



SSC JE Civil Engineering 2012

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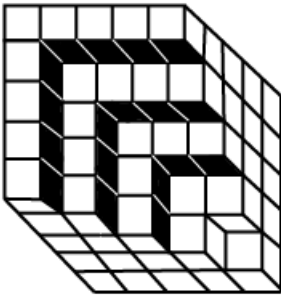
General Intelligence and Reasoning

Instructions

For the following questions answer them individually

Question 1

How many white cubes are there in the given structure?

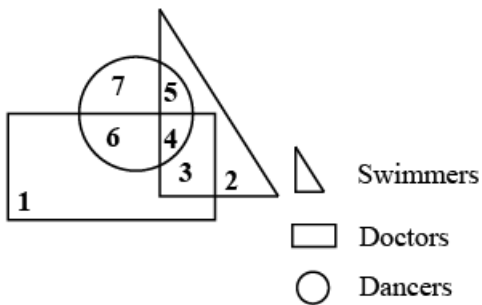


- A 40
- B 65
- C 16
- D 24

Answer: A

Question 2

In the following Venn diagram, identify the number which denotes Doctors who know both Swimming and Dancing.



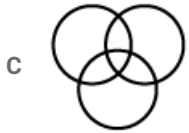
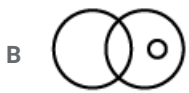
- A 6
- B 5
- C 3
- D 4

Answer: D

Question 3

Which one of the following diagrams best depicts the relationship among College Graduates, Professional Athletes and Great Scientists?





Answer: C

Instructions

Two statements are given followed by two conclusions I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You are to decide which of the given conclusions, if any, follow from the given statements.

Question 4

Statements:

Mind is a stream of thoughts.

Mind is working all the time.

Conclusions:

I: If there is no thought, there is no mind.

II: Thoughtless people will not succeed.

- A Neither conclusions I nor II follows.
- B Both conclusion I and II follow.
- C Only conclusion I follows.
- D Only conclusion II follows.

Answer: A

Question 5

Statements:

Teachers should have empathy.

Students need empathetic approach from their teachers.

Conclusions:

I: Persons without empathy cannot become good teachers.

II: Good teachers understand the problems of their students.

- A Neither conclusion I nor II follows.
- B Both conclusion I and II follow.
- C Only conclusion I follows.
- D Only conclusion II follows.

Answer: C

Instructions

For the following questions answer them individually

Question 6

Which answer figure will complete the pattern in the question figure?

Question Figure:

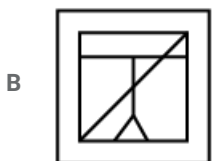
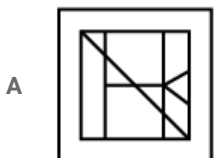
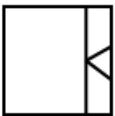


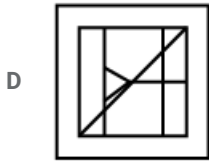
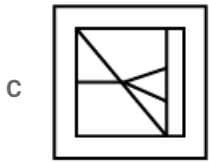
Answer: B

Question 7

Select the answer figure in which the question figure is hidden/embedded.

Question Figure:



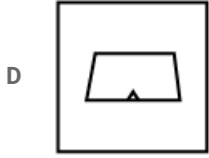
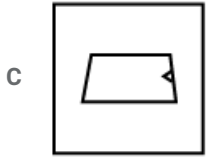
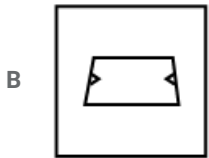
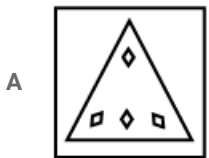


Answer: A

Question 8

A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figure:

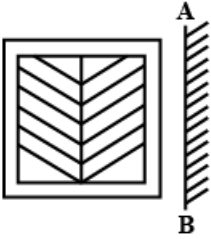


Answer: A

Question 9

Which of the answer figure is exactly the mirror image of the given figure, when the mirror is held on the line AB?

Question Figure:



Answer: D

Question 10

A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of matrix I and II are numbered from 0 to 4. A letter from these matrices can be represented first by its row and next by its column, e.g., 'A' can be represented by 24, 31 etc. and 'P' can be represented by 11, 32, etc. Identify the set for the letters AELO.

Matrix I

	0	1	2	3	4
0	A	E	C	B	D
1	C	D	A	E	B
2	B	E	D	C	A
3	D	A	C	B	E
4	B	E	D	A	C

Matrix II

	5	6	7	8	9
5	L	M	O	N	P
6	N	P	L	M	O
7	P	M	O	L	N
8	L	N	P	M	O
9	O	N	L	P	M

A 31, 00, 23, 22

B 43, 01, 12, 42

C 12, 34, 30, 02

D 12, 30, 42, 14

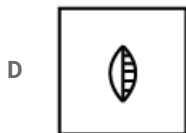
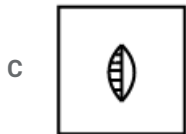
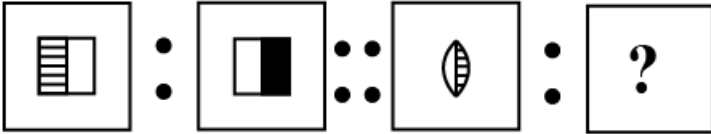
Answer: C

Instructions

Select the related word/letter /number/figure from the given alternatives.

