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Data Interpretation

Instructions

The table given below indicates the number of consumers who preferred one or both drinks. Read the table and answer questions.

Age of Consumer (in year)	Drink preferred						Total number of Consumers surveyed including those who did not prefer any drink	
	A		B		Both			
	Male	Female	Male	Female	Male	Female	Male	Female
18-25	240	180	180	120	90	60	600	720
26-40	360	120	480	360	90	180	840	540
41-60	300	240	240	300	120	180	1200	960

Question 1

Number of consumers in the age group 26-40 who did not prefer drink B is

- A 540
- B 480
- C 360
- D 180

Answer: A

Question 2

Number of consumers over 40 years who preferred at least one drink is

- A 450
- B 780
- C 870
- D 1320

Answer: B

Question 3

The number of consumers in the age group 18-25 who prefer only one drink is

- A 1020

B 720

C 570

D 420

Answer: D

Question 4

The percent of consumers more than 40 years of age who did not prefer any one of the drink is about

A 43.2

B 54.7

C 63.9

D 76.1

Answer: C

Question 5

In all, how many consumers did not prefer any drink?

A 1080

B 1380

C 2160

D 2460

Answer: D

Instructions

The following table classifies the tea and coffee habits of all employees of a company. Complete the table and answer the questions.

Tea			
	Less than 2 cups a day	2 to 3 cups a day	More than 3 cups a day
Males	95	?	?
Females	88	45	67
Total	?	106	?

Coffee			
	Less than 2 cups a day	2 to 3 cups a day	More than 3 cups a day
Males	85	?	49
Females	40	108	?
Total	?	144	101

Question 6

How many Employees drink more than 3 three cups of a day?

- A 183
- B 106
- C 81
- D 67

Answer: C

Question 7

Number of females who drink two or more cups of a tea per day is

- A 45
- B 108
- C 112
- D 160

Answer: C

Question 8

The percentage of male employees in the company is close to

- A 43.5
- B 45.9
- C 47.8
- D 54.1

Answer: B

Question 9

The number of employees who drink upto three cups of coffee per day is

- A 269
- B 264
- C 221
- D 156

Answer: A

Question 10

The ratio of the number of males who drink two or more cups of tea per day to the number of employees who drink less than 2 cups of coffee per day is

- A 15:17
- B 19:25
- C 5:3
- D 3:5

Answer: D

Instructions

The following table gives demand and supply of cement, in million tons, for the period 2005 to 2010. Surplus is defined as excess of supply over demand.

Read the table and answer the Questions.

Year	Demand	Supply
2005	45.1	48.2
2006	47.7	48.3
2007	50.0	51.2
2008	53.4	54.2
2009	57.5	60.0
2010	61.7	62.4

Question 11

The surplus of cement was lowest for the year

- A 2006
- B 2007
- C 2008
- D 2010

Answer: A

Question 12

The percentage increase in demand of cement was the highest as compared to its previous year in

- A 2006
- B 2007
- C 2009
- D 2010

Answer: C

Question 13

What was the approximate average surplus (in million tons) of cement for the period 2005 to 2010 ?

- A 2001
- B 2002
- C 2003
- D 2005

Answer: D

Question 14

In how many years the supply (in million tons) of cement was more than the average supply for 2005 to 2010 ?

- A 4
- B 3
- C 2
- D 1

Answer: B

Question 15

For the years 2005 to 2010, total supply of cement was $x\%$ more than the total demand. The value of x is closest to

- A 1.8
- B 2.1
- C 2.3
- D 2.8

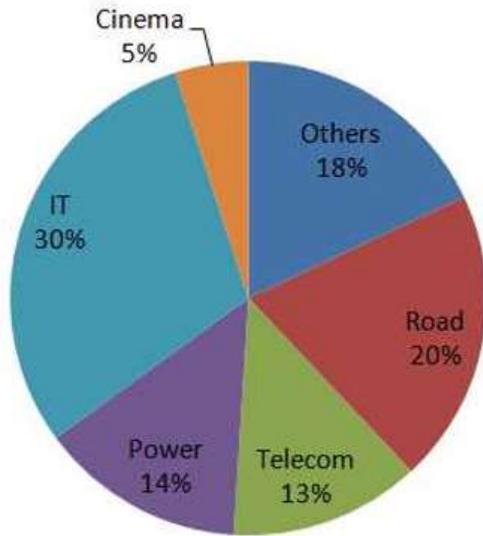
Answer: D

Instructions

The following table shows the FDI in different states of a country in the year 2009-10.

State	A	B	C	D	E	F	G
FDI (in ₹ crores)	550	580	660	560	480	510	600

The following graph shows the investment in different sectors.



Read the table and graph and answer the questions.

Question 16

In which of the following pairs of states the ratio of investment (FDI) in power sector is 11 : 8 ?

- A A and B
- B B and C
- C C and E
- D A, D

Answer: C

Question 17

The ratio of investment in IT in state G to the investment in 'others' in state A is

- A 11:20
- B 20: 11
- C 5:3
- D 3:5

Answer: B

Question 18

The total investment (in ₹ crore) in 'Road Sector' by states B, C and D is

- A 360
- B 340

C 320

D 398

Answer: A

Question 19

The FDI in cinema sector in state E is about what percent less than that in state B in telecom sector ?

A 47

B 58

C 63

D 68

Answer: D

Question 20

FDI in IT sector in State A is approximately what percent of that in telecom sector in state G and F combined ?

A 114.3

B 118.3

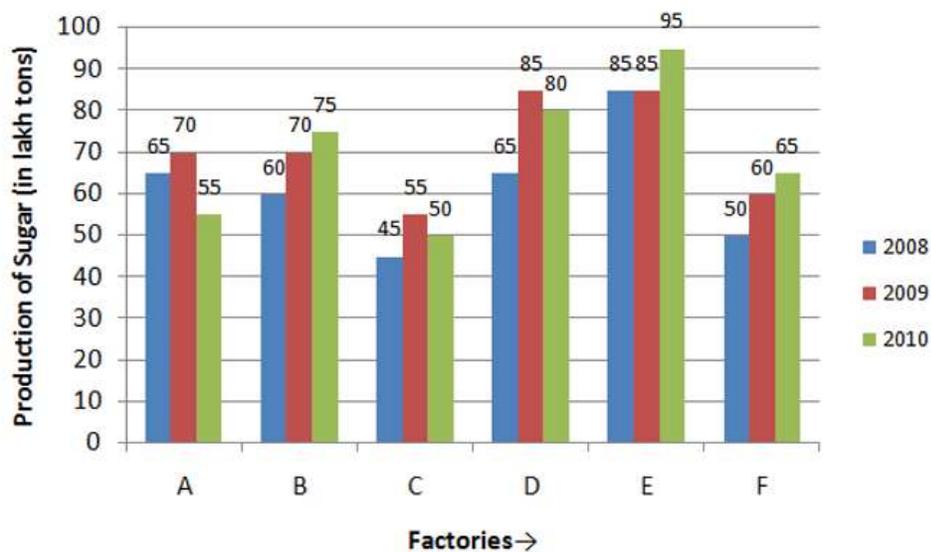
C 121.7

D 138.5

Answer: A

Instructions

Read the following graph and answer the questions:



Question 21

The difference (in lakh tons) between the average production of sugar by six factories in 2009 and average production by the same factories in 2008 is about

- A 6.6
- B 9.2
- C 9.4
- D 9.8

Answer: B

Question 22

The percentage increase in production of sugar by factory B from 2009 to 2010 is approximately

- A 11.7
- B 8.3
- C 7.1
- D 1.6

Answer: C

Question 23

Which of the six factories has recorded the maximum percentage growth in production from 2008 to 2009 ?

- A B
- B C
- C D
- D E

Answer: C

Question 24

Production of sugar by factory C in 2009 and production of sugar by factory F in 2010 together is what percent of production by B in 2010 ?

- A 160
- B 150
- C 133.3
- D 08.4

Answer: A

Question 25

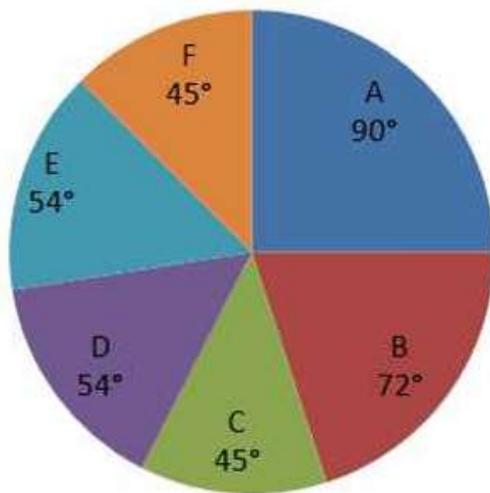
In which of the following pairs of factories, the difference between average production for 2009 and 2010 is minimum?

