Language Comprehension

Instructions
Read the following passage carefully and then answer these questions based on what is stated or implied in the passage.

Passage I:

We call a man irrational when he acts in a passion, when he cuts off his nose to spite his face. He is irrational because he forgets that, by indulging the desire which he happens to feel most strongly at the moment, he will thwart other desires which in the long run are more important to him. If men were rational, they would take a more correct view of their own interest than they do at present; and if all men acted from enlightened self-interest the world would be a paradise in comparison with what it is. I do not maintain that there is nothing better than self-interest as a motive to action; but I do maintain that self-interest, like altruism, is better when it is enlightened than when it is unenlightened. In an ordered community it is very rarely to a man's interest to do anything which is very harmful to others. The less rational a man is, the oftener he will fail to perceive how what injures others also injures him, because hatred or envy will blind him. Therefore, although I do not pretend that enlightened self-interest is the highest morality, I do maintain that, if it became common, it would make the world an immeasurably better place than it is.

Rationality in practice may be defined as the habit of remembering all our relevant desires, and not only the one which happens at the moment to be strongest. Like rationality in opinion, it is a matter of degree. Complete rationality is no doubt an unattainable ideal, but so long as we continue to classify some men as lunatics it is clear that we think some men more rational than others. I believe that all solid progress in the world consists of an increase in rationality, both practical and theoretical. To preach an altruistic morality appears to me somewhat useless, because it will appeal only to those who already have altruistic desires. But to preach rationality is some what different, since rationality helps us to realise our own desires on the whole, whatever they may be. A man is rational in proportion as his intelligence informs and controls his desires. I believe that the control of our acts by our intelligence is ultimately what is of most importance, and that alone will make social life remain possible as science increases the means at our disposal for injuring each other. Education, the press, politics, religion—in a word, all the great forces in the world—are present on the side of irrationality, they are in the hands of men who flatter King Demos in order to lead him astray. The remedy does not lie in anything heroically cataclysmic, but in the efforts of individuals towards a more sane and balanced view of our relations to our neighbours and to the world. It is to intelligence, increasingly side-spread, that we must look for the solution of the ills from which our world is suffering.

Question 1

What is the central idea of the passage?

A The problems of the world can best be solved by rationality and enlightened self-interest.
B Altruism and rationality are the main indicators of intelligence.
C Altruism can make this world a heaven.
D Man is absolutely irrational.

Answer: A

Question 2

What is the author's attitude to modern development in science and communications?

A Cynical about their use.
B Skeptical about the uses they are put to.
C One of cautious acceptance.
D One of concern about their harmful potential.

Answer: D
Question 3
Rationality, according to the passage means mainly

A Having regard for others.
B Intelligent control of one's desires.
C The ability to cultivate a balanced view of one's surroundings.
D Power to resist yielding to strong passions.

Answer: D

Question 4
The author feels that it is impractical to appeal to altruism because

A Not all people are altruistic by nature.
B Altruism is weaker than rationality.
C Altruism is more refined than rationality.
D None of the above.

Answer: A

Question 5
The King Demos refers to

A Populace
B Politician
C Scientist
D Despot

Answer: D

Instructions
Read the following passage carefully and then answer these questions based on it.

Passage II:

Over four hundred years after his death, scholars are still travelling the mysteries of Michelangelo's art. Recently one mystery that was revealed was that his famous drawing of a pensive Cleopatra included a hidden drawing of a different Cleopatra on the reverse side. This hidden Cleopatra shows a tormented woman, whose eyes stare out at the viewer and whose mouth is open, screaming in horror. The two images, drawn on two sides of the same paper, can be viewed simultaneously. A second mystery concerns Michelangelo's architectural plan for the dome of St Peter's Basilica in Rome. Did he intend for the dome to look like the model he built between 1558 and 1561? Or did he change his mind after building the model and decide to elevate the dome in the way it is today? Scholars do not agree on the answer. A third mystery about one of the greatest artists who ever lived was why he destroyed hundreds or thousands of his drawings before he died. Did he feel they were unimportant? Did he want posterity to see only his finished products?

Question 6
It can be inferred from the passage that the most unusual aspect of the Cleopatra drawing is that

A The figure is tormented.
The figure is screaming.
One drawing is hidden.
One drawing is backward.

Answer: C

Question 7
The word 'pensive' (underlined) can best be substituted with the word

A Angry
B Happy
C Anxious
D Thoughtful

Answer: D

Question 8
The dome of St Peter's Basilica

A Bears no relation to the one in the model.
B Was destroyed after the model was built.
C Is raised more than the one in the model.
D Follows the plan of the model.

Answer: C

Question 9
According to the passage, Michelangelo is

A A private person.
B One of the greatest artists in the world.
C The most famous architect in Rome.
D Screaming in horror.

Answer: B

Question 10
Why did Michelangelo destroy so many drawings before he died?

A Nobody knows.
B They were unimportant.
C They were only drafts.
He had changed the drawings.
Answer: A

**Daily Free Topic Test**

**Instructions**
In these questions, choose the word from the alternatives (a), (b), (c) and (d) that is similar in meaning to the word given in capital letters.

**Question 11**
GIST

A Contribution  
B Substance  
C Prestige  
D Accessory  
Answer: B

**Question 12**
SOLICITOUS

A Nonchalant  
B Firm  
C Reverential  
D Worried  
Answer: D

**Question 13**
HOMELY

A Refined  
B Plain  
C Reliable  
D Amiable  
Answer: B

**MAT Free Solved Previous Papers**

**Question 14**
LOQUACIOUS

A Verbose  
B Taciturn
Question 15
PACIFY
A Placate
B Rouse
C Harass
D Rejoice
Answer: A

Instructions
In these questions, choose the word from the alternatives (a), (b), (c) and (d) that is opposite in meaning to the word given in capital letters.

Question 16
PERTINENT
A Appropriate
B Pleasant
C Extraneous
D Paltry
Answer: C

Question 17
SLOPPY
A Meticulous
B Inappropriate
C Robust
D Gullible
Answer: A

Question 18
WANTON
A Sportive
B Ardent
C Fragile
D Discreet
Answer: D

Question 19
FINESSE

A Atrocity
B Weakness
C Tact
D Clumsiness
Answer: D

Free Gk Tests

Question 20
IGNITE

A Kindle
B Attach
C Extinguish
D Split
Answer: C

Instructions
In each of these questions, a related pair of words is followed by four pairs of words (a), (b), (c) and (d). Choose the pair that best expresses a relationship similar to that expressed in the given pair.

Question 21
DRILL : BORE ::

A Painter : brush
B Sieve : sift
C Helmet : head
D Mason : wall
Answer: B

Question 22
DOE : STAG ::

A Horse : colt
B Dog : kennel
C
D
Answer: B

Downloaded from cracku.in
Daily Free Topic Test

Question 23
PHILATELIST : STAMPS ::

A Carpenter : saw
B Runner : sneakers
C Numismatist : coins
D Astrologer : predictions

Answer: C

Question 24
UMPIRE : GAME ::

A Chef : banquet
B Legislator : election
C Moderator : debate
D Prodigy : wonder

Answer: C

Question 25
NUCLEUS : CELL ::

A Rind : melon
B Web : spider
C Stalk : corn
D Yolk : egg

Answer: D

MAT Free Solved Previous Papers

Instructions
Each of the sentences in these questions has a blank indicating that something has been omitted. Beneath each sentence, four choices of words or phrases (a), (b), (c) and (d) are given. Choose the one that best fits the meaning of the sentence as a whole.

Question 26
Criticism that tears down without suggesting areas of improvement is not .......... and should be avoided if possible.

A Constructive
Question 27
Many educators believe that bilingual education has proved to have definite .......... education in any one tongue.

A Correlations with
B Limitations on
C Advantages over
D Connotations for
Answer: C

Question 28
Ballet dancers, ........... actors, must spend many hours a day practising before a performance.

A Like
B The like
C The same
D Same as
Answer: A

Question 29
The weather in the far north is not .......... it is down south.

A Like humid as
B As humid as
C Humid as
D So humid that
Answer: B

Question 30
Language, culture and personality may be considered independently of each other in thought, but they are .......... in fact.

A Equivocal
B Pervasive
C Inseparable

Download Excellent App for MAT Preparation
Instructions

In these questions, each sentence has four underlined portions marked A, B, C and D. Choose that portion which must be changed so that the sentence becomes correct.

Question 31

River water pollution (A) / is often indicate (B) / by (C) / algae distribution. (D)

A A
B B
C C
D D

Answer: B

Question 32

The ways of communication (A) / has (B) / changed dramatically (C) / since (D) / the last century.

A A
B B
C C
D D

Answer: B

Question 33

Which (A) / determines a (B) / good meal varies (C) / from country to (D) / country.

A A
B B
C C
D D

Answer: A

Question 34

Gandhiji lived a noble life of fasting (A) / and poverty (B) / in order to work for peaceful (C) / and independence (D)

A A
B B
C C
Daily Free Topic Test

Question 35
The first year of child’s life is (A) / characterised (B) / in (C) / rapid physical (D) / growth.