Question 11

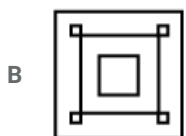
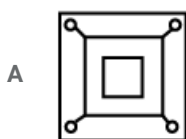
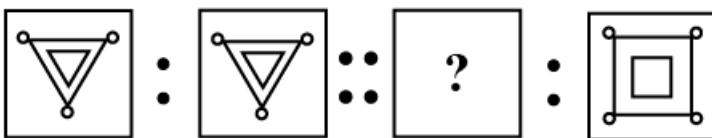
Question Figures:

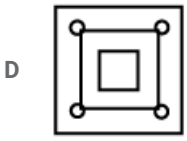
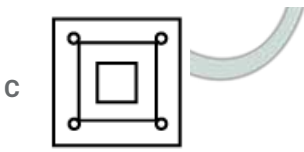


Answer: B

Question 12

Question Figure:

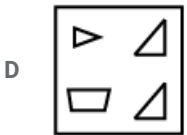
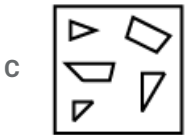
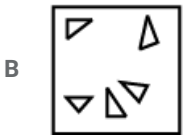
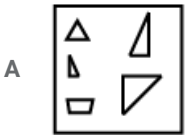
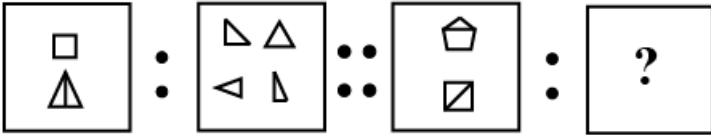




Answer: C

Question 13

Question Figures:



Answer: D

Question 14

? : JHKI :: TRUS : OMPN

A GEHF

B GEFH

C LOMP

D QMPN

Answer: A

Question 15

AEJO : ZVQL :: DINS : ?

- A WRMH
- B WSOJ
- C WRNJ
- D WSNI

Answer: A

Question 16

IRTH : HQSG :: ? : RQPO

- A QPON
- B PQRO
- C OPQR
- D SRQP

Answer: D

Question 17

16 : 64 :: 25 : ?

- A 83
- B 125
- C 55
- D 110

Answer: B

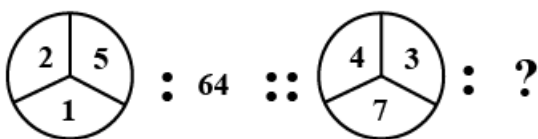
Question 18

5 : 15 :: 40 : ?

- A 60
- B 45
- C 120
- D 55

Answer: C

Question 19



- A 81
- B 196

C 169

D 324

Answer: B

Instructions

Select the one which is different from the other three responses.

Question 20

A Aluminium

B Tungsten

C Copper

D Diamond

Answer: D

Question 21

A Customer

B Hawker

C Broker

D Salesman

Answer: A

Question 22

A Weaver

B Spinner

C Engineer

D Potter

Answer: C

Question 23

A Champaka

B Hibiscus

C Rose

D Jasmine

Answer: B

Question 24

A Cholera

B Jaundice

- C AIDS
- D Typhoid

Answer: C

Question 25

- A RQFJ
- B ODHR
- C SRBH
- D RHSN

Answer: A

Question 26

- A 114 57 28
- B 120 60 30
- C 144 72 36
- D 124 62 31

Answer: A

Question 27

- A 8987
- B 6354
- C 7832
- D 2398

Answer: B

Question 28

- A 49 - 7
- B 36 - 6
- C 64 - 8
- D 80 - 9

Answer: D

Instructions

For the following questions answer them individually

Question 29

Arrange the given words in the order in which they occur in the dictionary and find the last but one word:

- A Faubourg

- B Fatiscent
- C Fauxbourdon
- D Favonian

Answer: C

Question 30

Arrange the following words in the order in which they occur in the dictionary. Which will appear fourth in the dictionary ?

- A Nucleosynthesis
- B Nucleoprotein
- C Nucleonic
- D Nuclearize

Answer: A

Question 31

Arrange the following words in the order in which they occur in the Dictionary :

1. Interview
2. Inventory
3. Invention
4. Interval
5. Investment

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

Answer: D

Instructions

Choose the correct alternative from the given responses that will complete the series:

Question 32

xy, wy, xy, ut, xy, ?

- A xy
- B rs
- C yx
- D sr

Answer: D

Question 33

PQR, HIJ, DEF, ?

- A ABC

- B BCD
- C DEF
- D CDE

Answer: B

Question 34

NDB, LED, JGG, ?

- A LNP
- B HED
- C HJJ
- D HJI

Answer: C

Question 35

18, 54, 162, 486, 1458, ?

- A 39366
- B 4374
- C 2187
- D 13122

Answer: B

Question 36

20, 30, 42, 56, 72, ?

- A 87
- B 95
- C 85
- D 90

Answer: D

Instructions

For the following questions answer them individually

Question 37

Find the wrong number in the given series:

7, 15, 32, 65, 138

- A 65
- B 138
- C 7

D 15

Answer: A

Question 38

A party consisted of a man, his wife, his three sons and their wives and three children in each son's family. How many were there in the party ?

A 17

B 24

C 22

D 13

Answer: A

Question 39

₹ 6,500 were divided equally among a certain number of persons. Had there been 15 more persons, each would have got ₹ 30 less. Find the original number of persons.

A 50

B 55

C 40

D 45

Answer: A

Question 40

From the following alternatives, select the word which cannot be formed using the letters of the given word :
UNIVERSITY

A NEVER

B REST

C INVERT

D UNITE

Answer: A

Question 41

In a certain code MEN is written as MIN and WOMEN is written as WUMIN, then how will CHILD be written in the same code?

A CHOLD

B CHULD

C CHELD

D CHALD

Answer: A

Question 42

If $Y = 2$, $PEN = 11 - 22 - 13$, then $10 - 6 - 18 - 24 - 16 = ?$

- A QUICK
- B QUITE
- C JFRXP
- D QUACK

Answer: A

Question 43

Find out the number which belongs to the given group of number from the four alternatives.
5, 25, 90, 35, 60

- A 21
- B 83
- C 15
- D 24

Answer: C

Question 44

If \div stands for division

$-$ stands for equal to

\times stands for addition

\div stands for greater than

$=$ stands for less than

$>$ stands for multiplication

$<$ stands for subtraction

then of the given alternatives which one is correct?