- A A and B
- B B and c
- C B and D
- D D and E

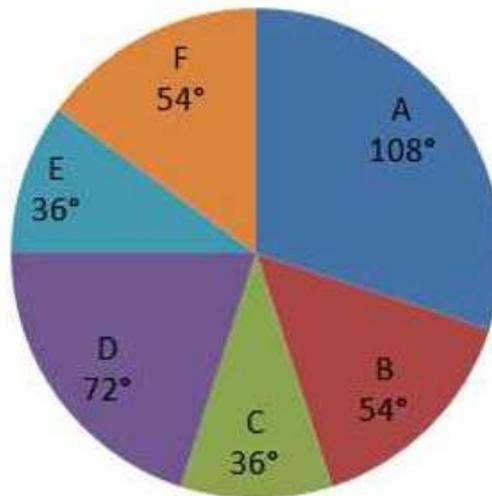
Answer: D

Instructions

The following pie-charts show the distribution of expenses over six different items A, B, C, D, E and F of a person for July and August 2012. She spent ₹ 27,000 in July and ₹ 30,000 in August, 2012



August, 2012



July, 2012

Read the charts and answer the questions

Question 26

The ratio of money spent on items C and F together in July to that spent on B and E together in August is

- A 9:10
- B 10:9
- C 3:4
- D 4:5

Answer: A

Question 27

The difference (in ₹) between the amounts spent on C in August and D in July is

- A 1,250
- B 1,125
- C 1,050
- D 900

Answer: C

Question 28

The sum of the difference between the expenditures in July and August on items C and that of F as a percentage of the change in total expenditure between the two months is

- A 25
- B 37.5
- C 47.5
- D 50

Answer: D

Question 29

Number of items of July on which money spent is less than the average money spent on items in the month is

- A 5
- B 4
- C 3
- D 2

Answer: B

Question 30

If the amount spent on item B in August were the same as that in July, what would have been its central angle in the pie chart?

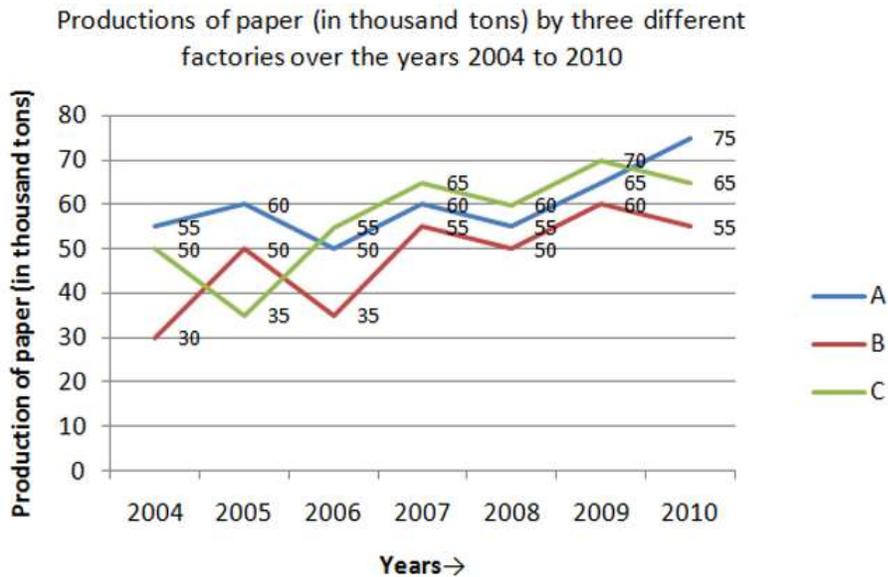
- A 64.8°
- B 72°
- C 60°

D 42.5°

Answer: A

Instructions

Study the following graph and answer the questions.



Question 31

Total production of paper of the three factories together is equal for the years

- A 2004, 2006
- B 2005, 2007
- C 2007, 2008
- D 2009, 2010

Answer: D

Question 32

In which of the following years for the factory B, the percentage rise or fall in the production from the previous year is maximum?

- A 2004
- B 2006
- C 2007
- D 2008

Answer: A

Question 33

Average production of paper for year for the factory A is the what percentage of Average production per year for factory c?

- A 125
- B 119
- C 105
- D 80

Answer: C

Question 34

Ratio of total production of paper to the factory A to the total production by factory c is

- A 20:21
- B 21:20
- C 80:67
- D 84:67

Answer: B

Question 35

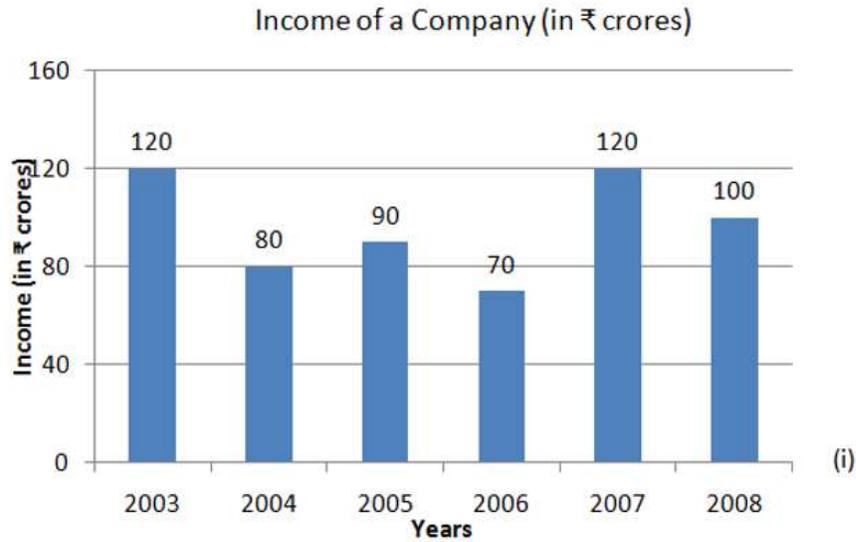
In how many years the production of paper (in thousand tons) by factory c is less than the average production of paper by factory B over the years

- A 1
- B 2
- C 3
- D 4

Answer: A

Instructions

Study the following graph (i) and (ii) which shows income in(₹ in crores) and percentage profit over the years 2003 to 2008, and answer the questions



Question 36

In which year was the amount of profit was maximum?

- A 2004
- B 2006
- C 2007
- D 2008

Answer: C

Question 37

Difference in the amount of profit for 2005 and 2008 is

- A 1.67 cores
- B 1.87 crores
- C 1 core
- D 0.31 crore

Answer: A

Question 38

Approximately what was the average expenditure (in ₹ crores) for the given years?

- A 81.9
- B 82.2
- C 96.7
- D 98.7

Answer: B

Question 39

The expenditure (in ₹ crores) in 2006 is

- A 83.3
- B 75
- C 65.31
- D 56

Answer: D

Question 40

If the profit percent in 2008 was 25, what would have been the expenditure (in ₹ crores) in that year ?

- A 75
- B 75.8
- C 80
- D 83.3

Answer: C

Verbal Ability

Instructions

In each of the following sentences four words or phrases have been underlined. One underlined part in each sentence is not acceptable in standard English.

Pick up that part and mark its number.

Question 41

The government initiated/(1) various measure/(2) to raise/(3) the living standards/(4) of the people.

- A (1)
- B (2)
- C (3)
- D (4)

Answer: B

Question 42

The book must be/(1) old for/(2) its cover is torn/(3) bad/(4)

- A (1)
- B (2)
- C (3)
- D (4)

Answer: D

Question 43

The region has a climate so severe that/(1) the plants growing there/(2) had been/(3) rarely more than twelve inches high/(4)

- A (1)
- B (2)
- C (3)
- D (4)

Answer: C

Question 44

The reason/(1) for my prolonged/(2) absence/(3) from the class was because/(4) I was ill.

A (1)

B (2)

C (3)

D (4)

Answer: D

Instructions

Fill in the blanks with the most appropriate words.

Question 45

When such remarks are circulated, we can only blame and despise those who - produce them.

A adulatory

B chance

C rhetorical

D redundant

Answer: B

Question 46

It would be difficult for one so to be led to believe that all men are equal and that we must disregard race, colour and creed.

A emotional

B democratic

C intolerant

D obsolete

Answer: C

Question 47

The enemy soldiers were hot in pursuit; desperate. The fugitive sought in the village church.

A salvation

B sanctuary

C therapy

D mercy

Answer: B

Question 48

Fitness experts claim that jogging is once you begin to jog regularly, you may be unable to stop, because you are sure to love it more and more all the time.

- A exhausting
- B illusive
- C addictive
- D exotic

Answer: C

Instructions

Each question below consists of a related pair of words followed by four pairs of words.