A  A
B  B
C  C
D  D

Answer: C

Instructions
In each of these questions, an idiomatic expression is given. Choose the correct choice which expresses the meaning to the given expression from the four options (a), (b), (c) and (d).

Question 36
To smell a rat

A  Signs of plague epidemic
B  Bad smell
C  Suspect foul dealings
D  To be in a bad mood

Answer: C

Question 37
To be above board

A  To have a good height
B  To be honest in any deal
C  To have no debts
D  To be able to swim

Answer: B

Question 38
To have the gift of the gab

A  A talent for speaking
B  To do exactly the right thing
C  To be cheerful
D  To get lots of gifts
   Answer: A

Question 39
To fall flat
A  Retreat
B  Met accidentally
C  Quarrel
D  To be met with a cold reception
   Answer: D

Question 40
Right-hand man
A  An honest person
B  Most efficient assistant
C  One who cannot use his left hand
D  A foolish person
   Answer: B

Download Excellent App for MAT Preparation

Mathematical Skills

Instructions
For the following questions answer them individually

Question 41
Walking at \( \frac{3}{4} \) of his usual pace, a man reaches his office 20 minutes late. Find his usual time.

A  2 hrs
B  1 hr
C  3 hrs
D  4 hrs
   Answer: B

Explanation:
Let usual speed = 4 m/min and usual time taken be \( t \) min

\[
=> \text{New speed} = \frac{3}{4} \times 4 = 3 \text{ m/min and new time} = (t + 20) \text{ min}
\]

Speed is inversely proportional to time

\[
\frac{4}{3} = \frac{t + 20}{t}
\]
Usual time = 60 min = 1 hour

Ans - (B)

Free Gk Tests

Question 42
If the difference between the simple and the compound interests on some principal amount at 20% for 3 years is Rs 48, then the principal amount must be

A Rs 650
B Rs 600
C Rs 375
D Rs 400

Answer: C

Explanation:
Difference between SI and CI for 3 years = \( \frac{P \times (r/100)^2 (3 + \frac{r}{100})}{2} \) and for 2 years = \( \frac{P \times (r/100)^2}{2} \)
Now, rate of interest = \( r = 20\% \) and time = \( t = 3 \) years
Let principal amount be Rs, \( P \)

=> Difference = \( P \times \frac{(20)^2}{100^2} \times (3 + \frac{20}{100}) = 48 \)
=> \( P \times \frac{1}{25} \times \frac{16}{5} = 48 \)
=> \( P = \frac{48 \times 125}{16} = 3 \times 125 \)
=> \( P = Rs. 375 \)
=> Ans - (C)

Question 43
In a zoo, there are rabbits and pigeons. If their heads are counted, these are 90 while their legs are 224. Find the number of pigeons in the zoo.

A 70
B 68
C 72
D 22

Answer: B

Explanation:
Let us assume all 90 are rabbits, thus there must be 360 legs (Rabbits have 4 legs and pigeons have 2)
But there are 360 - 224 = 136 less legs, so rabbits must be less.
=> Number of pigeons = \( \frac{136}{2} = 68 \)

Alternate Method: Let number of pigeons be \( x \) and number of rabbits be \( y \)
=> \( x + y = 90 \) -------(i)
and \(2x + 4y = 224\) \(\text{---(ii)}\)

Solving the two equations, we get: \(x = 68\) and \(y = 22\)

\[\Rightarrow \text{Ans} - (B)\]

**Question 44**
The sides of a rectangular field are in the ratio 3 : 4 with its area as 7500 sq m. The cost of fencing the field @ 25-paise per metre is

A Rs 87.50  
B Rs 86.50  
C Rs 67.50  
D Rs 55.50

**Answer:** A

**Explanation:**
Let sides of rectangular field be \(3x\) and \(4x\) m respectively.

\[\Rightarrow \text{Area} = lb = 7500\]
\[\Rightarrow 3x \times 4x = 7500\]
\[\Rightarrow x^2 = \frac{7500}{12} = 625\]
\[\Rightarrow x = \sqrt{625} = 25\]

\[\Rightarrow \text{Perimeter of field} = 2(3x + 4x) = 14x\]
\[= 14 \times 25 = 350\text{ m}\]

\[\therefore \text{Cost of fencing} = 350 \times 0.25 = Rs. 87.50\]

\[\Rightarrow \text{Ans} - (A)\]

---

**Daily Free Topic Test**

**Question 45**
A and B together can do a piece of work in 6 days. A alone can do it in 10 days. What time will B require to do it alone?

A 20 days  
B 15 days  
C 25 days  
D 30 days

**Answer:** B

**Explanation:**
Time required by B alone \(= \frac{1}{6} - \frac{1}{10}\)
\[= \frac{5-3}{30} = \frac{2}{30} = \frac{1}{15}\]

\[\therefore \text{B alone finishes the work in} \text{ 15 days}.\]

\[\Rightarrow \text{Ans} - (B)\]

**Question 46**
A square and an equilateral triangle have the same perimeter. If the diagonal of the square is \(12\sqrt{2}\) cm, then the area of the triangle is
A. $24\sqrt{3}$ cm$^2$
B. $24\sqrt{2}$ cm$^2$
C. $64\sqrt{3}$ cm$^2$
D. $32\sqrt{3}$ cm$^2$

Answer: C

Explanation:
Let the perimeter of square and equilateral triangle be $12x$ cm

$=>$ Each side of square $= \frac{12x}{4} = 3x$ cm and each side of equilateral triangle $= 4x$ cm

Diagonal of a square $= d = \sqrt{2} \times $ side

$=> 3x \times \sqrt{2} = 12\sqrt{2}$
$\Rightarrow x = \frac{12}{3} = 4$

$=>$ Side of equilateral triangle $= 4 \times 4 = 16$ cm

$\therefore$ Area of equilateral triangle $= \frac{\sqrt{3}}{4} s^2$

$= \frac{\sqrt{3}}{4} \times (16) \times (16)$

$= 64\sqrt{3}$ cm$^2$

$\Rightarrow$ Ans - (C)

Question 47

A cistern is filled in 5 hours and it takes 6 hours when there is a leak in its bottom. If the cistern is full, in what time shall the leak empty it?

A. 6 hrs
B. 5 hrs
C. 30 hrs
D. 15 hrs

Answer: C

Explanation:
Let capacity of cistern = L.C.M. (5,6) = 30 units

Efficiency to fill it $= \frac{30}{5} = 6$ units/hr

Let efficiency of leak $= -x$ units/hr

According to ques, $=> (6 - x) \times 6 = 30$

$=> 6 - x = 5$

$\Rightarrow x = 1$

$\therefore$ Time taken by leak to empty it $= \frac{30}{1} = 30$ hours

$\Rightarrow$ Ans - (C)
Question 48

The radius of the circumcircle of an equilateral triangle of side 12 cm is

A \( \left( \frac{4}{3} \right) \sqrt{3} \) cm
B \( 4 \sqrt{3} \) cm
C \( 4 \sqrt{2} \) cm
D \( \left( \frac{4}{3} \right) \sqrt{2} \) cm

Answer: B

Explanation:
Side of the equilateral triangle = \( a = 12 \) cm

\[ \Rightarrow \text{Area of triangle} = \Delta = \frac{\sqrt{3}}{4} s^2 \]
\[ = \frac{\sqrt{3}}{4} \times 12 \times 12 = 36 \sqrt{3} \text{ cm}^2 \]

\[ \therefore \text{Circumradius} = R = \frac{abc}{4\Delta} \]
\[ = \frac{12 \times 12 \times 12}{4 \times 36 \sqrt{3}} \]
\[ = \sqrt{3} = 4 \sqrt{3} \text{ cm} \]

\[ \Rightarrow \text{Ans} - (B) \]

Question 49

The sides of a triangle are 6 cm, 11 cm and 15 cm. The radius of its incircle is

A \( \frac{5\sqrt{2}}{4} \) cm
B \( 3 \sqrt{2} \) cm
C \( 6 \sqrt{2} \) cm
D \( \frac{4\sqrt{2}}{5} \) cm

Answer: A

Explanation:
Sides of the triangle are \( a = 6, b = 11, c = 15 \) cm

Area of a triangle = \( \Delta = rs \), where \( r \) = in radius and \( s \) is semi perimeter

\[ \Rightarrow \text{Semi perimeter} = s = \frac{a+b+c}{2} = \frac{6+11+15}{2} = 16 \text{ cm} \]

Area of triangle using Heron's Formula = \( \sqrt{s(s-a)(s-b)(s-c)} \)
\[ = \sqrt{16 \times 10 \times 5 \times 1} \]
\[ = \sqrt{2^5 \times 5^2} = 20 \sqrt{2} \text{ cm}^2 \]

\[ \therefore r = \frac{\Delta}{s} \]
\[ = \frac{20 \sqrt{2}}{16} = \frac{5 \sqrt{2}}{4} \text{ cm} \]

\[ \Rightarrow \text{Ans} - (A) \]

Question 50

The sum of the interior angles of a polygon is 1620. The number of sides of the polygon must be
Question 51
The distance between the tops of two trees 20 m and 28 m high is 17 m. The horizontal distance between the two trees is