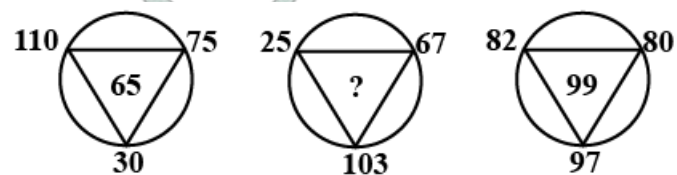
- A $5 \times 3 < 7 \div 8 + 4 < 2$
- B $5 + 3 > 7 - 8 \times 4 + 2$
- C $5 > 3 \times 7 = 8 > 4 + 2$
- D $5 < 8 > 7 - 8 > 4 + 2$

Answer: A

Instructions

Select the missing number from the given responses.

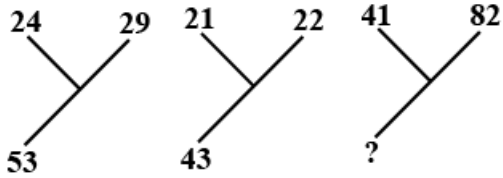
Question 45



- A 120
- B 195
- C 61
- D 89

Answer: C

Question 46



- A 33
- B 123
- C 121
- D 63

Answer: B

Question 47

2	5	7
6	15	21
10	19	?

- A 28
- B 52
- C 29
- D 25

Answer: B

Instructions

For the following questions answer them individually

Question 48

Going 60 metres to the South of his house, Kiran turns left and goes another 20 metres then turning to the North, he goes 40 metres and then starts walking to his house. In which direction is his house. In which direction is his house from there ?

- A East
- B North West
- C North
- D South East

Answer: B

Question 49

Ram started walking towards East. After 1 km, he turned South and walked 5 km. Again he turned East and walked 2 km. Finally, he turns to the North and walked 9 km. How far is he from the starting point ?

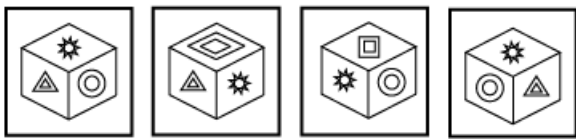
- A 5 km
- B 7 km
- C 3 km
- D 4 km

Answer: A

Question 50

Four positions of a cube are shown below. If symbol Sun is at the top, what symbol will be at the bottom ?

Question Figures:



A



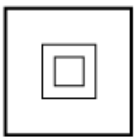
B



C



D



Answer: C

General Awareness

Instructions

For the following questions answer them individually

Question 51

'Liver rot' is caused by

- A Typhlops
- B Trypanosoma

C Fasciola

D Taenia

Answer: C

Question 52

"Proconveritin" is an example of

A Plasma protein

B Proteolipid

C Lipoprotein

D Glycoprotein

Answer: A

Question 53

If the filament current of a coolidge tube is increased, X-rays emitted from it will be of greater

A Velocity

B Penetration power

C Energy

D intensity

Answer: D

Question 54

The idea of stationary orbit of electrons in an atom was first introduced by

A Bohr

B Thomson

C Sommerfield

D Rutherford

Answer: A

Question 55

Which of the following pairs of particles have equal and opposite charge ?

A Proton-neutron

B None of these

C Electron-proton

D Electron-neutron

Answer: D

Question 56

In 'Isobaric process', which parameter remains constant ?

- A Temperature
- B Mass
- C Pressure
- D Volume

Answer: C

Question 57

A prototype of a system is

- A The object code of a fully developed system
- B A complete system
- C A trial version of a system under development;
- D The source code of a fully developed system

Answer: C

Question 58

An example of a mathematical function in Structured Query Language (SQL) is

- A MIN
- B COS
- C AVG
- D MAX

Answer: B

Question 59

The intensity of sound is measured in dB-scale and the threshold of hearing is

- A 10 dB
- B 20 dB
- C 0 dB
- D 5 dB

Answer: C

Question 60

PAN is pollutant of air. The full name of PAN is

- A Peroxy Acetyl Nitrate
- B Peroxy Acidal Nitrate

- C Peroxy Alkyl Nitrate
- D Peroxy Aldehyd Nitrate

Answer: A

Question 61

Repeated exposure to small concentrations of a toxic agent results in accumulation of toxic substance over a period of time. This is known as

- A Bio accumulation
- B Chronic accumulation
- C Biomagnification
- D Chronic toxicity

Answer: B

Question 62

Which one of these elements is NOT considered an essential trace element for the biosphere ?

- A Molybdenum
- B Sodium
- C Zinc
- D Selenium

Answer: B

Question 63

The term epicentre is associated with

- A Folding
- B Earth's interior
- C Faulting
- D Earthquakes

Answer: B

Question 64

How many countries participated in the first Twenty-20 World Cup in South Africa ?

- A 16
- B 22
- C 32
- D 28

Answer: A

Question 65

Which one among the following is the National Fruit ?

- A Apple
- B Mango
- C Banana
- D Jack Fruit

Answer: B

Question 66

Which language is spoken by maximum number of people in the world?

- A Spanish
- B Urdu
- C English
- D Chinese

Answer: D

Question 67

Name the dome shaped monument used to keep Buddhist relics.

- A Viharas
- B Temples
- C Stupa
- D Chaityas

Answer: C

Question 68

'KIMONO' is a dress style of

- A China
- B Nepal
- C Korea
- D Japan

Answer: D

Question 69

Which one of the following famous monuments was built to honour the visit of King George V and Queen Mary to India ?

- A Victoria Terminus
- B War Memorial

C The Gateway of India

D India Gate

Answer: C

Question 70

Tulsidas was the author of

A Adi Granth

B Sursagar

C Bhagavata Purana

D Ramcharitmanas

Answer: D

Question 71

The study of coins is called

A Historiography

B Numismatics

C Epigraphy

D Archaeology

Answer: B

Question 72

Which among the following is not a classical Indian dance?

A Manipuri

B Bharatanatyam

C Rasleela

D Odissi

Answer: C

Question 73

The colour of potassium flame through double blue glass is

A Violet

B Crimson red

C Golden yellow

D Green

Answer: B

Question 74

Precipitation takes place when product of concentration of ions

- A Is less than the solubility product
- B Is negligible
- C Equals the solubility product
- D Exceeds the solubility product

Answer: D

Question 75

Dry ice is

- A Liquified Nitrogen
- B Liquified H_2
- C Solid CO_2
- D Ice dust

Answer: C

Question 76

Poisoning of drinking water is caused due to presence of

- A Iron compound
- B Magnesium compound
- C Zinc compound
- D Arsenic compound

Answer: D

Question 77

Which institute is known as apex body for development of agriculture ?