Select the pair that best expresses the relationship similar to the original pair.

Question 49

Clay: mould::

- A Wood: carve
- B Paper: burn
- C Pipe: blow
- D Trees: sway

Answer: A

Question 50

Play: Acts::

- A Essay: Topics
- B Novel: Chapters
- C Game: Players,
- D Poem: rhymes

Answer: B

Question 51

Clock: time::

- A Watch: wrist
- B Radio : sound

- C Odometer : speed
- D Yardstick : distance

Answer: D

Question 52

Gazelle : swift::

- A Horse : slow
- B Lion : roar
- C Lamb: bleat
- D Swan : graceful

Answer: D

Instructions

In the following questions choose the alternative which best expresses the meaning of the given word.

Question 53

Ecstasy

- A joy
- B treasure
- C warmth
- D lack

Answer: A

Question 54

Foster

- A fondle
- B rear
- C roll
- D speed

Answer: B

Question 55

Credible

- A worthy

- B believable
- C noticeable
- D careful

Answer: B

Question 56

Inspid

- A lucid
- B witty
- C why
- D flat

Answer: D

Instructions

Choose the word which is opposite in meaning to the given word. Question 57 Hubbub

- A capital
- B fury
- C calm
- D axle

Answer: C

Question 58

Undulating

- A ups
- B flat
- C steep
- D gradual

Answer: B

Question 59

Curtail

- A burden
- B lengthen

C encourage

D express

Answer: B

Question 60

Resilient

A unyielding

B pungent

C unsavoury

D foolish

Answer: A

Instructions

In the following questions the word at the top is used in four different ways. Choose the option in which the usage of the word is incorrect or inappropriate. Question 61 PUSH

A The manufacturers are really pushing this new shampoo.

B He has difficulty pushing his feelings into words.

C We should be able to move this table if we push it together.

D She pushed through the crowd saying that she was a doctor.

Answer: B

Question 62

HARBOUR

A large ship is anchoring in the harbor today.

B The crowing of the cock harbors the dawn.

C Antonio harbored the thoughts of revenge for his brother for doing him wrong.

D Dogs harbor fleas in their thick fur.

Answer: B

Question 63

RIGHT

A What a rightly idea-he had to visit this place!

B You were quite right to refuse this assignment.

- C The driver quickly righted the car after it skidded.
- D I will come right away, without any delay.

Answer: A

Question 64

MASTER

- A She could not master the courage to tell her friend- about her loss
- B She quickly mastered the art of interviewing people.
- C The terrorist was a master of disguise.
- D He is the master of his house.

Answer: A

Instructions

Fill in the blanks with appropriate alternative.

Question 65

Anurag asked me

- A why didn't you pay the driver ?
- B why I didn't pay the driver.
- C why didn't I pay the driver ?
- D why you didn't pay the driver.

Answer: B

Question 66

During the summer months,there is

- A prolonged country shortage in many parts of power.
- B prolonged parts of the country in many power shortage.
- C many parts of the country in prolonged power shortage.
- D prolonged powershortage in many parts of the country

Answer: D

Question 67

We heard an incessant noise from our neighbours' house. They all the time.

- A are quarrelling

- B were quarrelling
- C will be quarrelling
- D would be quarrelling

Answer: B

Question 68

The breakdown was said a defective transformer.

- A to be caused by
- B it was caused by
- C that the cause was
- D to have been caused by

Answer: A

Instructions

In the following questions, a sentence is given in active voice. Find the correct passive voice version from the given alternatives.

Question 69

Somebody has put out the light.

- A The light is put out.
- B The light was being put out.
- C The light has been put out.
- D The light had been put out.

Answer: C

Question 70

We justly rebuked him for acting so selfishly.

- A He has justly rebuked for selfishness.
- B He was justly rebuked by us for acting so selfishly.
- C He has been justly rebuked by us for acting so selfishly.
- D He has rebuked by us for acting so selfishly.

Answer: B

Question 71

The rules forbid passengers to cross the railway line.

- A Passengers are forbidden by the rules to cross the railway line.
- B Passengers were forbidden by the rules to cross the railway line.
- C Passengers have been forbidden by the rules to cross the railway line.
- D Passengers had been forbidden by the rules to cross the railway line.

Answer: A

Instructions

In the following sentences replace the underlined words with the appropriate expression from the given alternatives. Question 72 His friends expected that he would e s c a p e with a fine.

- A get off
- B go out
- C get out
- D give way

Answer: A

Instructions

In the following sentences replace the underlined words with the appropriate expression from the given alternatives. Question 72 His friends expected that he would e s c a p e with a fine.

- A get off
- B go out
- C get out
- D give way

Answer: A

Question 75 The crew of the boat
u n d e r w e n t terrible suffering.

- A passed through
 - B went by
 - C stood up
 - D pulled together
- Answer: A

Instructions

In the following passage there are blanks which have been numbered. For each blank, four words are suggested. Find out the most appropriate word to fill in the blank. If you ask some people, "How did you learn English so well?" You may get a surprising answer: "In my sleep!" These are76 who have taken part in one of the77 experiments to test learn- while-you-sleep methods,78 are now being tried out in several countries, and with79 subjects, of which English is only one. Specialists say that80. sleep study method speeds language learning tremendously.

Question 76

76

- A men
- B women
- C people
- D person

Answer: C

Question 77

77

- A recent
- B late
- C modern
- D new

Answer: A

Question 78

78

- A they
- B who
- C these
- D which

Answer: D

Question 79

79

- A all
- B several

C both

D different

Answer: B

Question 80

80

A this

B a

C any

D every

Answer: A

Question 81

A. Since time immemorial more people have been killed or made to suffer in the name of religion than for any other reasons.

RI. The essence of religion is hatred in other religions.

RII. Those who lose their lives in the name of religion go straight to Heaven, so devotees do not mind losing their lives

A Only RI is the reason for A

B Only RII is the reasons for A.

C Both RI and RII are the reasons for A.

D Neither RI nor RII is the reason for A.

Answer: D

Question 82

A. Most of the columns of modern magazines are covered with news of political events.

RI. Readers are very much interested in political turmoil and scandals.

RII. It is not difficult to write about politics as one does not need originality.

A Only RI is the reason for A

B Only RII is the reasons for A.

C Both RI and RII are the reasons for A.

D Neither RI nor RII is the reason for A.

Answer: A

Question 83

- A. only Secularism in thought word and deed can save India from Chaos.
RI. Communal differences would only result in riots and destruction of life, faith, property
RII. our democracy Demands open mind and heart for moral, Spiritual and physical uplift of the country

- A Only RI is the reason for A
B Only RII is the reasons for A.
C Both RI and RII are the reasons for A.
D Neither RI nor RII is the reason for A.

Answer: D

Question 84

A Vice-Chancellors do not have a very comfortable time.

RI. Students are always causing disciplinary problems.

RII. When people become vice-chancellors they are very old.

- A Only RI is the reason for A
B Only RII is the reasons for A.
C Both RI and RII are the reasons for A.
D Neither RI nor RII is the reason for A.

Answer: A

Question 85

A.

RI. Everyone salutes the chair.

RII. Those persons do not perform any activity worth mentioning.

- A Only RI is the reason for A
B Only RII is the reasons for A.
C Both RI and RII are the reasons for A.
D Neither RI nor RII is the reason for A.

Answer: B

Instructions

Find the odd-one out Question 86

- A Idle

- B Lethargic
- C Lazy
- D Subdued

Answer: D

Question 87

- A Blackmail
- B Forgery
- C Snobbery
- D Sabotage

Answer: C

Question 88

- A Milk
- B Orange
- C Cotton
- D Snow

Answer: A

Question 89

- A Cement
- B Brick
- C Wall
- D Stone

Answer: C

Question 90

- A Raw
- B Tasty
- C Ripe
- D Rotten

Answer: B

Instructions

Match the following questions with (1), (2), (3) and (4) on the basis of similar relationship. The items may not be in the same order.

Question 91

Car: road: petrol

- A Post-office: hospital: city
- B Army: defense: navy
- C Pen: ink; paper
- D Life: alive: dead Answer: C

Question 92

Day: light: night

- A Post-office: hospital: city
- B Army: defense: navy
- C Pen: ink; paper
- D Life: alive: dead

Answer: D

Question 93

Music : dance : art

- A Post-office: hospital: city
- B Army: defense : navy
- C Pen : ink ; paper
- D Life : alive : dead

Answer: B

Question 94

Body : livere : heart

- A Post-office : hospital : city
- B Army : defence : navy
- C Pen : ink ; paper
- D Life : alive : dead

Answer: A

Instructions

A word arrangement machine when given an input line of words, rearranges them following a particular rule in each step. The following is the illustration of the input and the steps of arrangement: Input : She was shot dead at, her residence Step I : at was shot dead she her residence Step II : at her shot dead she was residence Step III : at her she dead shot was residence Step IV : at her she was shot dead residence Step V : at her she was shot dead residence Since the words are fully arranged, the machine stops. Otherwise it may go on till the words get fully arranged. Study the logic and answer the questions.
Question 95 In how many steps will the following input be fully arranged ? Input : India has always been a critical factor

- A Three
- B Four
- C Five
- D Six

Answer: B

Question 96

What would be the Step III for the following input ?

