting $x = 1$, $a - 2 + c = -5$
 $\Rightarrow a + c = -3$
 Substituting $x = 4$, $64a - 8 + c = 52$
 $\Rightarrow 64a + c = 60$
 Solving above equations, we get
 $a = 1$ and $c = -4$.
 Hence, expression is $x^3 - 2x - 4$
 Also, $x^3 - 2x - 4$ is 0 at $x = 2$.
 \therefore Required value of x is 2.

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Q.92

$X = 0.\text{abcdabcdabcd} \dots$ such that $a + b + c + d = 9k$, where k is natural number and $a + c = b + d$. What should be the smallest natural number by which X should be multiplied to convert it to an integer?

Solution:

Correct Answer : 101

$X = 0.\text{abcdabcd} \dots$ (i)
 $\therefore 10000X = \text{abcdabcdabcd} \dots$ (ii)
 Subtracting equation (i) from (ii), we get
 $9999X = \text{abcd}$

$$\therefore X = \frac{\text{abcd}}{9999}$$

Also, $a + b + c + d = 9k$
 $\therefore \text{abcd}$ is divisible by 9 since its sum of digits is divisible by 9.

Also, since $a + c = b + d$, abcd is divisible by 11.

$\therefore \text{abcd}$ is divisible by 99.

\therefore The smallest natural number that X should be multiplied with to make it an integer

$$= \frac{9999}{99} = 101$$

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Answer key/Solution

Q.93

Raghuram left a will of Rs. 35 lakhs between his two daughters aged 5.5 years and 13 years such that they get equal amounts when each of them reaches the age of 18 years. The original amount has to be invested at 10% p.a. simple interest. How much amount (in Rs.) was invested in the name of younger daughter at the time of the will?

1 ☐ 10,00,000

2 ☐ 14,00,000

3 ☐ 12,00,000

4 ☐ 8,00,000

Solution:

Correct Answer : 2

Let the shares be x and y for the younger and the older daughter respectively.

$$(x + y) = 3500000$$

Now, x will be invested for 12.5 years and y will be invested for 5 years.

Also, $r = 10\%$ p.a.

$$\therefore \text{Interest earned by } x = \frac{x \times 25 \times 10}{2 \times 100} = 1.25x$$

$$\text{and interest earned by } y = \frac{y \times 5 \times 10}{100} = 0.5y$$

$$\text{Now, } x + 1.25x = y + 0.5y$$

$$\Rightarrow \frac{x}{y} = \frac{1.5}{2.5} = \frac{2}{3}$$

$$\Rightarrow x = \frac{2}{5} \times 3500000 = 14 \text{ lakhs}$$

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Answer key/Solution

Q.94

The time table of a certain class consists of six sessions. These six sessions are distributed among five different subjects such that one subject is conducted per session. What is the total number of different possible time tables if there has to be atleast one session per subject?

1 ☐ 14402 ☐ 36003 ☐ 18004 ☐ 720**Solution:****Correct Answer : 3**

Since each subject is to be conducted at least once, we can arrange the 5 subjects in the 6 sessions in ${}^6P_5 = 720$ ways.

The remaining one session can have any of the 5 subjects in 5 ways. But this would lead to the repetition of a subject.

\therefore The total number of different possible time table S

$$= 720 \times \frac{5}{2!} = 1800$$

Q.95

Three travellers are sitting around a fire, and are about to eat a meal. One of them has 5 small loaves of bread, the second has 3 small loaves of bread. The third has no food, but has 8 coins. He offers to pay for some bread. They agree to share the 8 loaves equally among the three travellers, and the third traveller will pay 8 coins for his share of the 8 loaves. All loaves were of the same size. The second traveller, who had 3 loaves, suggests that he will be paid 3 coins, and that the first traveller be paid 5 coins. The first traveller says that he should get more than 5 coins. How much should the first traveller get?

1 ☐ 52 ☐ 73 ☐ 14 ☐ None of these**Solution:****Correct Answer : 2**

Each traveller had $\frac{8}{3}$ loaves.

\Rightarrow First traveller has given $5 - \frac{8}{3}$ loaves to the third

and second traveller sacrificed only $3 - \frac{8}{3} = \frac{1}{3}$ rd of a loaf. So, first traveller should get 7 coins.

Q.96

In a box, there are 24 balls numbered 1 through 24. Out of the 24 balls, the numbers of balls that are coloured black, red and green are 10, 8 and 6 respectively. If Alan randomly takes out 6 balls from the box, then the total number of ways in which 2 green balls can be taken out from the box by Alan is 15 and the probability of taking out a red ball is half the probability of taking out a non-red one. After Alan has taken out 6 balls as per above mentioned case, Smith also takes out 2 balls from the box randomly. What is the probability that Smith did not take out a red ball?