A 9 m
B 11 m
C 15 m
D 31 m

Answer: C

Explanation:
AD and CE are two trees of height 28 m and 20 m respectively. AC = 17 m
In right $\triangle ABC$,

$\Rightarrow (BC)^2 = (AC)^2 - (AB)^2$

$\Rightarrow (BC)^2 = (17)^2 - (8)^2$

$\Rightarrow (BC)^2 = 289 - 64 = 225$

$\Rightarrow BC = \sqrt{225} = 15 m$

$\Rightarrow$ Ans - (C)
Question 52
Rs 770 have been divided among A, B and C such that A receives 2/9th of what B and C together receive. Then A's share is

A Rs 140  
B Rs 154  
C Rs 165  
D Rs 170  

Answer: A

Explanation:
Let B and C together have = Rs. 9x

=> A's share = \( \frac{2}{9} \times 9x = Rs. 2x \) \( \text{--------}(i) \)

Also, amount that A receive = \( (770 - 9x) \) \( \text{--------}(ii) \)

Comparing equations (i) and (ii), \( \Rightarrow 2x = 770 - 9x \)

\( \Rightarrow 11x = 770 \)

\( \Rightarrow x = \frac{770}{11} = 70 \)

\( \therefore \) A's share = \( 2 \times 70 = Rs. 140 \)

\( \Rightarrow \text{Ans - (A)} \)

Question 53
What least number must be subtracted from each of the numbers 14, 17, 34 and 42 so that the remainders are proportional?

A 0  
B 1  
C 2  
D 7  

Answer: C

Explanation:
Let \( x \) must be subtracted.

\( 14 - x = 34 - x \)

\( \Rightarrow 17 - x = 42 - x \)

\( \Rightarrow (14 - x)(42 - x) = (34 - x)(17 - x) \)

\( \Rightarrow 588 - 14x - 42x + x^2 = 578 - 34x - 17x + x^2 \)

\( \Rightarrow 56x - 51x = 588 - 578 \)

\( \Rightarrow 5x = 10 \)

\( \Rightarrow x = 2 \)

\( \Rightarrow \text{Ans - (C)} \)

Question 54
\( \frac{3\pi}{5} \) radians is equal to
A 108
B 54
C 100
D 81

Answer: A

Explanation:
Expression: \(\text{radians} = \frac{3\pi}{5} \times 180\)
= \(\frac{3}{5} \times 36 = 108^\circ\)
=> Ans - (A)

Question 55

If \(\sin A : \cos A = 4 : 7\), then the value of \(\frac{(7\sin A - 3\cos A)}{(7\sin A + 2\cos A)}\) is

A \(\frac{3}{14}\)
B \(\frac{3}{2}\)
C \(\frac{1}{3}\)
D \(\frac{1}{6}\)

Answer: D

Explanation:
Let \(\sin A = 4\) and \(\cos A = 7\)
Expression: \(\frac{(7\sin A - 3\cos A)}{(7\sin A + 2\cos A)}\)
\[
\begin{align*}
7(4) - 3(7) &= 28 - 21 = 28 - 21 \\
7(4) + 2(7) &= 28 + 14 \\
\frac{7}{42} &= \frac{1}{6}
\end{align*}
\]
=> Ans - (D)

Question 56

A tree breaks due to storm and the broken part bends so that the top of the tree first touches the ground, making an angle of 30° with the horizontal. The distance from the foot of the tree to the point where the top touches the ground is 10 m. The height of the tree is

A \(10(\sqrt{3} + 1)\) m
B \(10\sqrt{3}\) m
C \(10(\sqrt{3} - 1)\) m
D \(\left(\frac{10}{\sqrt{3}}\right)\) m

Answer: B

Explanation:
Given : $BC = 10 \text{ m}$ and $\angle ACB = 30^\circ$

To find : $AC + AB = ?$

Solution : In right $\triangle ABC$

$\Rightarrow \tan(30^\circ) = \frac{AB}{BC}$

$\Rightarrow \sqrt{3} = \frac{AB}{10}$

$\Rightarrow AB = \frac{10}{\sqrt{3}} \quad \text{(i)}$

Similarly, $\cos(30^\circ) = \frac{BC}{AC}$

$\Rightarrow 2 = \frac{10}{AC}$

$\Rightarrow AC = \frac{20}{\sqrt{3}} \quad \text{(ii)}$

:. Height of tree = $AB + AC$

$\frac{10}{\sqrt{3}} + \frac{20}{\sqrt{3}} = \frac{30}{\sqrt{3}} = 10\sqrt{3} \text{ m}$

$\Rightarrow \text{Ans - (B)}$

Daily Free Topic Test

Question 57
If $pqr = 1$ then

$\left( \frac{1}{1+p+q^{-1}} \right) + \left( \frac{1}{1+q+r^{-1}} \right) + \left( \frac{1}{1+r+p^{-1}} \right)$

is equal to

A 1
B $pq$
C $qr$
D $\frac{1}{pq}$

Answer: A

Explanation:
Given : $pqr = 1$

Expression : $\left( \frac{1}{1+p+q^{-1}} \right) + \left( \frac{1}{1+q+r^{-1}} \right) + \left( \frac{1}{1+r+p^{-1}} \right)$

$= \frac{1}{1+p+q^{-1}} + \frac{1}{1+q+r^{-1}} + \frac{1}{1+r+p^{-1}}$
Question 58
An edge of a cube measures 10 cm. If the largest possible cone is cut out of this cube, then the volume of the cone is

A 260 cm³  
B 260.9 cm³  
C 261.9 cm³  
D 262.7 cm³  

Answer: C

Explanation:

Edge of cube = 10 cm

Radius of the largest possible cone = 5 cm and height of cone = 10 cm

Volume of cone = \( \frac{1}{3} \pi r^2 h \)

\[
= \frac{1}{3} \times \frac{22}{7} \times (5)^2 \times 10 \\
= \frac{25 \times 220}{21} = 261.9 \text{ cm}^3 
\]

=> Ans - (C)

Question 59
If a solid sphere of radius 10 cm is moulded into 8 spherical solid balls of equal radius, then the surface area of each ball is

A 60\(\pi\) cm²  
B 50\(\pi\) cm²  
C 75\(\pi\) cm²  
D 100\(\pi\) cm²  

Answer: D
**Explanation:**
Let radius of each small spherical ball = \( r \) cm

Volume of a sphere = \( \frac{4}{3} \pi r^3 \)

\[ => 8 \times \frac{4}{3} \pi r^3 = \frac{4}{3} \pi (10)^3 \]

\[ => r^3 = \frac{10^3}{8} \]

\[ => r = \frac{10}{2} = 5 \]

\[ \therefore \text{Surface area of each ball} = 4 \pi r^2 \]

\[ = 4 \times \pi \times (5)^2 = 100 \pi \text{ cm}^2 \]

\[ => \text{Ans} - (D) \]

---

**QUESTION 60**

If \( a \) and \( b \) are the roots of the equation \( x^2 - 6x + 6 = 0 \), then the value of \( a^2 + b^2 \) is

A 36  
B 24  
C 12  
D 6

**Answer:** B

**Explanation:**
Equation : \( x^2 - 6x + 6 = 0 \)

Sum of roots = \( a + b = 6 \) and Product of roots = \( ab = 6 \) \( \text{(i)} \)

Now, squaring both sides, \( \Rightarrow (a + b)^2 = (6)^2 \)

\[ => a^2 + b^2 + 2ab = 36 \]

\[ => (a^2 + b^2) + 2(6) = 36 \]

\[ => (a^2 + b^2) = 36 - 12 = 24 \]

\[ => \text{Ans} - (B) \]

**QUESTION 61**

If \( a : b = 2 : 5 \) then \( (3a + 4b) : (6a + 6b) \) is equal to

A \( \frac{13}{20} \)  
B \( \frac{26}{33} \)  
C \( \frac{16}{27} \)  
D \( \frac{18}{35} \)

**Answer:** A

**Explanation:**
Let \( a = 2 \) and \( b = 5 \)
To find \((3a + 4b) : (5a + 6b)\)

\[
\frac{3(2)+4(5)}{5(2)+6(5)} = \frac{6+20}{10+30}
\]

\[
= \frac{26}{40} = \frac{13}{20}
\]

=> Ans - (A)

**Question 62**

The value of

\[
(1^3 + 2^3 + 3^3 + \ldots + 15^3) - (1 + 2 + 3 + \ldots + 15)
\]

is

A 14280
B 14400
C 12280
D 13280

**Answer: E**

**Explanation:**

Sum of \(n\) consecutive natural number cubes = \(\frac{n(n+1)}{2}\)

and sum of \(n\) consecutive natural numbers = \(\frac{n(n+1)}{2}\)

Expression : \(1^3 + 2^3 + 3^3 + \ldots + 15^3) - (1 + 2 + 3 + \ldots + 15)

\[
= \left(\frac{15 \times 16}{2}\right)^2 + \left(\frac{15 \times 16}{2}\right)
\]

\[
= (120)^2 + 120
\]

\[
= 14400 + 120 = 14520
\]

**Download Excellent App for MAT Preparation**

**Question 63**

In the figure given below, O is the centre of the circle. If \(\angle OBC = 37^\circ\), the \(\angle BAC\) is equal to

A 74
B 106
C 53
D 37

**Answer: C**

**Explanation:**
In the circle, OB=OC (radii), => \( \angle OBC = \angle OCB = 37^\circ \)

In \( \triangle OBC \), using angle sum property

\[ \angle BOC + \angle OBC + \angle OCB = 180^\circ \]

\[ \angle BOC + 37^\circ + 37^\circ = 180^\circ \]

\[ \angle BOC = 180^\circ - 74^\circ = 106^\circ \]

Now, angle subtended by an arc at the centre is double the angle subtended by it at any point on the circle.

\[ \Rightarrow \angle BOC = 2 \times \angle BAC \]

\[ \Rightarrow \angle BAC = \frac{106^\circ}{2} = 53^\circ \]

\[ \Rightarrow \text{Ans} - (C) \]

**Question 64**

A horse is tethered to one corner of a rectangular grassy field 40 m by 24 m with a rope 14 m long. Over how much area of the field can it graze?