- A NABARD
- B IFCI
- C Land Development Bank
- D IDBI

Answer: A

Question 78

The duration for which a patent right is valid is known as

- A Patent life

- B Patent duration
- C Patent time
- D Patent right

Answer: A

Question 79

The concept of supply curve as it is used in economic theory is relevant only for the case of

- A Monopolistic competition
- B Oligopoly
- C Monopoly
- D Perfect or pure competition

Answer: D

Question 80

When the prices of two goods tend to vary inversely, they are said to be

- A Pure goods
- B Economic goods
- C Substitutes
- D Complements

Answer: D

Question 81

Purchase of cycle by a Household is treated as

- A Consumption
- B Asset creation
- C Capital formation
- D Savings

Answer: A

Question 82

In a Unitary Government, the States derive their powers from

- A Central Government
- B Judiciary
- C Constitution
- D Parliament

Answer: A

Question 83

The theory of natural rights was first enunciated by

- A Hobbes
- B Rousseau
- C John Locke
- D Hugo Grotius

Answer: D

Question 84

Individualism is also known as

- A Anarchism
- B Communism
- C Socialism
- D Laissez-Faire

Answer: D

Question 85

Parliamentary Government is called

- A Congressional executive
- B Cabinet executive
- C Fixed executive
- D Non-responsible executive

Answer: B

Question 86

Fundamental Duties were laid down by

- A The Original Constitution
- B 42nd Amendment
- C 39th Amendment
- D 40th Amendment

Answer: B

Question 87

Simon Commission was boycotted because

- A It did not visit India

- B It was composed of conservatives
- C It was composed of inexperienced men
- D It was an all White Commission

Answer: D

Question 88

The Nayanars belonged to the

- A Shiva cult
- B Jain cult
- C Bhagavath cult
- D Vaishnava cult

Answer: A

Question 89

Name the Sufi Saint with whom Akbar, the Mughal Emperor, is associated:

- A Shaikh Nizamuddin Auliya
- B Shaikh Salim Chishti
- C Shaikh Farid
- D Shaikh Muinuddin Chishti

Answer: B

Question 90

The Vaisheshika School of Physics propounded the atomic theory during the period of

- A Harsha
- B Ashoka
- C Mauryas
- D Guptas

Answer: D

Question 91

Who set up a separate department called the Diwan-i-Khairat?

- A Muhammad-bin-Tughlaq
- B Firoz Tughlaq
- C Sher Shah
- D Akbar

Answer: B

Question 92

Birmingham is an Industrial Centre of

- A The Pittsburg-Lake Erie region
- B Volge region
- C The Midlands
- D The Keihin region

Answer: C

Question 93

Acrescent shaped sand dune is known as

- A Barkhan
- B Sandbar
- C Seif
- D Zeugen

Answer: A

Question 94

Which is an ore of dolomite?

- A Aluminium
- B Magnesium
- C Copper
- D Lead

Answer: B

Question 95

Stalactites and stalagmites are found mainly in

- A underground coal mines
- B sandstone regions
- C granite regions
- D limestone regions

Answer: D

Question 96

Which one of the following is the oldest and deepest fresh waterlake in the world?

- A Lake Baikal

- B Lake Chilka
- C Lake Superior
- D Lake Titicaca

Answer: A

Question 97

Which one of the following plants shows vivipary?

- A Rhizophora
- B Mango
- C Pinus
- D Litchi

Answer: A

Question 98

The kind of inflorescence in sunflower is

- A Capitulum
- B Raceme
- C Spadix
- D Spike

Answer: A

Question 99

Moulting in insects is mainly controlled by

- A Parathormone
- B Ecdysone
- C Ecotone
- D Parahormone

Answer: B

Question 100

Silver fish is included in the phylum

- A Chordata
- B Arthropoda
- C Annelida
- D Echinodermata

Answer: B

General Engineering (Civil & Structural)

Instructions

For the following questions answer them individually

Question 101

Which one of following is not a non-dimensional parameter?

- A Chezy's coefficient
- B Darcy-Weisbach friction factor
- C Froude number
- D Mach number

Answer: A

Question 102

The best alignment for a canal is when it is aligned along.

- A Valley line
- B Stream line
- C Contour line
- D Ridge line

Answer: D

Question 103

If D is the depth of scour below original bed, then the width of bunching apron is generally taken as

- A 1.5 D
- B 2.5 D
- C 1.2 D
- D 2.0 D

Answer: A

Question 104

When the bituminous surfacing is done on already existing black top road or over existing cement concrete road, the type of treatment to be given is

- A Tack coat
- B Spray of emulsion
- C Seal coat
- D Prime coat

Answer: A

Question 105

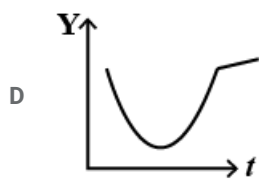
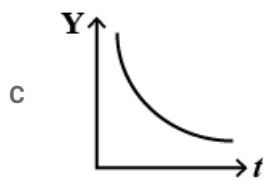
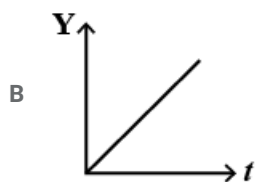
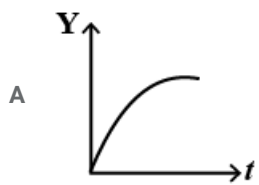
Bottommost layer of pavement is known as

- A Sub base course
- B Sub grade
- C Wearing course
- D Base course

Answer: B

Question 106

The correct graphical representation of BOD (y) and time(t) is given by



Answer: A

Question 107

The most suitable solid waste disposal method for rural areas is

- A Land filling
- B Deep well injection
- C Composting
- D Incineration

Answer: C

Question 108

The population of a town as per census records were 2,00,000; 2,10,000 and 2,30,000 for the year 1981, 1991 and 2001 respectively. Find the population of the town in the year 2011 using arithmetic mean method. The answer is

- A 250000
- B 255000
- C 240000
- D 245000

Answer: D

Question 109

Hooke's law is valid up to

- A Limit of proportionality
- B Ultimate point
- C Elastic limit
- D Yield point

Answer: A

Question 110

The ability of a material to absorb energy till the elastic limit is known as

- A Resilience
- B Ductility
- C Elasticity
- D Malleability

Answer: A

Question 111

Out of the following, which is least elastic?