Input : this is one thing on which I caution

- A I is one thing on which this caution
- B I is on one this which thing caution
- C I is on thing one which this caution
- D I is one thing which this caution

Answer: B

Question 97

If step II of an input reads "by he out the efforts made spells us," which of the following would be the last step ?

- A step III
- B step IV
- C step V
- D step VI

Answer: C

Question 98

What could be the penultimate step for the following input ?

Input : You hardly see any motorized vehicle

- A step I
- B step III
- C step IV
- D step VI

Answer: B

Question 99

What could be the step IV for the following input ?

Input : the foliage along road can deceive you

- A can foliage along road the deceive you
- B can the you road along the deceive foliage
- C can the you road foliage deceive along
- D can the along road foliage deceive you

Answer: B

Instructions

Study the following information and answer the questions given below? In a certain code, the symbol for 0 (Zero) is @ and for 1 is \$. There are no other symbols for all other numbers greater than one. The numbers greater than 1 are to be written only by using the two symbols given above. The value of the symbol for 1 doubles itself every time it shift one place to the left. Study the following examples: '0' is written as @ '1' is written as \$ '2' is written as \$ @ '3' is written as \$ \$ '4' is written as \$ @@ and so on

Question 100

Which of the following numbers will be represented by \$ \$ @ \$?

- A 8
- B 11
- C 13
- D 12

Answer: C

Question 101

Which of the following will represent the value of $3 \times 3 + 1$?

- A \$ \$ @ \$

- B \$ @ \$ @
- C \$ @ @ \$ \$
- D \$ \$ \$

Answer: B

Question 102

Which of the following numbers will be represented by \$ @ @ @ \$?

- A 22
- B 31
- C 14
- D 17

Answer: D

Question 103

What is the average of \$\$\$@@ and \$\$@@

- A \$@@@
- B \$\$\$\$@
- C @\$@@
- D \$@@\$@

Answer: C

Question 104

What is the value of $$$[(\$ @) + (\$ @) \div (\$ @)]^{\$ @}$$$?$

- A \$\$ \\$@@\\$@\$
- B \$\$ \\$@\\$@\\$ \$\$
- C \$\$ \\$\\$\\$ \times \\$\\$ - \\$@ \$\$
- D \$\$ (\\$ \\$)^{\\$ @}\$\$\$

Answer: D

Question 105

What is the value of $$$[(8 + 16) \div (4 \times 3)]^3$$$?$

- A \$\$ \\$ @ @ \\$ \$\$
- B \$\$ \\$\\$ @ @ \\$ \$

C \$\$ \ \$ \ \$ \ \$ @ \$\$

D \$\$ \ \$ @ @ @ \$\$

Answer: D

Instructions

In each question below, there are three statements followed by four conclusions numbered I, II, III and IV. You have to take the given statements to be true even if they seem to be at variance with commonly known facts and then decide which of the given conclusions logically follow (s) from the given statement.

Question 106

Statements : Some charts are darts. All darts are carts. Some carts are smarts.

Conclusions :

- I. Some charts are carts.
- II. Some carts are darts
- III. Some darts are smarts.
- IV. Some smarts are charts.

- A Only I and III follow
- B Only II and III follow
- C I and II follow
- D I, III and IV follow

Answer: C

Question 107

Statements:

All boxes are tables. No desks are tables. Some desks are curtains.

Conclusions:

- I. No Boxes are desks.
- II. Some Boxes are desks.
- III. Some curtains are not boxes
- IV. Some curtains are boxes.

- A III and either I or II follow
- B I and either III and IV follow
- C Either I or II and either III and IV follow
- D I and III follow

Answer: D

Question 108

Statement:

No killer is a sweater. No jacket is a sweater. Some jacket are roses.

Conclusions:

- I. Some roses are sweaters
- II. Some roses are not sweaters.
- III. No killer is a jucked.
- IV. Some jackels are killers.

- A Either I or II and III follows
- B Either III or IV or IL follow
- C Either I and III follow
- D Either I or II and either III or IV follow

Answer: D

Question 109

Statements:

No student is decent some decent are bags. All bags are roses

Conclusions:

- I. Some bags are not students.
- II. All bags are students.
- III. Some decents are roses.
- IV. All roses are decent.

- A Only I follows
- B On Either I or II follows
- C Either I or II, and III follows
- D I and II follow Answer: D

Question 110 Statements : Some birds are stones. Some, tigers are birds. All stones are grapes.

Conclusions : I. Some stones are birds. II. Some stones ,are not birds. III. Some grapes are birds. IV. Some tigers are stones

- A I, I, and II follow
- B I, II and IV follow
- C Either I or II and III follow

D I and II follow

Answer: D

Instructions

A researcher studying organic compounds has found that five different molecules. T, W, X, Y and Z form chains according to the following rules : A chain consists of three or more molecules, though the molecules in the chain are not necessarily different. T is never found on either end of a chain. If W appears in a chain, it appears more than once. X is never found next to y in a chain. W is never found on the end of a chain unless Z is found somewhere in the chain. If Y appears in a chain, Z appears also,

Question 111

Which of the following is a possible chain of molecules?

- A T X Y Z
- B Y T X X
- C W Z T Y
- D W W X Z

Answer: D

Question 112

Which of the followings is NOT possible chain of molecules?

- A X X T Z
- B Z X W W Z
- C W X Z Y W
- D Y W T Z X X

Answer: D

Question 113

The chain W W T Y Z X can be changed into another chain by carrying out any one of the following EXCEPT

- A replacing the T molecule with a molecule
- B replacing the Y molecule with an X molecule
- C replacing the X molecule with a T molecules
- D interchanging the T and the Z molecules

Answer: C

Question 114

Which of the following is not a chain but could be turned into a chain by changing the order of the molecules?

- A X Y T X
- B T X X Y
- C W T T W
- D W X X W

Answer: D

Question 115

Which of the following sequences can be converted into a chain by adding Z and rearranging the molecules?

- I. X Y X T
- II. W T T Z
- III. X X Y W

- A I only
- B I and III only
- C III only
- D I, II and III

Answer: A

Instructions

In the following questions the symbols @, @, =, © and © are used with the following meaning : P @ Q means P is greater than Q.

p @ Q means P is either greater than or equal to Q. P = Q means is equal to Q. P © Q means P is smaller than Q. P © Q means P is either smaller than or equal to Q. For each questions you have to assume given statements to be true and then decide which of the two given conclusions is / are definitely true.

Give answer :

Question 116

Statements:

B @ V, K © C, C © B

Conclusions:

- I. V @ C
- II. B @ K

- A if only conclusion II is true

- B if either conclusion I or II is true
- C if neither I nor II is true
- D if both the conclusions are true

Answer: A

Question 117

Statements:

$K @ T, S = K, T © R$

Conclusions:

- I. $S @ R$
- II. $T = R$

- A if only conclusion II is true
- B if either conclusion I or II is true
- C if neither I nor II is true
- D if both the conclusions are true

Answer: C

Question 118

Statements:

$U = M, P @ U, M @ B$

Conclusion:

- I. $P = B$
- II. $P @ B$

- A if only conclusion II is true
- B if either conclusion I or II is true
- C if neither I nor II is true
- D if both the conclusions are true

Answer: B

Question 119

Statements:

$L @ N, J © P, P @ L$

Conclusion:

- I. $J = L$
- II. $P = N$

- A if only conclusion II is true
- B if either conclusion I or II is true
- C if neither I nor II is true
- D if both the conclusions are true

Answer: C

Question 120

Statements:

$H @ G, D @ E, H = E$

Conclusion:

- I. $D @ H$
- II. $G @ D$

- A if only conclusion II is true
- B if either conclusion I or II is true
- C if neither I nor II is true
- D if both the conclusions are true

Answer: D

Quantitative Ability

Instructions

For the following questions answer them individually

Question 121

The number 123456789 and 999999999 are multiplied. How many of the digits in the product are 9's

- A 0
- B 1
- C 2
- D 3

Answer: A

Explanation:

To find :

$$\begin{aligned} & \$123456789 \times 999999999 \\ &= \$123456789 \times (1000000000 - 1) \\ &= \$123456789000000000 - 123456789 \\ &= \$12345678876543211 \end{aligned}$$

Thus, there are 0 9's

=> Ans - (A)