A 154 m\(^2\)

B 308 m\(^2\)

C 150 m\(^2\)

D None of these

**Answer:** A

**Explanation:**

Area of the field that the horse can gaze = area of sector having radius \( r = 14 \) m

\[ \theta = \frac{90^\circ \times 22}{360^\circ \times 7} \times 14 \times 14 \]

\[ = \frac{1}{4} \times 22 \times 28 \]

\[ = 22 \times 7 = 154 \text{ m}^2 \]

\[ \Rightarrow \text{Ans} - (A) \]

**Question 65**

A two-digit number is such that the product of the digits is 14. When 45 is added to the number, then the digits interchange their places. Find the number.

A 72

B 27

C 37

D 14

**Answer:** A
Answer: B

Explanation:
Factors of 14 = 1, 2, 7, 14
Thus, only two digit numbers possible are 27 and 72
Now, when 45 is added, number will be reversed, => Number = 27
=> Ans - (B)

Question 66
Vishal goes to a shop to buy a radio costing Rs 2568. The rate of sales tax is 7%. He tells the shopkeeper to reduce the price of the radio to such an extent that he has to pay Rs 2568, inclusive of sales tax. Find the reduction needed in the price of the radio.

A Rs 179.76  
B Rs 170  
C Rs 168  
D Rs 169  

Answer: C

Explanation:
Let reduced price of the radio = Rs. x
=> Reduced Price + Sale tax = Rs. 2568
=> x + \frac{7x}{100} = 2568
\Rightarrow 107x = 2568 
\Rightarrow x = \frac{2568}{107} \times 100
\Rightarrow x = 24 \times 100 = 2400
\therefore Reduction needed = 2568 - 2400 = Rs. 168
=> Ans - (C)

Question 67
Dinesh travels 760 km to his home, partly by train and partly by car. He takes 8 hours if he travels 160 km by train and the rest by car. He takes 12 minutes more if he travels 240 km by train and the rest by car. The speed of the train and the car respectively are

A 80 km/hr, 100 km/hr  
B 100 km/hr, 80 km/hr  
C 120 km/hr, 100 km/hr  
D 100 km/hr, 120 km/hr

Answer: A

Explanation:
Let speeds of train and car be x km/hr and y km/hr respectively.
According to ques,
\Rightarrow \frac{160}{x} + \frac{600}{y} = 8 \quad \text{(i)}
Applying: $3 \times (i) - 2 \times (ii)$

\[
\begin{align*}
1800 & \quad 1040 \\
\Rightarrow \quad y - y & \quad 24 - 16.4 \\
760 & \quad 7.6
\end{align*}
\]

\[
\Rightarrow y = \frac{760}{7.6} = 100
\]

Similarly, \(x = \frac{160}{2} = 80\)

∴ Speeds of train and car are 80 km/hr and 100 km/hr respectively.

⇒ Ans - (A)

**Question 68**

A person on tour has Rs 360 for his daily expenses. If he extends his tour for 4 days, he has to cut his daily expenses by Rs 3. Find the original duration of the tour.

A 15 days  
B 30 days  
C 20 days  
D 24 days

**Answer:** C

**Explanation:**

Let original duration of tour be \(x\) days and expense per day = Rs. \(\frac{360}{x}\)

According to ques,

\[
\Rightarrow (x + 4)(\frac{360}{x} - 3) = 360
\]

\[
\Rightarrow 360 - 3x + \frac{1440}{x} - 12 = 360
\]

\[
\Rightarrow -3x^2 + 1440 - 12x = 0
\]

\[
\Rightarrow x^2 + 4x - 480 = 0
\]

\[
\Rightarrow (x + 24)(x - 20) = 0
\]

\[
\Rightarrow x = 20, -24
\]

∴ \(x\) cannot be negative, thus number of days = 20

⇒ Ans - (C)

**Daily Free Topic Test**

**Question 69**

Rs 6500 were divided equally among a certain number of persons. Had there been 15 more persons, each would have got Rs 30 less. Find the original number of persons.

A 50  
B 60  
C 40  
D 55

**Answer:** A
Explanation:
Let original number of persons be \(x\) and amount received by each person = Rs. \(\frac{6500}{x}\)

According to ques,

\[
=> (x + 15)(\frac{6500}{x} - 30) = 6500
\]

\[
=> 6500 - 30x + \frac{15 \times 6500}{x} - 450 = 6500
\]

\[
=> -30x^2 + (15 \times 6500) - 450x = 0
\]

\[
=> x^2 + 15x - 3250 = 0
\]

\[
=> (x + 65)(x - 50) = 0
\]

\[
=> x = 50, -65
\]

\(\because\) \(x\) cannot be negative, thus number of persons are 50

\(=>\) Ans - (A)

Question 70

Pipes A and B running together can fill a cistern in 6 minutes. If B takes 5 minutes more than A to fill the cistern, then the times in which A and will fill the cistern separately will be respectively

A 15 minutes, 20 minutes
B 15 minutes, 10 minutes
C 10 minutes, 15 minutes
D 25 minutes, 20 minutes

Answer: C

Explanation:

Let time taken by A alone to fill the cistern = \(t\) minutes

\(=>\) Time taken by B = \((t + 5)\) minutes

According to ques, \(\frac{1}{t} + \frac{1}{t+5} = \frac{1}{6}\)

\(=>\) \(\frac{t(t+5)}{t^2 + 5t} = \frac{1}{6}\)

\(=>\) \(12t + 30 = t^2 + 5t\)

\(=>\) \(t^2 - 7t - 30 = 0\)

\(=>\) \((t - 10)(t + 3) = 0\)

\(=>\) \(t = 10, -3\)

\(\because\) Time cannot be negative, \(=> t = 10\)

Thus, time taken by A and B separately to fill the cistern is 10 min and 15 min respectively

\(=>\) Ans - (C)

Question 71

In a flight of 3000 km, an aircraft was slowed down by bad weather. Its average speed for the trip was reduced by 100 km/hour and the time increased by one hour. Find the original duration of the flight.

A 5 hours
B 6 hours
C 4 hours
D 10 hours

Answer: A

Explanation:
Let initial speed be \( x \) km/hr, \( \Rightarrow \) New speed = \( (x - 100) \) km/hr
Let original duration of flight = \( t \) hours and actual time taken = \( (t + 1) \) hours
Total distance = \( xt = 3000 \) \( \quad \) (i)
Speed is inversely proportional to time,
\[ \Rightarrow \frac{x}{x-100} = \frac{t+1}{t} \]
\[ \Rightarrow xt = xt + x - 100t - 100 \]
\[ \Rightarrow x - 100t = 100 \]
\[ \Rightarrow \frac{3000}{t} - 100t = 100 \]
\[ \Rightarrow -100t^2 - 100t + 3000 = 0 \]
\[ \Rightarrow t^2 + t - 30 = 0 \]
\[ \Rightarrow (t + 6)(t - 5) = 0 \]
\[ \Rightarrow t = 5, -6 \]
\( \therefore \) Time cannot be negative, \( \Rightarrow \) Original duration = 5 hours
\( \Rightarrow \) Ans - (A)

MAT Free Solved Previous Papers

Question 72

Students of a class are made to stand in rows. If 4 students are extra in a row, there would be 2 rows less. If 4 students are less in a row, there would be 4 more rows. Find the number of students in the class.

A 86
B 106
C 96
D Cannot be determined

Answer: C

Explanation:
Let number of students in each row be \( x \) and number of rows = \( y \)
\( \Rightarrow \) Total number of students = \( xy \)
Case 1: \( (x + 4) \times (y - 2) = xy \)
\[ \Rightarrow xy - 2x + 4y - 8 = xy \]
\[ \Rightarrow 2y - x = 4 \] \( \quad \) (i)
Case 2: \( (x - 4) \times (y + 4) = xy \)
\[ \Rightarrow xy + 4x - 4y - 16 = xy \]
\[ \Rightarrow x - y = 4 \] \( \quad \) (ii)
Adding equations (i) and (ii), \( \Rightarrow y = 8 \)
and similarly, \( x = 12 \)
Total number of students = \(12 \times 8 = 96\) 
=> Ans - (C)

**Question 73**

Four different objects 1, 2, 3, 4 are distributed at random in four places marked 1, 2, 3, 4. What is the probability that none of the objects occupy the place corresponding to its number?