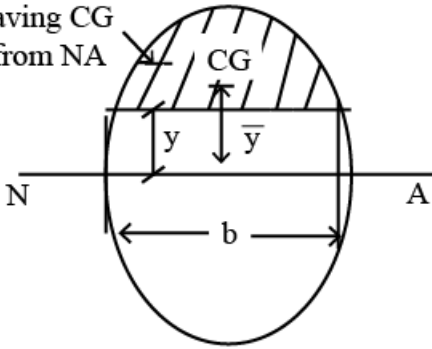
- A Silver
- B Rubber
- C Iron
- D Copper

Answer: B

Question 112

Shear stress at y distance above neutral axis (NA) on a prismatic beam due to shear force V is given by

Area A
having CG
 \bar{y} from NA



A $V A \bar{y}^2 / I b$

B $V I / (b A y)$

C $V A y \bar{y}^2 / I$

D $V b / (A y I)$

Answer: A

Question 113

For a given shear force across a symmetrical 'T' section the intensity of shear stress is maximum at the

- A At the junction of the flange and the web, but on the web
- B At the junction of the flange and the web, but on the flange
- C Extreme fibres
- D Centroid of the section

Answer: D

Question 114

The equivalent length of a column of length L having both ends fixed is given by

A $L/2$

B $L/\sqrt{2}$

C $2L$

D L

Answer: A

Question 115

For a given stress, the ratio of moment of resistance of a beam of square cross-section when placed with its two sides horizontal to the moment of resistance with its diagonal horizontal is given by

A $\frac{1}{\sqrt{2}}$

B $\sqrt{2}$

C $\frac{1}{2}$

D 1

Answer: B

Question 116

A bar, L metre long and having its area of crosssection A, is subjected to gradually applied tensile load W. The strain energy stored in the bar is given by

A $\frac{W^2 L}{AE}$

B $\frac{W^2 L}{2AE}$

C $\frac{WL}{2AE}$

D $\frac{WL}{AE}$

Answer: B

Question 117

The predominant effect of an axial tensile force on 2 helical spring is

A Compression

B Twisting

C Bending

D Tension

Answer: B

Question 118

Slope at the supports of a simply supported beam of effective span L with a central point load W is given by

A $\frac{WL^2}{16EI}$

B $\frac{WL^2}{24EI}$

C $\frac{WL^2}{8EI}$

D $\frac{WL^2}{12EI}$

Answer: A

Question 119

If a circular shaft is subjected to a torque T and bending moment M, the ratio of maximum bending stress and maximum shearstress is given by

- A $\frac{M}{T}$
- B $\frac{2T}{M}$
- C $\frac{2M}{T}$
- D $\frac{M}{2T}$

Answer: C

Question 120

Two beams, one of circular cross section and the other of square cross section, have equal areas of cross section. If subjected to bending, then

- A Both sections are equally economical
- B Both sections are equally stiff
- C Circular cross section is more economical
- D Square cross section is more economical

Answer: D

Question 121

The point of contraflexure is a point where

- A Shear force is maximum
- B Bending moment is maximum
- C Shear force changes sign
- D Bending moment changes sign

Answer: D

Question 122

A rectangular log of wood is floating in water with a load of 100 N at its centre. The maximum shear force in the wooden log is

- A 100 N at the centre
- B Zero shear all through
- C 50 N at each end
- D 50 N at the centre

Answer: D

Question 123

Point out the correct matching:

- A Cantilever beam under point load at tip (W) - $\frac{WL^3}{48EI}$
- B Cantilever beam under udl (W) - $\frac{WL^4}{8EI}$

C Simply supported beam under central point load (W) - $\frac{WL^3 \delta_{max}}{384EI}$

D Simply supported beam under udl (W) - $\frac{3WL^4}{384EI}$

Answer: B

Question 124

IN a beam at a section carrying a shearforce F, the shearstress is maximum at

A Bottommost fibre

B Mid depth

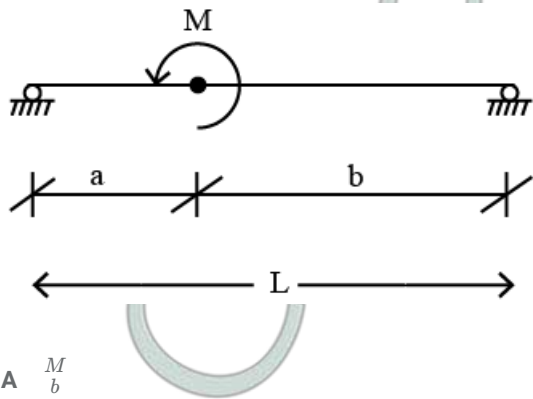
C Neutral surface

D Topmost fibre

Answer: C

Question 125

The shear force at the point of contraflexure in the following beam is:



A $\frac{M}{b}$

B $\frac{M}{L}$

C 0

D $\frac{M}{a}$

Answer: B

Question 126

Strain energy per unit volume of a solid circular shaft ϕ under axial tension is

A $\frac{\sigma^2}{8E}$

B $\frac{\sigma^2}{16E}$

C $\frac{\sigma^2}{2E}$

D $\frac{\sigma^2}{4E}$

Answer: C

Question 127

For a cantilever beam of length L carrying a triangular load of intensity ' w ' at the support and zero at the free end, the slope of the free end is given by

- A $\frac{WL^3}{24EI}$
- B $\frac{WL^3}{48EI}$
- C $\frac{WL^3}{8EI}$
- D $\frac{WL^3}{12EI}$