Question 122

If the expression $15^6 \times 28^5 \times 55^7$ is evaluated, the number of zeros at the end of the number is

- A 8
- B 10
- C 18
- D 20

Answer: B

Explanation:

Expression:

$$15^6 \times 28^5 \times 55^7$$

Number of 2's in the expression (in 28^5)

= $(2)^{10}$ = 10 Number of 5's

= $(5)^6 \times (5)^7$

= 13 because number of 2's are less than number of 5's,

Thus number of zeroes will depend on two, hence number of zeroes are 10

=> Ans - (B)

Question 123

$\sqrt[4]{2001 \ 2001 \ 2001 \ 2001}$ is closest to

A 2001

B 2100

C 6700

D 10010

Answer: C

Question 124

The units digit of $(2002)^{2002}$ is

A 2

B 4

C 6

D 8

Answer: B

Explanation:

Expression: $(2002)^{2002}$

It can be written as : $(2002)^{4n+2}$

Thus, the unit's digit will be same as $(2)^2=4$

=> Ans - (B)

Question 125

Three different numbers are chosen such that when each of the numbers is added to the average of the remaining two, the number 65, 69 and 76 are obtained. The average of the three original numbers is

A 35

B 38

C 43

D 70

Answer: A

Explanation:

Let the three original numbers be x, y, z According to ques,

$$\Rightarrow x + \frac{y+z}{2} = 65 \quad \text{Similarly, } y + \frac{x+z}{2} = 69 \quad \text{and } z + \frac{y+x}{2} = 76$$

Adding all the equations,

$$\Rightarrow (x+y+z) + (x+y+z) = 65 + 69 + 76 \Rightarrow x+y+z = \frac{210}{2} = 105$$

Dividing both sides by 3,

$$\Rightarrow \frac{x+y+z}{3} = \frac{105}{3} = 35 \quad \therefore$$

Required average = 35

\Rightarrow Ans - (A)

Question 126

a b c and d e f are 3-digit numbers such that

a	b	c
d	e	f
10	0	0

and none of a, b, c, d, e, or f is 0.

What is the sum

$$a + b + c + d + e + f?$$

A 10

B 19

C 21

D 28

Answer: D

Explanation:

Here, $c+f=10$ and $b+e=9$ and $a+d=9$ [because of carry over 1]

Adding all the equations,

$$\Rightarrow a+b+c+d+e+f=10+9+9=28$$

\Rightarrow Ans - (D)

Question 127

When a number is divided by 5, the remainder is 2, when divided by 7, the remainder is 3, when divided by 9, and the remainder is 4. The sum of digits of such smallest number is

- A 13
- B 11
- C 9
- D 7

Answer: A

Explanation:

A number is divided by 9 if sum of its digits is 9

When a number is divided by 9 and leaves no remainder,

\Rightarrow sum of digits is 9.

So, when a number is divided by 9 and leaves remainder 4, then sum of its digits is $9+4 = 13$

\Rightarrow Ans - (A)

Question 128

The expression $\frac{1}{8} + \frac{1}{10} + \frac{1}{11} + \frac{1}{15} + \frac{1}{20} + \frac{1}{41} + \frac{1}{110} + \frac{1}{1640}$ is equal to

- A 1
- B $\frac{13}{15}$
- C $\frac{11}{15}$
- D $\frac{7}{15}$

Answer: D

Explanation:

Expression :

$$\begin{aligned} \frac{1}{8} + \frac{1}{10} + \frac{1}{11} + \frac{1}{15} + \frac{1}{20} + \frac{1}{41} + \frac{1}{110} + \frac{1}{1640} &= \left(\frac{1}{41} + \frac{1}{1640}\right) + \left(\frac{1}{10} + \frac{1}{20}\right) + \left(\frac{1}{11} + \frac{1}{110}\right) + \left(\frac{1}{8} + \frac{1}{15}\right) \\ &= \frac{40+1}{1640} + \frac{2+1}{20} + \frac{10+1}{110} + \frac{15+8}{120} \end{aligned}$$

$$\frac{1}{40} + \frac{3}{20} + \frac{1}{10} + \frac{23}{120} = \frac{3+18+12+23}{120} = \frac{56}{120} = \frac{7}{15}$$

=> Ans - (D)

Question 129

Let r be the least non-negative remainder when $(22)^7$ is divided by 123. The value of r is

A 5

B 22

C 32

D 52

Answer: D

Explanation:

When $(22)^7$ is divided by 123 = $\frac{(22)^2 \times (22)^2 \times (22)^2 \times 22}{123}$

Now, when we divide $(22)^2 = 484$ by 123,

remainder is $-8 = \frac{-8 \times 8 \times 8 \times 22}{123} = \frac{-20 \times 22}{123}$

=> Remainder = $-(-52) = 52$

=> Ans - (D)

Question 130

if $\frac{97}{19} = w + \frac{1}{x + \frac{1}{y}}$ where x, y and w are all positive integers, the value of $x + 2y - 3w$ is

A 2

B -2

C 3

D -5

Answer: B

Explanation:

Expression : $\frac{97}{19} = w + \frac{1}{x + \frac{1}{y}}$ Breaking the L.H.S. expression = $5 + \frac{2}{19} = 5 + \frac{1}{\frac{19}{2}} = 5 + \frac{1}{9 + \frac{1}{2}}$ Comparing above equation with : $w + \frac{1}{x + \frac{1}{y}} \Rightarrow w=5, x=9, y=2$ To find : $x + 2y - 3w = 9 + 2(2) - 3(5) = 9 + 4 - 15 = -2$

=> Ans - (B)

Question 131

Let $a = 2^{129} \times 3^{81} \times 5^{128}$, $b = 2^{127} \times 3^{81} \times 5^{128}$, $c = 2^{126} \times 3^{82} \times 5^{128}$, and $d = 2^{125} \times 3^{82} \times 5^{129}$. Then

- A $b > c > d > a$
- B $b < c < d < a$
- C $b > c > a > d$
- D $b < c < a < d$

Answer: B

Explanation:

$$a = 2^{129} \times 3^{81} \times 5^{128}$$

$$b = 2^{127} \times 3^{81} \times 5^{128} \quad c = 2^{126} \times 3^{82} \times 5^{128} \quad d = 2^{125} \times 3^{82} \times 5^{129}$$

Eliminating common factors

$$(2^{125}) \times (3^{81}) \times (5^{128}) \Rightarrow a=16, b=4, c=6, d=15 \quad \therefore b < c < d < a$$

\Rightarrow Ans - (B)

Question 132

The positive integer a is a 2-digit number (01, 02 are not 2-digit number) the positive integer b has 'a' digit and the positive integer 'c' has 'b' digits. The smallest possible value for c is

- A 10^{9^9}
- B 10^{10^9}
- C $10^{10^{10}} - 1$
- D $10^{10^9} - 1$

Answer: D

Explanation:

Smallest number having n digits is $(10)^{n-1}$ Smallest possible value of $a=10$

Now, b has 10 digits, thus smallest possible value of $b=(10)^9$

Now, c has $(10)^9$ digits, thus smallest possible value of $c=(10)^{10^9-1}$

\Rightarrow Ans - (D)

Question 133

If $2^{36} - 1 = 68a519476735$, when all the digits are correct except a , the correct value of a is

- A 9
- B 8

C 7

D 3

Answer: C

Explanation:

$$\text{Expression : } (2)^{36}-1 = (2^3)^{12}-1=(8)^{12}-1$$

Now, to check whether the number is divisible by 9, we have : $(-1)^{12}-1=0$

Thus, $(2)^{36}-1$ is divisible by 9, hence sum of its digits is also divisible by 9.

$$\Rightarrow 6+8+a+1+9+4+7+6+7+3+5=56+a \text{ Thus, } 56+a=63 \Rightarrow a=7$$

\Rightarrow Ans - (C)

Question 134

The value of $\frac{(1.121)^3 - (3.333)^3 + (2.212)^3}{(1.121)(3.333)(2.212)}$ is

A 1

B -2

C -3

D 4

Answer: C

Explanation:

Expression :

$$E = \frac{(1.121)^3 - (3.333)^3 + (2.212)^3}{(1.121)(3.333)(2.212)}$$

Let $x=1.121, y=2.212, z=-3.333$ and hence $x+y+z=0$ -----(i)

$$\Rightarrow E = \frac{x^3+y^3+(-z)^3}{xy(-z)} \text{ -----(ii)}$$

We know that, $x^3+y^3+z^3-3xyz=(x+y+z)(x^2+y^2+z^2-xy-yz-zx)$

$$\Rightarrow x^3+y^3+z^3=3xyz \text{ -----(iii)}$$

[because $x+y+z=0$] Thus, substituting value from equation (iii)

in equation (ii), we get : $E=-3$

\Rightarrow Ans - (C)