A  \(\frac{17}{24}\)  
B  \(\frac{3}{8}\)  
C  \(\frac{1}{2}\)  
D  \(\frac{5}{8}\)

**Answer:** B

**Explanation:**

A derangement is a permutation of objects that leave no object in its original position. Number of derangement's of set with \(n\) elements is

\[D_n = n! \left[1 - \frac{1}{1!} + \frac{1}{2!} - \frac{1}{3!} + \frac{1}{4!} - \ldots - \frac{1}{n!}\right]\]

The probability of derangement = \(\frac{D_n}{n!}\)

Now, in the given case \(n = 4\)

\[\therefore \text{Probability that none of the objects occupy the place corresponding to their number} = 1 - \frac{1}{1!} + \frac{1}{2!} - \frac{1}{3!} + \frac{1}{4!} = 1 - 1 + \frac{1}{2} - \frac{1}{6} + \frac{1}{24} = \frac{9}{24} = \frac{3}{8}\]

=> Ans - (B)

**Question 74**

A boat goes 24 km upstream and 28 km downstream in 6 hours. If it goes 30 km upstream and 21 km downstream in 6 hours and 30 minutes, find the speed of the stream.

A  10 km/hr  
B  5 km/hr  
C  4 km/hr  
D  6 km/hr  

**Answer:** C

**Explanation:**

Let speed of boat = \(x\) km/hr and speed of stream = \(y\) km/hr

\(\Rightarrow\) Downstream speed = \((x + y)\) km/hr and downstream speed = \((x - y)\) km/hr

According to ques,

\[\Rightarrow x - y + \frac{28}{x+y} = 6 \quad \text{(i)}\]

and \[x - y + \frac{21}{x+y} = 6.5 \quad \text{(ii)}\]

Using the operation : \[4 \times \text{(ii)} - 3 \times \text{(i)}\]
Similarly,\( x + y = 14 \) \text{(iv)}

Now, subtracting equation (iii) from (iv), \( 2y = 8 \)

\( y = \frac{8}{2} = 4 \)

\( \therefore \) Speed of stream = 4 km/hr

\( \Rightarrow \) Ans - (C)

**Question 75**

The diameter of a cycle wheel is 70 cm. A cyclist takes 30 hours to reach a destination at the speed of 22 km/hr. How many revolutions will the wheel make during this journey?

A 3 million
B 3 lakh
C 4 lakh
D None of these

**Answer:** B

**Explanation:**

Distance covered at 22 km/hr in 30 hours = \( 22 \times 30 \) = 660 km = 66 \times 10^6 cm

Radius of cycle = 35 cm

In one revolution, distance covered by the wheel = Circumference of cycle = \( 2\pi r \)

= \( 2 \times \frac{22}{7} \times 35 = 220 \) cm

\( \therefore \) Number of revolutions in the total journey = \( \frac{66 \times 10^6}{220} = 3 \times 10^5 \)

= 3 lakh revolutions

\( \Rightarrow \) Ans - (B)

**Question 76**

Shyam had 85 currency notes in all, some of which were of Rs 100 denomination and the remaining of Rs 50 denomination. The total amount of all these currency notes was Rs 5000. How much amount in rupees did he have in the denomination of Rs 50?

A 3500
B 70
C 15
D 1500

**Answer:** A

**Explanation:**

Let number of notes of Rs. 50 denomination = \( x \) and number of notes of Rs. 100 denomination = \( 85 - x \)

According to ques,

\( 50x + 100(85 - x) = 5000 \)
Question 77

A car owner buys petrol at Rs 7.50, Rs 8.00 and Rs 8.50 per litre for three successive years. What approximately is the average cost per litre of petrol if he spends Rs 4000 each year?

A Rs 8  
B Rs 9  
C Rs 7.98  
D Rs 8.50  

Answer: C

Explanation:
Since amount spend each year is constant, thus average cost is the harmonic mean of each price

\[ \frac{3}{\left(\frac{1}{7.5} + \frac{1}{8} + \frac{1}{8.5}\right)} \]

\[ = \frac{3}{\left(\frac{2}{15} + \frac{1}{8} + \frac{2}{17}\right)} \]

\[ = \frac{3}{\left(\frac{272+255+240}{2040}\right)} \]

\[ = \frac{3 \times 2040}{767} = 7.98 \]

=> Ans - (C)

---

Free Gk Tests

Question 78

If 10 years are subtracted from the present age of Ram and the remainder divided by 14, then you would get the present age of his grandson Shyam. If Shyam is 9 years younger to Sunder whose age is 14, then what is the present age of Ram?

A 80 years  
B 70 years  
C 60 years  
D None of these  

Answer: A

Explanation:
Sunder’s age = 14 years and Shyam’s age = 14 – 9 = 5 years
Let present age of Ram = \( x \) years

According to ques, \( \frac{(x-10)}{14} = 5 \)

=> \( x - 10 = 70 \)

=> \( x = 70 + 10 = 80 \)

\( \therefore \) Ram’s age = 80 years
Question 79
Sunder purchased an office bag with a price tag of Rs 600 in a sale where 25% discount was being offered on the tag price. He was given a further discount of 10% on the amount arrived at after giving usual 25% discount. What was the final amount paid by Sunder?

A Rs 210
B Rs 540
C Rs 405
D Rs 450

Answer: C

Explanation:
Marked price = Rs. 600
Relative discount after successive discounts of 25 and 10% = \(25 + 10 - \left(\frac{25 \times 10}{100}\right) = 32.5\%\)
\[\therefore \text{Sale price} = 600 - \left(\frac{32.5}{100} \times 600\right)\]
\[= 600 - 195 = Rs. 405\]

=> Ans - (C)

Question 80
The mean of 30 values was 150. It was detected on rechecking that one value 165 was wrongly copied as 135 for the computation of the mean. Find the correct mean.

A 151
B 149
C 152
D None of these

Answer: A

Explanation:
Mean of 30 values = 150

After replacing 135 by 165, correct mean = \(\frac{(30 \times 150) + (165 - 135)}{30}\)
\[= 150 + \frac{30}{30} = 151\]

=> Ans - (A)

Daily Free Topic Test
Data Analysis & Sufficiency

Instructions
The following table gives the enrolment in Higher Secondary Schools in 1978. Study the table carefully and answer these questions.
<table>
<thead>
<tr>
<th>Enrolment</th>
<th>No. of Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-39</td>
<td>526</td>
</tr>
<tr>
<td>40-59</td>
<td>620</td>
</tr>
<tr>
<td>60-79</td>
<td>674</td>
</tr>
<tr>
<td>80-99</td>
<td>717</td>
</tr>
<tr>
<td>100-119</td>
<td>681</td>
</tr>
<tr>
<td>120-139</td>
<td>612</td>
</tr>
<tr>
<td>140-159</td>
<td>540</td>
</tr>
<tr>
<td>160-179</td>
<td>517</td>
</tr>
<tr>
<td>180-199</td>
<td>522</td>
</tr>
<tr>
<td>Total</td>
<td>5439</td>
</tr>
</tbody>
</table>

**Question 81**

What is the approximate percentage of schools, where the enrolment was below 120?

A 59.16  
B 59.27  
C 60  
D 61

**Answer:** A

**Explanation:**  
Percentage of schools where enrolment is below 120 are given by  
\[
\frac{(526+620+674+717+681)}{5439} \times 100 \\
= \frac{3218}{5439} \times 100 \approx 59.16\% \\
=> \text{Ans} - (A)
\]

**Question 82**

What is the approximate percentage of schools, where the enrolment was above 79 but below 180?

A 56  
B 56.39  
C 57  
D 55

**Answer:** B

**Explanation:**  
Percentage of schools, with enrolment above 79 & below 180 are given by  
\[
\frac{(717+681+612+540+517)}{5439} \times 100 \\
= \frac{3067}{5439} \times 100 \approx 56.39\% \\
=> \text{Ans} - (B)
\]

**Question 83**

Under which class, the maximum number of schools fall?
Question 84
What is the approximate percentage of the least number of schools for the classes of enrolment?

A 8
B 9.5
C 9
D 10

Answer: B

Explanation:
The least no. of schools (517) are in class 160-179
=> Required % = \( \frac{517}{5439} \times 100 \approx 9.57\%
=> Ans - (B)

Question 85
What is the number of schools where the enrolment is above 99 but below 160?

A 2550
B 2033
C 1833
D 1316

Answer: C

Explanation:
No. of schools with enrolment above 99 & below 160 are
= 681 + 612 + 540 = 1833
=> Ans - (C)

Question 86
What is the average enrolment per HS School?

A 107.87
Question 87
What is the average of Rural Males Population in millions?

A 36.1  
B 39.7  
C 37.9  
D 30.3  

Answer: C

Explanation:
Population (in millions) of Rural males (5-9) = 39.7  
Population (in millions) of Rural males (10-14) = 36.1  
=> Required average = \( \frac{39.7 + 36.1}{2} = 37.9 \)  
=> Ans - (C)
Question 88
In which category of population, there is the lowest percentage of children in the school?