Answer: A

Question 128

The allowable stress in a long column can be increased by increasing the

- A Slenderness ratio
- B Length of the column
- C Radius of gyration
- D Eccentricity

Answer: C

Question 129

For a pin jointed plane structure to be statically determinate, the necessary condition is, where,

m = number of unknown member force

r = number of unknown reaction

j = number of joints

- A $m + r = 2j$
- B $3m + r = 2j$
- C $m + r = 3j$
- D $m + 2r = 3j$

Answer: A

Question 130

The simplest geometrical form of a truss is a

- A Trapezium
- B Square
- C Triangle
- D Parallelogram

Answer: C

Question 131

For a beam carrying a uniformly distributed load, the strain energy will be maximum in case the beam is

- A Propped cantilever
- B Fixed at both ends
- C Cantilever
- D Simply supported

Answer: C

Question 132

The beam shown below is indeterminate of degree -



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

Answer: D

Question 133

The angle of twist of a closely helical spring under an axial torque is given by

- A $\frac{64Td_n}{ED^4}$
- B $\frac{32Td_n}{ED^4}$
- C $\frac{32TD_n}{ED^4}$
- D $\frac{64TD_n}{Ed^4}$

Answer: D

Question 134

28 day crushing strength of cementis tested on 70.7 mm size cubes of mortar having cement to sand proportion of mortar having cement to sand proportion of

- A 1 : 5
- B 1 : 6
- C 1 : 3
- D 1 : 4

Answer: C

Question 135

For Portland cement of 43 grade, 28 day mean compressive strength should exceed

- A 43 MPa
- B 43.5 MPa
- C 33 MPa
- D 38.5 MPa

Answer: A

Question 136

Minimum grade of concrete for moderate environmental exposure condition should be

- A M25
- B M30
- C M15
- D M20

Answer: A

Question 137

The characteristic strength of concrete is defined as that compressive strength below which NOT more than

- A 2% of results fall
- B None of these
- C 10% of results fall
- D 5% of results fall

Answer: D

Question 138

Workability of concrete is directly proportional to

- A Grading of aggregate
- B Water : Cement ratio
- C Aggregate : Cement ratio
- D Time of transit

Answer: A

Question 139

The bottom diameter, top diameter and the height of the steel mould used for slump test are respectively

- A 20 cm, 30 cm & 10 cm
- B 10 cm, 30 cm & 20 cm

C 20 cm, 10 cm & 30 cm

D 10 cm, 20 cm & 30 cm

Answer: C

Question 140

Los Angeles test for aggregates is made to determine the

A Abrasion resistance

B Water absorption

C Crushing strength

D Impact value

Answer: A

Question 141

Out of the constituents of cement namely, tricalcium silicate (C_3S), dicalcium silicate (C_2S), tri calcium aluminate (C_3A) and tetracalcium aluminoferrite (C_4AF) the first to set and harden is

A C_4A

B C_4AF

C C_3S

D C_2S

Answer: A

Question 142

The addition of $CaCl_2$ in concrete result in

A. increased shrinkage

B. decreased setting time

C. decreased shrinkage

D. increased setting time

A only A

B only A and B

C only A and D

D only D

Answer: B

Question 143

The concrete mix design is conducted as per

A IS : 10262

B IS : 13920

C IS : 383

D IS : 456

Answer: A

Question 144

The modulus of elasticity of concrete in N/mm^2 can be assumed as follows where F_{ck} is the characteristic cube compressive strength of concrete in N/mm^2 ?

A $4000\sqrt{f_{ck}}$

B $5000\sqrt{f_{ck}}$

C $2000\sqrt{f_{ck}}$

D $3000\sqrt{f_{ck}}$

Answer: B

Question 145

The horizontal distance between parallel main reinforcements in RC slab shall not be more than

A 4 times effective depth of slab

B 5 times effective depth of slab

C 3 times effective depth of slab

D 2 times effective depth of slab

Answer: C

Question 146

In limit state method of design, for HYSD bars the values of bond stress shall be

A Increased by 60%

B Decreased by 60%

C Increased by 50%

D Decreased by 50%

Answer: A

Question 147

Critical section for calculating bending moment for a spread concrete footing of effective depth d is given by the plane at

A $\left(\frac{d}{2}\right)$ from column face

B d from column face

C column face

D 75 mm from column face

Answer: C

Question 148

If L is the effective length of a column and B is the least lateral dimension, then the column will be treated as short column if the ratio of $\frac{L}{B}$ is equal to or less than

- A 14
- B 12
- C 18
- D 16

Answer: B

Question 149

The factored loads at the limit state of collapse for DL + LL, DL + WL and DL + LL + WL combinations, according to IS : 456 - 2000 are respectively

- A $1.2 DL + 1.2 LL, 1.5 DL + 1.5 WL, 1.5 DL + 1.5 LL + 1.5 WL$
- B $1.5 DL + 1.5 LL, (0.9 \text{ or } 1.5)DL + 1.5 WL, 1.2 DL + 1.2 LL + 1.2 WL$
- C $1.5 DL + 1.5 LL, 1.2 DL + 1.2 WL, 1.5 DL + 1.5 LL + 1.5 WL$
- D $(0.9 \text{ or } 1.5)DL + 1.5 LL, 1.5 DL + 1.5 WL, 1.2 DL + 1.2 LL + 1.2 WL$

Answer: B

Question 150

A compression member is termed as column or strut if the ratio of its effective length to the least lateral dimension is more than

- A 3
- B 5
- C 1
- D 2

Answer: A

Question 151

Minimum percentage of tension steel in and RCC beam for Fe 500 steel is

- A 0.22
- B 0.80
- C 0.12
- D 0.17

Answer: D

Question 152

In reinforced and plain concrete footing resting on soils, the thickness at edge shall not be less than

- A 30 cm
- B 50 cm
- C 15 cm
- D 25 cm

Answer: C

Question 153

Bending moment co-efficients and shear co-efficient for continuous beams of uniform cross-section as per IS 456 (tab-12 and 13) may be used only when spans do not differ to the longest span by