Question 135

If $a : b = 3 : 4$, $b : c = \frac{8}{9}$ and $c : d = \frac{2}{3}$, then the value of $\sqrt[4]{\frac{ad}{b^2}}$ is

A $\frac{3}{4}$

B $\frac{9}{8}$

C $\frac{3\sqrt{3}}{4}$

D $\frac{3\sqrt{2}}{4}$

Answer: D

Explanation:

Given = $a : b = 3 : 4$, $b : c = \frac{8}{9}$ and $c : d = \frac{2}{3}$ Multiplying equation (iii) by 9 and equation (ii) by 2, and (i) by 4

=> $a:b:c:d=12:16:18:27$ To find = $\sqrt[4]{\frac{ad}{b^2}}$

= $\sqrt[4]{\frac{12 \times 27}{16 \times 16}}$ = $\sqrt[4]{\frac{81}{64}}$ = $\frac{3}{2\sqrt{2}} = \frac{3\sqrt{2}}{4}$

=> Ans - (D)

Question 136

The value of $\frac{\sqrt{43 - 12\sqrt{7}} - 2}{16 + 6\sqrt{7}}$ is

A 1

B 2

C 3

D $3 - 2\sqrt{7}$

Answer: C

Explanation:

Expression : $\frac{\sqrt{43 - 12\sqrt{7}} - 2}{16 + 6\sqrt{7}}$ = $\frac{\sqrt{(\sqrt{7})^2 + (6)^2 - 2(\sqrt{7})(6)} - 2}{(\sqrt{7})^2 + (3)^2 + 2(\sqrt{7})(3)}$ = $\frac{\sqrt{(6-\sqrt{7})^2} - 2}{(3+\sqrt{7})^2}$ = $\frac{4-\sqrt{7}}{(3+\sqrt{7})^2}$

Question 137

Let N be the greatest natural number that will divide 13511, 13903 and 14589 leaving same remainder in each case. The sum of digits of N is

A 10

B 13

C 15

D 17

Answer: D

Explanation:

N divides each of 13511, 13903, 14589 leaving remainder r in each case.

$$\Rightarrow 13511 = aN + r \quad \text{-----(i)}$$

$$13903 = bN + r \quad \text{-----(ii)}$$

$$14589 = cN + r \quad \text{-----(iii)}$$

Subtracting above equations, we get : $392 = (b-a)N$ $686 = (c-b)N$ $1078 = (c-a)N$

Thus, N must be a factor of all three of these numbers.

Thus, $N = \text{H.C.F.}(392, 686, 1078) = 98$ therefore sum of digits of $N = 9 + 8 = 17$

\Rightarrow Ans - (D)

Question 138

The value of $\frac{(0.251)^2 - (0.051)^2 - (0.511)^2 - 2(0.051)(0.511)}{(0.251)^2 - (0.051)^2 - 2(0.251)(0.051) - (0.511)^2}$ is

A $\frac{271}{237}$

B $\frac{237}{271}$

C $\frac{823}{711}$

D $\frac{701}{823}$

Answer: A

Explanation:

Expression : $\frac{(0.251)^2 - (0.051)^2 - (0.511)^2 - 2(0.051)(0.511)}{(0.251)^2 - (0.051)^2 - 2(0.251)(0.051) - (0.511)^2}$ Let $x=0.251, y=0.051, z=0.511$ = $\frac{x^2 - (y^2 + z^2 + 2yz)}{(x^2 - y^2 - 2xy) - z^2}$ = $\frac{x^2 - (y+z)^2}{(x-y)^2 - z^2}$ = $\frac{(x+y+z)(x-y-z)}{(x-y-z)(x-y+z)}$ = $\frac{x+y+z}{x-y+z}$ = $\frac{0.251+0.051+0.511}{0.251-0.051+0.511} = \frac{0.813}{0.711} = \frac{271}{237}$

\Rightarrow Ans - (A)

Question 139

The cost of making a rectangular table is calculated by adding two variables. The first is proportional to the area of the table and the other to the square of the length of the longer side. In making 2 m x 3 m table it costs ₹ 5,000 and in making a 1.5 m x 4 m table, it cost ₹ 6,400. The cost of making a 2.5 m x 2.5 m table is (nearest to a rupee)

A ₹ 3,383

B ₹ 4,583

C ₹ 4,853

D ₹ 4,835

Answer: B

Explanation:

Let cost of making a table = $C = X + Y$ -----(i)

Now, $X = k_1 A$, where A is area of table and $Y = k_2 l^2$, where l is length of longer side of table In making 2 m x 3 m table it costs ₹ 5,000

$\Rightarrow C = (6k_1) + (9k_2) = 5000$ -----(ii)

Similarly, $6k_1 + 16k_2 = 6400$ -----(iii)

Subtracting equation (ii) from equation (iii),

we get \Rightarrow

$7k_2 = 1400 \Rightarrow k_2 = \frac{1400}{7} = 200$ Similarly, $k_1 = \frac{3200}{6}$

Now, for a table having dimension 2.5 m x 2.5 m

$\Rightarrow \text{Cost} = (6.25 \times \frac{3200}{6}) + (6.25 \times 200) = 6.25 \times (\frac{3200}{6} + 200) = 6.25 \times \frac{4400}{6} \approx \text{Rs. } 4,583$

\Rightarrow Ans - (B)

Question 140

Anu is walking at a constant speed halfway between two parallel train tracks. On each track is a train of the same length. They are approaching Anu from different directions both at the same speed v km/hour. The train going in the same direction as Anu going takes t_1 second to pass her, while the other takes t_2 seconds to pass her. Speed of Anu (in km/hour) is

A $\frac{t_1 - t_2}{t_1 + t_2} v$

B $\frac{t_2 - t_1}{t_1 + t_2} v$

C $\frac{t_1 + t_2}{t_1 - t_2} v$

D $\frac{t_1 + t_2}{t_2 - t_1} v$

Answer: A

Explanation:

Let Anu's speed = s km/hr Let length of each train = l km and speed of each train = v km/hr Relative speed of train going in same direction = $(v-s)$ km/hr

\Rightarrow Time taken = $t_1 = \frac{l}{v-s}$ -----(i)

Similarly, $t_2 = \frac{l}{v+s}$ -----(ii)

Comparing equations (i) and (ii),

$$\Rightarrow t_1(v-s) = t_2(v+s) \Rightarrow vt_1 - st_1 = vt_2 + st_2 \Rightarrow s(t_2 + t_1) = v(t_1 - t_2) \Rightarrow s = \frac{v(t_1 - t_2)}{t_2 + t_1}$$

=> Ans - (A)

Question 141

A multiple choice examination consists of 20 questions. The scoring is +5 for each correct answer, -2 for each incorrect answer, and 0 for each unanswered question. A student's score on the examination is 48. The maximum number of questions he could have answered correctly is

- A 14
- B 12
- C 10
- D 9

Answer: B

Explanation:

Let questions answered correctly = x and unanswered questions = y , => incorrect questions = $(20 - x - y)$ According to ques, => $5x - 2(20 - x - y) = 48$ => $7x + 2y = 88$ Since, sum of 2 positive numbers is positive, and 84 is the nearest multiple of 7 (when $y = 2$) => $7x = 84$ => $x = 12$ Thus, maximum number of questions answered correctly = 12

=> Ans - (B)

Question 142

At an institute, 99% of the 100 students are girls but only 98% of the students living on the campus are girls. If same girls live on campus, how many students live off campus?

- A 2
- B 40
- C 50
- D 98

Answer: C

Explanation:

Total students = 100 and Number of girls = 99,

Number of boys = 1

Let number of students living off campus = x , and number of students living on campus = $(100 - x)$ 2% of boys live on campus (since there is only 1 boy)

$$\Rightarrow \frac{2}{100} \times (100 - x) = 1 \Rightarrow 100 - x = 50 \Rightarrow x = 50$$

=> Ans - (C)

Question 143

A and B share a piece of land. The ratio of the area of A's portion to the area of B's portion is 2 : 3. They each grow wheat and barley on their pieces of land. The entire land is covered by wheat and barley in the ratio 7 : 3. On A's land, the ratio of wheat to barley is 4 : 1. The ratio of wheat to barley for B's land is

- A 11:19
- B 19:11
- C 11:9
- D 9:11

Answer: B

Explanation:

Let total area of land = $\$100$ sq. units => Total area of A's land = $\$40$ sq. units and B's land = $\$60$ sq. units Also, Total wheat in the land = $\frac{7}{10} \times 100 = 70$ sq. units and similarly, total barley = $\$30$ sq. units A' land : Wheat = $\frac{4}{5} \times 40 = 32$ sq. units Barley = $\$40 - 32 = 8$ sq. units => Remaining wheat = $\$70 - 32 = 38$ sq. units and remaining barley = $\$30 - 8 = 22$ sq. units \therefore Ratio of wheat to Barley for B's land = $\frac{38}{22} = 19:11$ => Ans - (B)

Question 144 A box has apples and oranges. $\frac{2}{3}$ of all the apples and $\frac{3}{4}$ of all the oranges are rotten The number of rotten apples equals the number of rotten oranges. What fraction of the total number of fruits in the box is rotten ?