A  Urban males 5-9
B  Rural males 5-9
C  Urban females 5-9
D  Rural females 10-14

Answer: D

Explanation:
Percentage of children in school in category:
Urban males (5-9) = 84.1%
Rural males (5-9) = 67.2%
Urban females (5-9) = 80.1%
Rural females (10-14) = 55.7% [MIN]

=> Ans - (D)

Question 89
What is the approximate percentage of children of all categories not in school?

A  40.8
B  31.5
C  30.5
D  31.13

Answer: D

Explanation:
Total number of children (in millions) not in school = 57.79

=> Required ratio = \( \frac{57.79}{100} \times 100 \approx 31.13\% \)

=> Ans - (D)

Question 90
What per cent is the ratio between urban males and rural males not in school?

A  16
B  18
C  15.33
D  None of these

Answer: C

Explanation:
Urban males (in millions) not in school = 1.79 + 1.5 = 3.29
Rural males (in millions) not in school = 13.02 + 8.44 = 21.46
Daily Free Topic Test

Question 91
What is the approximate number of children in millions who are working?

A 17
B 18
C 19
D 16

Answer: B

Question 92
What is the approximate percentage of all categories of children not in school and not working?

A 20.06
B 21.56
C 22.36
D None of these

Answer: D

Explanation:
Number of children not in school and not working in all categories (in millions):

\[ \frac{31.5}{100} \times 13.02 + \frac{40.8}{100} \times 15.63 + \frac{15.2}{100} \times 1.79 + \frac{18.6}{100} \times 2.02 + \frac{10.6}{100} \times 8.44 + \frac{14}{100} \times 13.42 + \frac{5.8}{100} \times 1.5 + \frac{5.3}{100} \times 1.93 \]

= 14.08

=> Required % = \( \frac{14.08}{57.79} \times 100 \approx 24.36\% \)

=> Ans - (D)

Question 93
In which category of children, there is maximum number not in school and not working?

A Rural females 10-14
B Rural males 5-9
C Rural females 5-9
D Urban males 10-14

Answer: C

Explanation:
Number of children (in millions) not in school and not working in the category:

Rural females (10-14) = \( \frac{14}{100} \times 13.42 = 1.88 \)
Rural males (5-9) = \frac{31.5}{100} \times 13.02 = 4.10
Rural females (5-9) = \frac{40.8}{100} \times 15.63 = 6.37 \quad \text{[MAX]}
Urban males (10-14) = \frac{5.8}{100} \times 1.5 = 0.08

=> \text{Ans - (C)}

**MAT Free Solved Previous Papers**

**Question 94**

In which category of children, there is maximum number not in school but working?

A Rural males 10-14
B Rural females 10-14
C Urban females 10-14
D Urban males 10-14

**Answer:** B

**Explanation:**

Number of children (in millions) not in school but working in the category:

Rural males (10-14) = \frac{12.8}{100} \times 9.44 = 1.08
Rural females (10-14) = \frac{30.3}{100} \times 13.42 = 4.06 \quad \text{[MAX]}
Urban females (10-14) = \frac{13.1}{100} \times 1.93 = 0.25
Urban males (10-14) = \frac{7}{100} \times 1.5 = 0.10

=> \text{Ans - (B)}

**Question 95**

What percentage of the total population of the children of all categories is in the school?

A 68.87
B 69.87
C 67.9
D 68.80

**Answer:** A

**Explanation:**

Total child population not in school (in millions) = 57.79
Total child population in school (in millions) = 185.5 - 57.79 = 127.71

=> Required % ratio = \frac{127.71}{185.5} \times 100
= 68.87%

=> \text{Ans - (A)}

**Question 96**

What approximately is the percentage ratio between the total number of children not in school and in school?
Question 97
Which year shows the maximum percentage of export with respect to production?
A 1992
B 1993
C 1996
D 1995

Answer: C

Explanation:
Percentage of export with respect to production in the year
1992 = \( \frac{180}{540} \times 100 = 33.33\% \)
1993 = \( \frac{288}{720} \times 100 = 40\% \)
1996 = \( \frac{450}{660} \times 100 = 68.19\% \) [MAX]
1995 = \( \frac{400}{600} \times 100 = 66.67\% \)

=> Ans - (C)

Question 98
The population of India in 1993 was

A 800 million
B 1080 million
C 985 million
D 900 million

Answer: B

Explanation:
Tea available in India in 1993 = 720 – 288 = 432 million kg
Per capita availability in 1993 = 0.4 kg

=> Population = \( \frac{432}{0.4} = 1080 \) million

=> Ans - (B)

Question 99
If the area under tea production was less by 10% in 1994 than in 1993, then the approximate rate of increase in productivity of tea in 1994 was

A 97.2
B 3
C 35
D Cannot be determined

Answer: D

Explanation:
Since there is no data given about area, hence it cannot be determined.

=> Ans - (D)
Question 100
The average proportion of tea exported to the tea produced over the period is

A. 0.87  
B. 0.47  
C. 0.48  
D. 0.66  

Answer: B

Explanation:
Total tea exported (in millions kg) = 96+180+288+340+400+450 = 1754
Total tea produced (in millions kg) = 480+540+720+700+600+660 = 3700

=> Required ratio = \( \frac{1754}{3700} \) = 0.47

=> Ans - (B)

Question 101
What is the first half decade’s average per capita availability of tea?

A. 457 gm  
B. 535 gm  
C. 446 gm  
D. 430 gm  

Answer: D

Explanation:
First half decade’s (1991-1995) average per capita availability of tea

\[ \frac{390+410+400+450+500}{5} \]

= \( \frac{2150}{5} \) = 430 gm

=> Ans - (D)

Question 102
In which year was the per capita availability of tea minimum?

A. 1996  
B. 1994  
C. 1991  
D. None of these  

Answer: C

Explanation:
Clearly, per capita availability of tea is minimum in the year 1991 which was 390.
Daily Free Topic Test

Question 103
In which year was there minimum percentage of export with respect to production?

A  1991
B  1992
C  1993
D  1994

Answer: A

Explanation:
Percentage of export with respect to production in the year:
1991 = $\frac{96}{480} \times 100 = 20\%$  [MIN]
1992 = $\frac{180}{540} \times 100 = 33.33\%$
1993 = $\frac{288}{720} \times 100 = 40\%$
1994 = $\frac{340}{700} \times 100 = 48\%$
=> Ans - (A)

Question 104
In which year we had maximum quantity of tea for domestic consumption?

A  1994
B  1991
C  1993
D  1996

Answer: C

Explanation:
Maximum quantity of tea for domestic consumption was available in the year which has the highest production, i.e. 1993 producing 720 million kg.
=> Ans - (C)

Question 105
What approximately was the average quantity of tea available for domestic consumption during the period?

A  324.3 million kg
B  400 million kg
C  410.3 million kg
D  320.3 million kg

Answer: A
Question 106
What was approximately the average population during the period?

A 625 million  
B 624 million  
C 600 million  
D 757 million  

Answer: D

Instructions
Study the table given below and answer these questions.

Question 107
In which period, did we have the most adverse trade balance for India?

A 1996-97  
B 1989-90  
C 1998-99  
D 1990-91  

Answer: C

Explanation:
The period with the most adverse trade balance was 1998-99 having lowest trade balance equal to -8199.

=> Ans - (C)

Question 108
What was the average % growth rate of exports during the entire period?

A 6.5  
B 9.56  
C 5.06  

Downloaded from cracku.in
% Growth rate of exports during the entire period.

\[
\frac{33659 - 16613}{16613} \times 100 \\
\approx 102.60\%
\]

Thus, average growth for the 10 year interval = \[
\frac{102.60}{10} = 10.26\%
\]

=> Ans - (D)

Question 109
In which period was the trade balance the best?

A 1998-99
B 1991-92
C 1994-95
D 1993-94

Answer: D

Explanation:
Clearly, trade balance is best in the period 1993-94 which was -1068 (maximum).

=> Ans - (D)

Question 110
In which period the growth rate of exports was the highest?

A 1995-96
B 1993-94
C 1989-90
D None of these

Answer: A

Explanation:
Clearly, growth rate of exports is highest in the period 1995-96 which was 8.7

=> Ans - (A)

Question 111
During which period the Export/Import ratio was the highest?

A 1994-95
B 1993-94
C 1991-92
D 1995-96

Answer: D

Explanation:
Average growth for the 10 year interval = \[
\frac{102.60}{10} = 10.26\%
\]
Answer: B

Explanation:
Export/Import ratio in the period:

1994-95 = \frac{8}{8.7} = 0.91
1993-94 = \frac{8}{8.3} = 0.96 \quad \text{[MAX]}
1991-92 = \frac{7}{7.8} = 0.91
1995-96 = \frac{8}{10.1} = 0.86

=> Ans - (B)

Question 112
What is the average growth rate of exports for the period 1992-93 to 1995-96?

A 15
B 15.75
C 14
D 17.88

Answer: D

Explanation:
% Growth rate of exports during the period 1992-93 to 1995-96
\[
\frac{31795 - 18537}{18537} \times 100 \\
\approx 71.52\%
\]
Thus, average growth for the 4 year interval = \frac{71.52}{4} = 17.88%

=> Ans - (D)

Question 113
What is the average Export/Import ratio for the period 1992-93 to 1998-99?