- A 15%
- B 20%
- C 10%
- D 12%

Answer: A

Question 154

A slender section buckle locally

- A after reaching yield moment
- B as soon as it reaches ultimate
- C before reaching yield moment
- D as soon as it reaches yield moment

Answer: C

Question 155

The slenderness ratio $\frac{l}{r}$ of a lacing bar should be less than

- A 250
- B 350
- C 145
- D 180

Answer: C

Question 156

The member of roof truss which supports the purlins is called as

- A Sag rod
- B Main strut
- C Principal rafter

D Principal tie

Answer: C

Question 157

The effective length of a steel column, effectively held in position and restrained against rotation at both ends is

A 0.80 L

B 1.0 L

C 0.5 L

D 0.65 L

Answer: D

Question 158

Which one the following factors does not affect the lateral buckling strength of a steel I section undergoing bending about its major axis ?

A Laterally unsupported length of the compression flange

B Radius of gyration about the major axis of the section

C Boundary conditions at the ends

D Radius of gyration about the minor axis of the section

Answer: B

Question 159

The water absorption for good brick should not be more than

A 10% of its dry weight

B 15% of its dry weight

C 10% of its saturated weight

D 15% of its saturated weight

Answer: B

Question 160

The disease of dry rot in timber is caused by

A Complete submergence in water

B None of these

C Alternative wet and dry conditions

D Lack of ventilation

Answer: D

Question 161

Clay bricks are made of earth having

- A Nearly equal proportion of silica and alumina
- B Nearly equal proportions of alumina, silica and lime
- C 35 – 70% silica and 10 – 20% alumina
- D 10 – 20% silica and 35 – 70% alumina

Answer: C

Question 162

The compound first to settle in cement is

- A Tricalcium silicate
- B Tetra calcium aluminoferrite
- C Tricalcium aluminate
- D Dicalcium silicate

Answer: C

Question 163

The age of trees can be understood by

- A Measuring the diameter of pith
- B The thickness of bark
- C Counting number of rings
- D Length of medullary rays

Answer: C

Question 164

Putty is made up of

- A Red lead and linseed oil
- B Zinc oxide and boiled linseed oil
- C White lead and turpentine
- D Powdered chalk and raw linseed oil

Answer: D

Question 165

Which of the following Bouge's compounds of cement liberates maximum heat of hydration?

- A C_3S
- B C_4AF
- C C_3A

D C_2S

Answer: B

Question 166

As per IS : 456 - 2000, the organic content of water used for making concrete should NOT be more than

A 200 mg/L

B 250 mg/L

C 100 mg/L

D 150 mg/L

Answer: A

Question 167

Which of the following is the hardest wood?

A Babul

B Chir

C Teak

D Shisham

Answer: D

Question 168

Doglegged stairs are

A Quarter turn stairs

B Three quarter turn stairs

C Half turn stairs

D Straight stairs

Answer: D

Question 169

If d is the constant distance between the sections, then the correct prismoidal formula for volume is

A $\frac{d}{3}[\text{first area} + \text{last area} + 4 \sum \text{Even area} + 2 \sum \text{odd areas}]$

B $\frac{d}{6}[\text{first area} + \text{last area} + 2 \sum \text{Even area} + 4 \sum \text{odd areas}]$

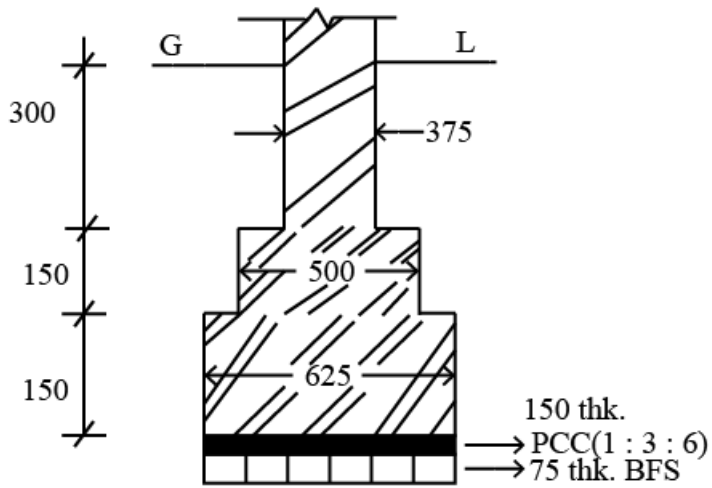
C $d[\text{first area} + \text{last area} + \sum \text{Even area} + 2 \sum \text{odd areas}]$

D $\frac{d}{3}[\text{first area} + \text{last area} + 2 \sum \text{Even area} + 4 \sum \text{odd areas}]$

Answer: A

Question 170

The cross-section of a strip footing is shown below:



The quantity of 150 thick PCC (1 : 3 : 6) per metre length of footing is

- A 0.094 sq.m.
- B 0.094 cu.m.
- C 0.0625 sq.m.
- D 0.0625 cu.m.

Answer: B

Question 171

The measurement is NOT made in square metres in case of

- A Damp proof course
- B Form works
- C Concrete Jaffries
- D R.C. Chhajja

Answer: D

Question 172

For one sq.m. single brick flat soling (conventional size), the number of brick required is

- A 54
- B 62
- C 32
- D 44

Answer: C

Question 173

The number of bricks (conventional size) required for one square metre of brick on edgesoling is

- A 54
- B 64
- C 34
- D 44

Answer: A

Question 174

For 1 sq.m. of 7.5 cm thick lime terracing in roof with brick khoa, surki, lime (2 : 2 : 7) including finishing, the quantity of surki required is

- A 0.023 cu. m.
- B 0.025 cu. m.
- C 0.019 cu. m.
- D 0.022 cu. m.