- A $\frac{12}{17}$
- B $\frac{5}{17}$
- C $\frac{9}{13}$
- D $\frac{11}{13}$

Answer: A

Explanation:

Let number of apples = $3x$ and number of oranges = $4y$ => Number of rotten apples = Number of rotten oranges => $2x = 3y$ => $\frac{x}{y} = \frac{3}{2}$ Let $x = 3$ and $y = 2$ => Fraction of rotten fruits = $\frac{2x+3y}{3x+4y} = \frac{2(3)+3(2)}{3(3)+4(2)} = \frac{12}{17}$ => Ans -

(A) Question 145 A TV set is available for ₹ 19,650 cash payment or for ₹ 3,100 cash down payment and three equal annual instalments. If the interest is charged at the rate of 10% per annum compounded annually, the amount of each instalment is

- A ₹ 6,555
- B ₹ 6,612
- C ₹ 6,655

D ₹ 6,665

Answer: C

Explanation:

Principal amount for EMIs = Rs. $(19,650 - 3,100) = \text{Rs. } 16,550$ Rate of interest = 10% and number of EMIs = 3 Amount when compounded annually = $P(1 + \frac{r}{100})^T$ Let each installment = Rs. $x \Rightarrow x(\frac{1}{(1 + \frac{10}{100})^1} + \frac{1}{(1 + \frac{10}{100})^2} + \frac{1}{(1 + \frac{10}{100})^3}) = 16550 \Rightarrow x(\frac{10}{11} + \frac{100}{121} + \frac{1000}{1331}) = 16550 \Rightarrow x(\frac{1210 + 1100 + 1000}{1331}) = 16550 \Rightarrow x = 16550 \times \frac{1331}{3310} \Rightarrow x = \text{Rs. } 6,655$

\Rightarrow Ans - (C)

Question 146

A person bought n articles for ₹ d . He sold two articles at half their cost and the rest at a profit of ₹ 8 on each article. If the overall profit is ₹ 72, then the least possible value of n is

A 12

B 10

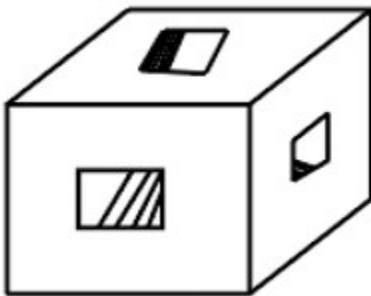
C 8

D 16

Answer: A

Question 147

A 3 cm x 3 cm x 3 cm cube has three holes each of 1 cm x 1 cm cross-section running from the centre of each face to the centre of the opposite face. The total surface area (in cm^2) of the solid so obtained is



A 48

B 50

C 72

D 78

Answer: C

Explanation:

Dimensions of cube = 3 cm x 3 cm x 3 cm and dimensions of square hole = 1 cm x 1 cm

Outer surface area of 1 face = $(3 \times 3) - (1 \times 1) = 8 \text{ cm}^2$

=> Outer surface area of the cube (6 faces) = $6 \times 8 = 48 \text{ cm}^2$

Inner surface area of three tunnels = $3 \times 2[(2 \times 1) + (2 \times 1)] = 24 \text{ cm}^2$
Therefore

Total surface area of solid = $48 + 24 = 72 \text{ cm}^2$

=> Ans - (C)

Question 148

If a 6 cm X 6 cm square is placed on a triangle, it can cover up to 60% of the triangle. If the triangle is placed on the square it can cover up to $\frac{2}{3}$ of the square. The area 3 (in cm^2) of the triangle is

- A 24
- B 36
- C 40
- D 60

Answer: C

Explanation:

The square will cover the same area of the triangle as much as covered by the triangle on square, and that at this point the amount of triangle covered is the same as the amount of square covered.

Let area of triangle be A and area of square = $6 \times 6 = 36 \text{ cm}^2$

According to ques, => $\frac{60}{100} A = \frac{2}{3} \times 36$ => $A = \frac{24}{0.6} = 40 \text{ cm}^2$

=> Ans - (C)

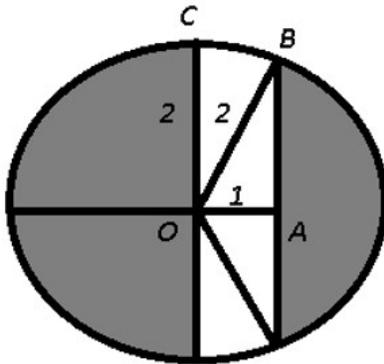
Question 149

A circular grass plot 4 m in diameter is cut by a straight path 1 m wide, one edge of which passes through the centre of the plot. Area of the remaining portion is

- A $\frac{4\pi}{3} - \sqrt{3}$
- B $\frac{10\pi}{3} - \sqrt{2}$
- C $\frac{10\pi}{3} + \sqrt{3}$
- D $\frac{10\pi}{3} - \sqrt{3}$

Answer: D

Explanation:



Radius of circle = $OC = OB = 2$ m and $OA = 1$ m
 Area of path = $2 \times [\text{Area of } \triangle OAB + \text{Area of sector } BOC]$ -----(i)
 In right $\triangle AOB$, $\Rightarrow (AB)^2 = (OB)^2 - (OA)^2 \Rightarrow (AB)^2 = 4 - 1 = 3 \Rightarrow (AB) = \sqrt{3}$ m -----(ii)
 Also, $\tan(\angle AOB) = \frac{AB}{OA} = \sqrt{3} \Rightarrow \angle OAB = 60^\circ$ Thus, $\angle BOC = 90^\circ - 60^\circ = 30^\circ$ -----(iii)
 Now, in equation (i), area of path = $2 \times \left[\frac{1}{2} \times OA \times AB + \frac{30^\circ}{360^\circ} \pi r^2 \right] = 2 \times \left[\frac{1}{2} \times 1 \times \sqrt{3} + \frac{1}{12} \times \pi (2)^2 \right] = 2 \times \left[\frac{\sqrt{3}}{2} + \frac{\pi}{3} \right] = \sqrt{3} + \frac{2\pi}{3}$ -----(iv)
 \therefore Area of plot = Area of shaded region = Area of circle - Area of path = $\pi(2)^2 - \left(\sqrt{3} + \frac{2\pi}{3} \right) = 4\pi - \sqrt{3} - \frac{2\pi}{3} = \frac{10\pi}{3} - \sqrt{3}$ m^2

\Rightarrow Ans - (D)

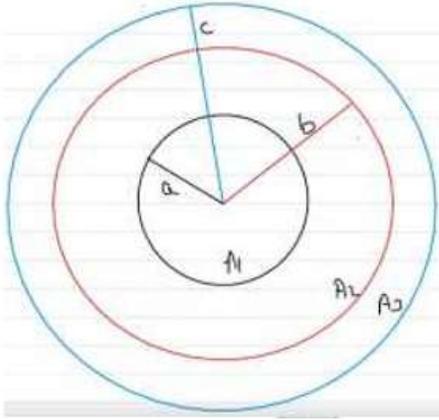
Question 150

Three concentric circles have radii (in cm) a , b and c , where $a < b < c$. If $a = 8$ and $b = 9$ and the middle circle bisects the area between the other two circles, then the value of c is

- A $7\sqrt{2}$
- B $6\sqrt{3}$
- C $7\sqrt{3}$
- D 10

Answer: A

Explanation:



It is given that $a=8$ cm and $b=9$ cm. Also, $A_2 = \frac{A_1 + A_3}{2}$ -----(i)

To find : $c=?$ Solution : Area of a circle = πr^2 Using equation (i),

$$\Rightarrow \pi (b)^2 = \frac{\pi (a)^2 + \pi (c)^2}{2} \Rightarrow a^2 + c^2 = 2b^2 \Rightarrow 64 + c^2 = 162 \Rightarrow c^2 = 162 - 64 = 98 \Rightarrow c = \sqrt{98} = 7\sqrt{2} \text{ cm}$$

\Rightarrow Ans - (A)

Question 151

A sphere has a diameter of $500\sqrt{3}$ cm. A biggest cube is fitted in it. Now a biggest sphere is fitted within this cube. Again a biggest cube is fitted in the smaller sphere. The ratio of the volume of bigger cube to the volume of smaller cube is

- A $3 : 1$
- B $2\sqrt{3} : 1$
- C $3\sqrt{3} : 1$
- D $4\sqrt{3} : 1$

Answer: C

Question 152

A rectangular box has dimensions x, y and z units, where $x < y < z$. If one dimension only is increased by one unit, then the increase in volume is

- A greatest when x is increased
- B greatest when y is increased
- C greatest when z is increased
- D the same regardless of which dimension is increased.