A 83.4
B 86.3
C 65.1
D 87.0

Answer: B

Question 114
Using Exports GDP ratio for the period 1989-90, find the GDP for the same period.

A 272344
B 275571
C 273345

Downloaded from cracku.in
Daily Free Topic Test

Instructions

Study the table given below carefully and answer these questions.

**WATER SUPPLY PROJECTIONS FOR HYDERABAD**

<table>
<thead>
<tr>
<th>Year</th>
<th>Population to be covered (million)</th>
<th>Water requirement (mid)</th>
<th>Actual or Projected supplies (mid)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>3.3</td>
<td>722</td>
<td>545</td>
</tr>
<tr>
<td>1994</td>
<td>4.35</td>
<td>913</td>
<td>680</td>
</tr>
<tr>
<td>2001</td>
<td>6.23</td>
<td>1105</td>
<td>1090</td>
</tr>
<tr>
<td>2011</td>
<td>8.19</td>
<td>1862</td>
<td>1906</td>
</tr>
<tr>
<td>2021</td>
<td>10.15</td>
<td>2224</td>
<td>1906</td>
</tr>
</tbody>
</table>

mid: Million litres per day

**Question 115**

What is the average growth rate per year of population to be covered from 2001 to 2011?

A 3.15%

B 2.86%

C 4%

D 2%

Answer: A

**Explanation:**

Growth rate per year of population to be covered from 2001 to 2011

\[
\frac{8.19 - 6.23}{6.23} \times 100 \approx 31.5\%
\]

Now, average growth rate of 10 years = \( \frac{31.5}{10} = 3.15\% \)

=> Ans - (A)

**Question 116**

In which year was there maximum difference between water requirements and actual or projected supplies?

A 1994

B 2011

C 2021

D 1991

Answer: C

**Explanation:**

Difference in per capita water requirements and the actual or projected supplies in the year:

1994 = 913 - 680 = 233
2011 = 1862 − 1906 = −44
2021 = 2224 − 1906 = 318  [MAX]
1991 = 722 − 545 = 177
=> Ans - (C)

Question 117
In which year the actual or projected supplies exceeded/exceeds the water requirements?

A 2011
B 1994
C 2021
D None of these

Answer: A

Explanation:
Clearly in the year 2011, the actual or projected supplies exceeded/exceeds the water requirements by :

= 1906 - 1862 = 44 mid
=> Ans - (A)

MAT Free Solved Previous Papers

Question 118
What approximately is the maximum per capita of actual or projected supplies as litres/day ?

A 278.1
B 187.78
C 232.7
D 174.9

Answer: C

Explanation:
Per capita of water in actual or projected supplies in the year :

1991 = \frac{545}{3.3} \approx 165
1994 = \frac{680}{4.35} \approx 156
2001 = \frac{1090}{6.23} \approx 175
2011 = \frac{1906}{8.19} \approx 232.7  [MAX]
2021 = \frac{1906}{10.15} \approx 188
=> Ans - (C)

Question 119
In which year, there was the least difference in per capita water requirements and the actual or projected supplies?

A 2001
B 2011
C 1991
D 1994

Answer: B

Explanation:
Difference in per capita water requirements and the actual or projected supplies in the year:

2001 = 1105 - 1090 = 15
2011 = 1862 - 1906 = -44 [MIN]
1991 = 722 - 545 = 177
1994 = 913 - 680 = 233

=> Ans - (B)

Question 120
In which year, there was the lowest per capita of water in actual or projected supplies?

A 2021
B 2001
C 1994
D 1991

Answer: C

Explanation:
Per capita of water in actual or projected supplies in the year:

2021 = \frac{1906}{10.15} \approx 188
2001 = \frac{1090}{6.23} \approx 175
1994 = \frac{680}{4.35} \approx 156 [MIN]
1991 = \frac{545}{3.3} \approx 165

=> Ans - (C)

Download Excellent App for MAT Preparation
Intelligence & Critical Reasoning

Instructions
Read the following information carefully to answer these questions.

A sample poll of 200 votes revealed the following information concerning three candidates A, B and C of a certain party who were running for three different offices.
28 in favour of both A and B.
98 in favour of A or B but not C.
42 in favour of B but not A or C.
122 in favour of B or C but not A.
64 in favour of C but not A or B.
14 in favour of A and C but not B.

Question 121
How many voters were in favour of all the three candidates?
Free Gk Tests

Question 122
How many voters were in favour of all the three candidates?

A 78
B 64
C 42
D 56
Answer: A

Question 123
How many voters were in favour of B irrespective of A or C?

A 78
B 62
C 48
D 86
Answer: D

Question 124
How many voters were in favour of C irrespective of A or B?

A 78
B 102
C 88
D 86
Answer: B

Daily Free Topic Test

Question 125
How many voters were in favour of A and B but not C?

Downloaded from cracku.in
Question 126
How many voters were in favour of only one of the candidates?

A 58
B 78
C 106
D 142
Answer: D

Question 127
How many voters were in favour of A and C but not B?

A 22
B 14
C 16
D 20
Answer: B

Question 128
How many voters were in favour of C alone?

A 36
B 42
C 64
D 38
Answer: C

Question 129
How many voters were in favour of B and C but not A?

A 16
B 14
Question 130
How many voters were in favour of A and C but not B?

A 16
B 14
C 36
D 42

Answer: B

Question 131
What is the next letter in the following series? a, c, b, d, e?

A h
B g
C i
D j

Answer: B

Instructions
In these questions, find the missing number.

Question 132

\[
\begin{array}{ccc}
54 & 30 & 112 \\
24 & 70 & 38 \\
\end{array}
\]

A 76
B 66
C 10
D None of these

Answer: B
Question 133

A 18
B 27
C 24
D 9
Answer: D

Free Gk Tests

Question 134

A 240
B 195
C 84
D None of these
Answer: B

Question 135

A 126
B 122
C 128
D 124
Answer: D
Question 136
6, 15, 36, 75, ?

A 231
B 138
C 214
D None of these

Answer: B

Question 137
5 : 7 :: ? : 28

A 20
B 14
C 56
D None of these

Answer: A

Question 138
15, 45, ?, 405

A 90
B 75
C 135
D 51

Answer: C

Instructions
In these questions, two statements are given followed by two conclusions I and II. You have to consider both the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions is/are definitely drawn from the given statements.

Question 139
Statements:
When it rains, usually X does not go out.
X has gone out.

Conclusions:
I. It is not raining.
II. X has some urgent business to transact.

A If only I follows
B If only II follows
Question 140

Statements:
In a Golf Club, all the members are not active players of the game but all of them are rich.
Mrs X is a member.
Conclusions:
I. She is a golfer.
II. She is rich.

A. If only I follows
B. If only II follows
C. If neither I nor II follows
D. If both I and II follow

Answer: C

Question 141

Statements:
All employees of company A have identity cards.
Ram is an employee of company A.
Conclusions:
I. Ram has an identity card.
II. Ram is the General Manager of the Company.

A. If only I follows
B. If only II follows
C. If neither I nor II follows
D. If both I and II follow

Answer: B

Question 142

Statements:
If there is shortage in the production of onions, the price of onions will go up.
Price of onions has gone up.
Conclusions:
I. There is shortage in the production of onions.
II. Onions were exported.

A. If only I follows
B. If only II follows
C. If neither I nor II follows
D. If both I and II follow

Answer: B
Question 143

Statements:
If all players play to their full potential, we will win the match.
We have won the match.

Conclusions:
I. All players played to their full potential.
II. Some players did not play to their full potential.

A  If only I follows
B  If only II follows
C  If neither I nor II follows
D  If both I and II follow

Answer: C

Question 144

Statements:
Some businessmen are rich.
Soman is rich.

Conclusions:
I. Soman is a businessman.
II. Soman has a big farm.

A  If only I follows
B  If only II follows
C  If neither I nor II follows
D  If both I and II follow

Answer: B

Question 145

Statements:
All persons who own a house or a car should file Income Tax return.
Shiela files her income tax return.

Conclusions:
I. Shiela owns a house or a Car.
II. Shiela neither owns a house nor a Car.

A  If only I follows
B  If only II follows
C  If neither I nor II follows
D  If both I and II follow

Answer: C
Question 146
Statements:
In order to be selected for the local cricket team, a person should be either a good batsman or bowler. Shyam is selected for the team.
Conclusions:
I. Shyam is a good batsman.
II. Shyam is not a good bowler.

A If only I follows
B If only II follows
C If neither I nor II follows
D If both I and II follow

Answer: B

Question 147
Statements:
Without rains the crops will not be good.
The crops were good.
Conclusions:
I. There were rains.
II. Crops were good due to good fertilizers.

A If only I follows
B If only II follows
C If neither I nor II follows
D If both I and II follow

Answer: A

Question 148
Statements:
According to the evolution theory, man evolved from a monkey.
X is a monkey.
Conclusions:
I. X can become a man.
II. Man can become a monkey.

A If only I follows
B If only II follows
C If neither I nor II follows
D If both I and II follow

Answer: B
Instructions
In these questions, select the odd one out.