Answer: D

Question 175

In straight line method, the annual depreciation of the property is

- A $\frac{\text{Original cost} - \text{Annual sinking fund}}{\text{Life in years}}$
- B $\frac{\text{Life in years}}{\text{Original cost} + \text{Scrap value}}$
- C $\frac{\text{Original cost} - \text{Scrap value}}{\text{Life in years}}$
- D $\frac{\text{Original cost} + \text{Scrap value}}{\text{Life in years}}$

Answer: C

Question 176

The quantity of brickwork in foundation and plinth per day per mason should be

- A 1.75 cu.m.
- B 2.5 cu.m.
- C 1.0 cu.m.
- D 1.25 cu.m.

Answer: D

Question 177

Which of the following scales is the smallest one?

- A 4 : 200000
- B 1 cm = 5000 m

C 1 cm = 50 m

D $RF = \frac{1}{50000}$

Answer: B

Question 178

When the curvature of earth is taken into account, the surveying is called

A Plane surveying

B Preliminary surveying

C Geodetic surveying

D Hydrographic surveying

Answer: C

Question 179

Detailed plotting in plane table surveying is generally done by

A Resection

B Both (a) and (d)

C Traversing

D Radiation

Answer: D

Question 180

Theodolite is an instrument used for measurement of

A Both horizontal and vertical angles

B Distance only

C Horizontal angles only

D Vertical angles only

Answer: A

Question 181

If the magnetic bearing of the Sun at a place at noon in southern hemisphere is 167° , the magnetic declination at that place is

A $13^\circ E$

B $13^\circ W$

C $77^\circ N$

D $23^\circ S$

Answer: A

Question 182

The angle between the prolongation of the preceding line and the forwardline of a traverse is called

- A Direct angle
- B Exclude angle
- C Deflection angle
- D Included angle

Answer: C

Question 183

If the end points of a line are free from local attraction, the difference between fore bearing - and back bearingof that line should be

- A 180°
- B 120°
- C 360°
- D 90°

Answer: A

Question 184

For a tacheometer, the additive and multiplying constants are respectively

- A 100 and 0
- B 0 and 100
- C 0 and 0
- D 100 and 100

Answer: B

Question 185

The fore bearing of a line CD is $324^\circ 45'$. The back bearing of the line is

- A $144^\circ 45'$
- B $54^\circ 45'$
- C $234^\circ 45'$
- D $35^\circ 45'$

Answer: A

Question 186

The principle of working of optical square is based upon

- A Double reflection

- B Double refraction
- C Reflection
- D Refraction

Answer: A

Question 187

If the plasticity index of a soil mass is zero, the soil is

- A Clay
- B Clayed silt
- C Sand
- D Silt

Answer: C

Question 188

Water content of soil can

- A Be less than 0%
- B Be greater than 100%
- C Never be greater than 100%
- D Take values only from 0% to 100%

Answer: B

Question 189

The coefficient of active earth pressure for a loose sand having an angle of internal friction ' ϕ ' is

- A $\frac{1 - \sin \frac{\phi}{2}}{1 + \sin \frac{\phi}{2}}$
- B $\frac{1 + \sin \frac{\phi}{2}}{1 - \sin \frac{\phi}{2}}$
- C $\frac{1 - \sin \phi}{1 + \sin \phi}$
- D $\frac{1 + \sin \phi}{1 - \sin \phi}$

Answer: C

Question 190

A plate load test is useful to estimate

- A Both bearing capacity and settlement of foundation
- B Consolidation of soil
- C Bearing capacity of foundation

D Settlement of foundation

Answer: A

Question 191

The unit of the coefficient of consolidation is

A $gm/cm^2/sec$

B $gm - cm/sec$

C cm^2/sec

D cm^3/sec

Answer: C

Question 192

The characteristic of an ideal fluid is

A One which satisfies continuity equation

B One which flows with least friction

C One which obeys Newton's Law of Viscosity

D Frictionless and incompressible

Answer: D

Question 193

The discharge through a rectangular orifice is given by the expression as indicated below :

A $Q = \frac{2}{3} C_{db} \sqrt{2g} (H_2^{\frac{1}{2}} - H_1^{\frac{1}{2}})$

B $Q = \frac{2}{3} C_{db} \sqrt{2g} (H_2^2 - H_1^2)$

C $Q = \frac{2}{3} C_{db} \sqrt{2g} (H_2 - H_1)$

D $Q = \frac{2}{3} C_{db} \sqrt{2g} (H_2^{\frac{3}{2}} - H_1^{\frac{3}{2}})$

Answer: D

Question 194

A rectangular plate $1.25 \text{ m} \times 2.4 \text{ m}$ is immersed in a liquid of relative density 0.85 with its 1.25 m side horizontal and just at the water surface. If the plane of the plate makes an angle of 60° with the horizontal, the pressure force on one side of the plate of

A 30.6 kN

B 26.0 kN

C 15.0 kN

D 30.0 kN

Answer: B

Question 195

The ratio of specific weight of a liquid to the specific weight of pure water at a standard temperature is called

- A Compressibility of liquid
- B Surface tension of liquid
- C Density of liquid
- D Specific gravity of liquid

Answer: D

Question 196

In the Bernoulli's equation written as $\frac{p}{\rho} + \frac{v^2}{2g} + z = \text{constant}$, each of the term represents energy per unit

- A Weight
- B Length of flow
- C Mass
- D Volume

Answer: C

Question 197

The term 'alternate depth' in open channel flow refers to the

- A Depths having the same age energy for a given discharge
- B Depths before and after the passage of the surge
- C Depths having the same kinetic energy for a given discharge
- D Depths on either side of a hydraulic jump

Answer: A

Question 198

The length of a pipe is 1000 m and its diameter is 20 cm. If the diameter of an equivalent pipe is 40 cm, then its length is

- A 4000 m
- B 32000 m
- C 20000 m
- D 8000 m

Answer: B

Question 199

In series-pipe problems

- A The discharge is same through each pipe

- B The discharge through each pipe is added to obtain total discharge
- C The headloss is same through each pipe
- D The Reynold's number for each pipe is same

Answer: A

Question 200

An air vessel is provided at the summit in a syphon to

- A Increase velocity
- B Maintain pressure difference
- C Avoid interruption in the flow
- D Increase discharge

Answer: C