1 ☐ 11/172 ☐ 13/183 ☐ 2/34 ☐ 22/51**Solution:****Correct Answer : 4**

So, once Alan has taken out 6 balls from the box, the box has 6 balls of each of the colours. The Probability that Smith did not take out a red ball

$$= \frac{{}^{12}C_2}{{}^{18}C_2} = \frac{22}{51}$$

Q.97

A strip of paper, 256 units in length and 1 unit in width, is divided into 256 unit squares. The squares are numbered 1 through 256 starting from the left most to right most square. The paper is folded into half repeatedly. For the first fold the right end of the paper is folded over to lie on the top of the left end such that square numbered 256 lie above the square numbered 1. Then the paper is cut at the fold. There are now two strips of paper having dimension 1×128 and lying one above the other. For the second fold, the right end of these two strips together is folded over to lie on the top of the left end, resulting in 4 strips of paper 1×64 in dimensions. The strip is again cut at the folds. This process is repeated till it becomes a stack of 256 unit square strips. How many of these square strips lie below the square numbered 202 in the final stack?

1 ☐ 1822 ☐ 2173 ☐ 1284 ☐ 142**Solution:****Correct Answer : 2**

Let us track the number 202.

At the end of the first fold, it is on the 2nd strip from bottom, 55th square from the left. Each strip now has 128 squares.

At the end of 2nd fold, each strip has 64 squares. So 202nd square would now be on the 2nd strip from the top the 55th square from left.

Similarly:

3rd Fold: 8 strips, 32 squares in each strip. 202nd square is on the 7th strip from bottom, 10th square from left.

4th fold: 16 strips, 16 squares in each strip. 202nd square now is the 7th strip, 10th square from left.

5th fold: 32 strips, 8 squares in each. 202nd square is now on the 26th strip, 7th square from left.

6th fold: 64 strips, 4 squares in each. 202nd square is now on the 39th strip, 2nd square from left

7th fold: 128 strips, 2 squares in each. 202nd square would be on the 39th strip, 2nd square from left.

8th fold: 256 strips, 1 square in each. 202nd square is now the 218th strip from the bottom and hence there are 217 strips below it.

Q.98

If $6x + 4y + 3z = 13$, where x, y and z are positive integers, then the value of $x^{\frac{1}{2}}y^{\frac{1}{3}}z^{\frac{1}{4}}$ is

1 ☐ 12 ☐ $13/2$ 3 ☐ 904 ☐ $1/2$ **Solution:****Correct Answer : 1**

Since x, y and z are positive integers and satisfy the equation $6x + 4y + 3z = 13$, $x = y = z = 1$ is the only possible case.

$$\therefore x^{\frac{1}{2}}y^{\frac{1}{3}}z^{\frac{1}{4}} = 1$$

Q.99

In a five-digit number $abcde$, where $a < 5$, the left most digit is the average of all the digits of the number. The digit at the hundreds place is the average of the digits at the hundreds, tens and unit's place and the digit at the tens place is the average of the digit at the tens place and the unit's digit. How many such numbers are possible?

1 ☐ More than 122 ☐ 103 ☐ 114 ☐ 12**Solution:****Correct Answer : 4**

As per the information given in the question

$$a = \frac{a+b+c+d+e}{5}$$

$$\Rightarrow b+c+d+e=4a$$

$$\text{Also, } c = \frac{c+d+e}{3} \Rightarrow d+e=2c$$

$$\text{and } d = \frac{d+e}{2} \Rightarrow d=e$$

$$\therefore c=d=e$$

$$\text{and } b+3e=4a$$

Case 1: a = 1:

Possible values of 'b' and 'e' in that order are (1, 1) and (4, 0)

Case 2: a = 2:

Possible values of 'b' and 'e' in that order are (8, 0); (5, 1) and (2, 2)

Case 3: a = 3:

Possible values of 'b' and 'e' in that order are (9, 1); (6, 2); (3, 3); (0, 4)

Case 4: a = 4:

Possible values of 'b' and 'e' in that order are (7, 3); (4, 4) and (1, 5)

 \therefore Total such numbers = $2 + 3 + 4 + 3 = 12$.

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Answer key/Solution

Q.100

Consider set G of all integers between 100 and 9999 (including the extremes). Call two integers a and b in G to be in the same category if the digits appearing in a and b are the same. For example, if a = 101, b = 100, c = 1000 and d = 120, then a, b and c are in the same category but c and d are not. Find the number of different categories that can be formed out of G.

1 ☐ 3842 ☐ 3853 ☐ 1744 ☐ 175**Solution:****Correct Answer : 1**

As we have only 3-digit and 4-digit numbers in the set G, a particular category can have either 1 digit or 2 distinct digits or 3 distinct digits or at the most 4 distinct digits. Number of categories of 1 digit = ${}^9C_1 = 9$ (we cannot consider zero in this case).

Number of categories of 2 distinct digits, 3 distinct digits and 4 distinct digits would be ${}^{10}C_2$, ${}^{10}C_3$ and ${}^{10}C_4$ respectively. Therefore the required answer is ${}^9C_1 + {}^{10}C_2 + {}^{10}C_3 + {}^{10}C_4 = 384$.

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Answer key/Solution