Question 149

![Images of shapes]

A 1  
B 2  
C 3  
D 4

Answer: A

Question 150

![Images of arrows]

A 2  
B 1  
C 4  
D 3

Answer: D

Question 151

![Images of arrows]

A 2  
B 1  
C 3  
D 4

Answer: C
Question 152

A 3
B 2
C 4
D 1

Answer: B

Question 153

A 3
B 4
C 2
D 1

Answer: A

Instructions
For the following questions answer them individually

Question 154
Four positions of a cube are shown below. Which symbol is opposite to the face having ‘△’

Question Figures

Answer Figures

A 3
B 1
In a certain coding system, '816321' means "The brown dog frightened the cat", '64851' means "The frightened cat ran away", '7621' means "The cat was brown", '341' means "The dog ran"

**Question 155**
What is the code for 'the dog was frightened'?

A 8263  
B 8731  
C 5438  
D None of these

Answer: B

**Question 156**
What is the code for 'frightened'?

A 2  
B 6  
C 3  
D 8

Answer: D

**Question 157**
What is the code for 'away'?

A 5  
B 7  
C 6  
D 1

Answer: A
Question 158
What is the code for 'brown'?

A 2
B 4
C 6
D 8

Answer: A

Instructions
For the following questions answer them individually

Question 159
In how many ways can 7 people be seated at a roundtable if 2 particular people must not sit next to each other?

A 5040
B 240
C 480
D 720

Answer: C

Question 160
In a certain coding system ETTPI stands for APPLE. What is the code for 'DELHI'?

A CQMN
B HIPLM
C PMULM
D CQPLM

Answer: B

Daily Free Topic Test
Indian & Global Development

Instructions
For the following questions answer them individually

Question 161
William M Daley who was part of the US President's delegation to India is the

A Secretary of State for Commerce
B Chairman of the Committee on Foreign Affairs
C Asst. Secretary of State for Information Technology
MAT Free Solved Previous Papers

Question 162
Where was the last round of talks for the WTO held in November-December 19997?

A  Sydney
B  London
C  Washington
D  Seattle
   Answer: D

Question 163
Who played the role of Saket Ram in the controversial film Hey Ram?

A  Shah Rukh Khan
B  Kamal Hassan
C  Naseeruddin Shah
D  Om Puri
   Answer: B

Question 164
The present Pope went on a historic tour of which region in March 2000?

A  Russia
B  Greece
C  Israel and Jordan
D  Turkey
   Answer: C

Question 165
Nokia is going to begin shipping 1 million WAP phones every week which will allow the user to browse the Internet through the mobile phone. What does WAP stand for ?

A  Windows Applications Protocol
B  Wireless Applications Protocol
C  Windows Alpha Project
Question 166
15th World Chess Championship was won by

A Viswanathan Anand
B Anatoly Karpov
C Karnam Malleswari
D Leander Paes
Answer: A

Question 167
Which city in the world has the distinction of hosting the most cricket matches?

A London (Lords)
B Melbourne
C Calcutta
D Sharjah
Answer: A

Question 168
Who was the last President of the US to serve for two terms before Mr Bill Clinton?

A John F Kennedy
B Ronald Reagan
C George Bush
D Jimmy Carter
Answer: B

Question 169
We have all heard of a venture capitalist in the IT industry. Who or what is an angel investor?

A Someone who puts money in the beginning of the project and usually does not expect returns on the investment.
B Someone who puts money in an internet company that is running into losses.
C Someone who gives only technical consultancy for the project.
D None of the above
Answer: A
Question 170
Who is the Supreme Commander of the Indian Armed Forces?

A  Prime Minister
B  Defence Minister
C  President
D  Chief of the Army Staff

Answer: C

Question 171
Which company has been listed as the highest spender on advertisements?

A  Reliance
B  Hindustan Lever
C  Dabur India
D  Nestle India

Answer: B

Question 172
Salman Khan and Sunil Shetty have been recruited as part of which campaign in the year 2000?

A  Coke
B  Pepsi
C  Thumps Up
D  Kawasaki Bajaj

Answer: C

Question 173
What is the present level of Indo-US trade?

A  $5-6 billion
B  $8-9 billion
C  $11-12 billion
D  $20 billion

Answer: C
Question 174
Bill Clinton is the fourth US President to visit India. Who was the first US President to visit India?

A  D Eisenhower
B  John F Kennedy
C  Richard Nixon
D  Lyndon B Johnson
   Answer: A

Question 175
Who among the following holds the Telecom Ministry in the present NDA government?

A  Nitish Kumar
B  Mamta Bannerjee
C  Ram Vilas Paswan
D  None of the above
   Answer: C

Question 176
Who is the Chief Election Commissioner of India at present?

A  N Vittal
B  MS Gill
C  Arun Jaitley
D  TN Seshan
   Answer: B

Question 177
Bill Gates recently stepped down as the CEO of Microsoft but announced that he will take a new post to "focus on technologies of the future". What is this post?

A  Chairman and Chief Software Architect
B  Managing Director
C  President
D  All of the above
   Answer: A

Question 178
.......... is not a member of ASEAN.
A Pakistan
B Singapore
C Malaysia
D Indonesia
Answer: A

Question 179
Which famous war hero said: "You are remembered for the rules you break"?

A Douglas MacArthur
B Napoleon
C Rommel
D Lawrence of Arabia
Answer: A

Free Gk Tests

Question 180
Who is associated with Narmada Bachao Andolan?

A AB Vajpayee
B Medha Patkar
C Mamata Bannerjee
D Sunder Lal Bahuguna
Answer: B

Question 181
Name the actress who played the leading role in the film Elizabeth directed by Shekhar Kapoor?

A Cate Blanchet
B Demi Moore
C Nandita Das
D Meryl Streep
Answer: A

Question 182
The Romantics is the first fiction work of which writer?

A Raj Kamal Jha
B Salman Rushdie
Daily Free Topic Test

Question 183
The Upper House of Parliament is known as

A Parliament House
B Rashtrapati Bhawan
C Rajya Sabha
D Lok Sabha
Answer: C

Question 184
The US attacked terrorists training camps in Afghanistan belonging to Osama Bin Laden. To which country does he originally belong to?

A Saudi Arabia
B Iraq
C Iran
D Yemen
Answer: A

Question 185
Which country did Saddam Hussein invade that sparked off the Gulf War?

A Jordan
B Iran
C Saudi Arabia
D Kuwait
Answer: D

MAT Free Solved Previous Papers

Question 186
The satellite-based personal communications company Iridium, which had to shut down its services, is a subsidiary company of which US giant?

A General Electric
US Robotics  
Motorola  
AT & T  
Answer: C

Question 187
Miss World 2000 title has been won by
A Aishwarya Rai  
B Sushmita Sen  
C Priyanka Chopra  
D Diya Mirza  
Answer: C

Question 188
In radio, what does SW stand for ?
A Short Wave  
B Slim Wave  
C Sholowksy Wave  
D None of the above  
Answer: A

Download Excellent App for MAT Preparation

Question 189
Shekhar Kapoor is working on film project with which of the following famous composers?
A John Williams  
B Andrew Lloyd Webber  
C Elton John  
D Paul McCartney  
Answer: B

Question 190
Which of the following did India not want to be part of the last WTO talks ?
A Labour standards  
B Environmental standards  
C Textile quotas  
Answer: C

Downloaded from cracku.in
Question 191
Which multi-purpose vehicle was launched by Toyota this year in India?
A Qualis
B Land Cruiser
C Wagon R
D Land Rover
Answer: A

Question 192
Which artist's autobiography is titled "Autobiography of a Genius"?
A Winston Churchill
B ZA Bhutto
C Otto Von Bismark
D None of these
Answer: D

Question 193
With which airlines does Virgin Atlantic have a strategic tie-up?
A United Airlines
B British Airways
C Singapore Airlines
D None of these
Answer: D

Question 194
Which of the following cities was not visited by President Mr Bill Clinton during his trip to India?
A Bangalore
B Mumbai
C Hyderabad
D Agra
Answer: A
Question 195
KS Sudarshan took over as the head of which organisation recently?

A Vishwa Hindu Parishad
B Rashtriya Swayamsewak Sangh
C Swadeshi Jagran Manch
D Bharatiya Mazdoor Sangh
Answer: B

Question 196
In which city was the film Water being shot before it was halted due to protests?

A Delhi
B Allahabad
C Kanpur
D Varanasi
Answer: D

Question 197
Who said; “I do not fear computers, I fear the lack of them.”

A Ray Bradbury
B Isaac Newton
C Thomas Edison
D Isaac Asimov
Answer: D

Question 198
Which is the newly-formed ministry of the Government of India?

A Ministry of IT
B Ministry of I & B
C Ministry of S & T
D Ministry of Environment
Answer: A
Question 199
When was the last time that India won the Gold medal in Hockey in the Olympics?

A 1992  
B 1980  
C 1964  
D 1972  
Answer: B

Question 200
Recently Bill Gates became the first man to cross the 100 billion dollars mark. According to economists this means that only .......... nations have an economic output higher than that of Bill Gates.

A More than 50  
B Less than 42  
C 60  
D 80  
Answer: B