Answer: A

Explanation:

Let the dimensions of rectangular box be $3, 4, 5$ units

\Rightarrow Volume = $V = 3 \times 4 \times 5 = 60$ cu units

Case 1 : New length = 4 units and breadth and height remains same $\Rightarrow V' = 4 \times 4 \times 5 = 80$ cu units

Case 2 : New breadth = 5 units and length and height remains same $\Rightarrow V' = 3 \times 5 \times 5 = 75$ cu units

Case 3 : New height = 6 units length and breadth remains same $\Rightarrow V' = 3 \times 4 \times 6 = 72$ cu units Clearly, increase in volume is greatest when x is increased.

\Rightarrow Ans - (A)

Instructions

Read the following table and answer questions.

School	Number of Students scoring less than 60% marks	Percentage of Students scoring more than 60% marks	Total number of Students appeared
A	320	55	800
B	220	40	400
C	300	20	375
D	280	10	350
E	210	25	300

Question 153

Which school has the lowest percentage of students scoring less than 60% marks ?

- A A
- B B
- C D
- D E

Answer: A

Explanation:

The number of students scoring more than 60% marks in school A = $\frac{55}{100} \times 800 = 440$

Thus, students scoring exactly 60% marks in school A = $800 - 440 - 320 = 40$

Similarly, for other schools :

<i>School</i>	<i>< 60%</i>	<i>60%</i>	<i>>60%</i>	<i>Total</i>
<i>A</i>	<i>320</i>	<i>40</i>	<i>440</i>	<i>800</i>
<i>B</i>	<i>220</i>	<i>20</i>	<i>160</i>	<i>400</i>
<i>C</i>	<i>300</i>	<i>0</i>	<i>75</i>	<i>375</i>
<i>D</i>	<i>280</i>	<i>35</i>	<i>35</i>	<i>350</i>
<i>E</i>	<i>210</i>	<i>15</i>	<i>75</i>	<i>300</i>

Clearly, each school but A, has more than half the students scoring less than 60% marks. Thus, school A has the required lowest percentage (40%)

=> Ans - (A)

Question 154

Number of schools which have the same percentage of students scoring exactly 60% is

- A 1
- B 2
- C 3
- D 4

Answer: C

Explanation:

The number of students scoring more than 60% marks in school A = $\frac{55}{100} \times 800 = 440$
 Thus, students scoring exactly 60% marks in school A = $800 - 440 - 320 = 40$

Similarly, for other schools :

<i>School</i>	<i>< 60%</i>	<i>60%</i>	<i>>60%</i>	<i>Total</i>
<i>A</i>	<i>320</i>	<i>40</i>	<i>440</i>	<i>800</i>
<i>B</i>	<i>220</i>	<i>20</i>	<i>160</i>	<i>400</i>
<i>C</i>	<i>300</i>	<i>0</i>	<i>75</i>	<i>375</i>
<i>D</i>	<i>280</i>	<i>35</i>	<i>35</i>	<i>350</i>
<i>E</i>	<i>210</i>	<i>15</i>	<i>75</i>	<i>300</i>

Now, in schools A, B and E, there are 5% of students scoring exactly 60% marks.

=> Ans - (C)

Question 155

Total number of students scoring 60% or more marks is

A 110

B 775

C 785

D 895

Answer: D

Explanation:

The number of students scoring more than 60% marks in school A = $\frac{55}{100} \times 800 = 440$

Thus, students scoring exactly 60% marks in school A = $800 - 440 - 320 = 40$

Similarly, for other schools :

<i>School</i>	<i>< 60%</i>	<i>60%</i>	<i>>60%</i>	<i>Total</i>
<i>A</i>	<i>320</i>	<i>40</i>	<i>440</i>	<i>800</i>
<i>B</i>	<i>220</i>	<i>20</i>	<i>160</i>	<i>400</i>
<i>C</i>	<i>300</i>	<i>0</i>	<i>75</i>	<i>375</i>
<i>D</i>	<i>280</i>	<i>35</i>	<i>35</i>	<i>350</i>
<i>E</i>	<i>210</i>	<i>15</i>	<i>75</i>	<i>300</i>

Total number of students scoring 60% or more marks is

$$= (40+20+35+15) + (440+160+75+35+75) = 110 + 785 = 895$$

=> Ans - (D)

Question 156

The ratio of the total number of students scoring less than 60% marks to that of scoring exactly 60% marks is

A 11:133

B 133:11

C 157:22

D 285 : 179

Answer: B

Explanation:

The number of students scoring more than 60% marks in school A = $\frac{55}{100} \times 800 = 440$

Thus, students scoring exactly 60% marks in school A = $800 - 440 - 320 = 40$

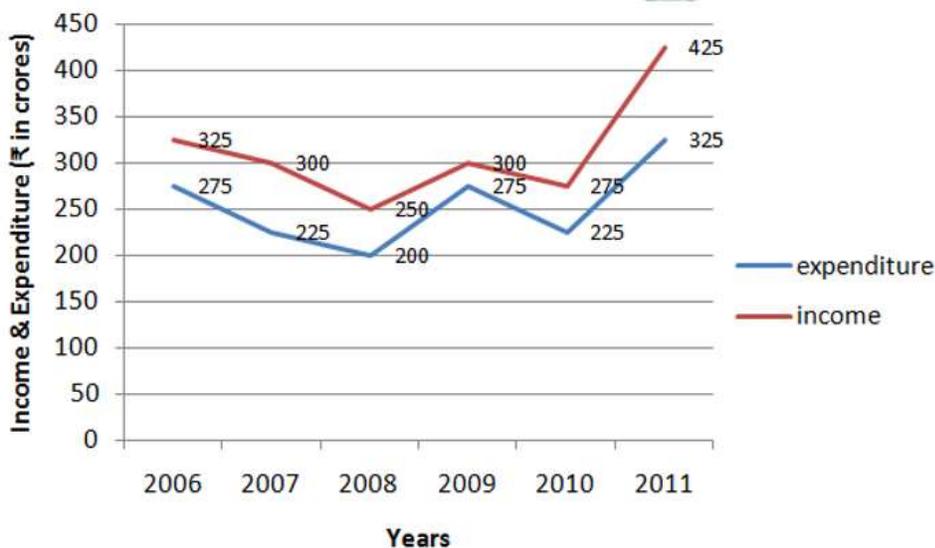
Similarly, for other schools :

School	< 60%	60%	>60%	Total
A	320	40	440	800
B	220	20	160	400
C	300	0	75	375
D	280	35	35	350
E	210	15	75	300

Total number of students scoring less than 60% marks = $320 + 220 + 300 + 280 + 210 = 1330$ Total number of students scoring exactly 60% marks = $40 + 20 + 35 + 15 = 110$ \therefore Required ratio = $\frac{1330}{110} = 133:11$

=> Ans - (B)

Instructions



The above graph shows income and expenditure (₹ in crores) of a company in the years 2006 to 2011.

Read the graph and answer the questions

Question 157

The total expenditure of which of the following pairs of years was equal to the income in 2011 ?

- A 2006 and 2007
- B 2007 and 2008
- C 2006 and 2008
- D 2007 and 2010

Answer: B

Explanation:

Income in 2011 = 425 and expenditure of :

(A) : 2006 and 2007 = 275 + 225 = 500

(B) : 2007 and 2008 = 225 + 200 = 425

(C) : 2006 and 2008 = 275 + 200 = 475

(D) : 2007 and 2010 = 225 + 225 = 450

=> Ans - (B)

Explanation:

Total income in the given years = 325+300+250+300+275+425 = 1875

=> Average income = $\frac{1875}{6}=312.5$ \therefore In two years, 2006 and 2011, income was more than average income.

=> Ans - (B)

Question 159

What was the approximate percentage increase expenditure from 2010 to 2011 ?

- A 72.3
- B 70.5
- C 54.5
- D 44.4

Answer: D

Explanation:

Expenditure in 2010 = 225 and in 2011 = 325 => Percentage increase = $\frac{325-225}{225} \times 100 = 44.4\%$

=> Ans - (D)

Question 160

In which year the percentage of expenditure to income, the highest?

A 2009

B 2008

C 2007

D 2006

Answer: C

Explanation:

Ratio of expenditure to income : (A) : 2009 = $\frac{300}{275} = 1.09$ (B) : 2008 = $\frac{250}{200} = 1.25$ (C) : 2007 = $\frac{300}{225} = 1.33$ (max) (D) : 2006 = $\frac{325}{275} = 1.18$

=> Ans - (C)