SSC JE
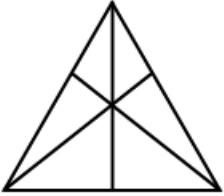## General Intelligence and Reasoning

For the following questions answer them individually

Question 1

How many triangles are there in the figure?

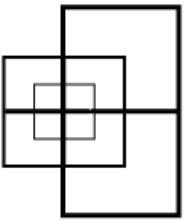
A 7

B 10

C 16

D 20

   Answer: C

Question 2

Find the number of minimum straight lines required to make figure

A 13

B 17

C 15

D 19

   Answer: A

Question 3

Write the number of space enclosed by rectangle and circle but not by triangle
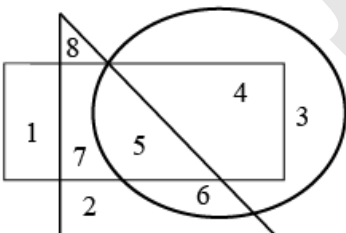
A 3

B 2
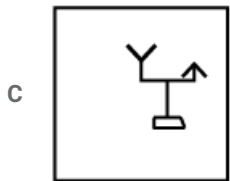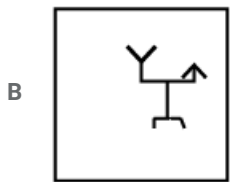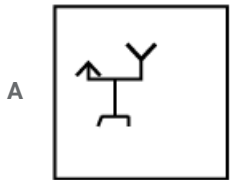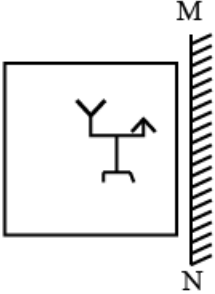
C   1

D   4

   Answer: D

Question 4

If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

Question figure

A

B

C

D
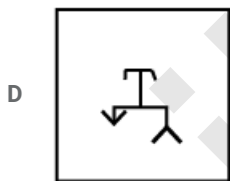
   Answer: A

Question 5

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 are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, e.g. 'M' can be represented by 01, 14 etc., and 'S' can be represented by 58, 77 etc. Similaraly, you have to identify the set the word 'ROHAN'.

Matrix I					
	0	1	2	3	4
0	H	M	X	W	K
1	N	R	N	Y	M
2	K	V	H	P	W
3	Y	Z	R	M	N
4	W	V	H	J	P

Matrix II					
	5	6	7	8	9
5	A	D	E	S	B
6	T	U	O	G	Q
7	O	Q	S	D	A
8	S	E	U	E	D
9	Q	B	A	T	O

A 11, 57, 00, 55, 12

B 11, 75, 00, 55, 10

C 32, 75, 21, 55, 10

D 32, 67, 41, 55, 12

Answer: B

Explanation:
R   11, 32,
O   75, 67, 99
H   00, 22,
A   55, 97, 79
N   10, 12, 34,

From option B,
ROHAN   11, 75, 00, 55, 10

∴ The correct answer is option B.

Question 6

In the given figure, the circle stands for intelligent, square for hardworking, triangle for Post graduate and the rectangle for loyal employees. Study the figure and answer the following questions. Employees who are intelligent, hardworking and loyal but not Post graduate are represented by
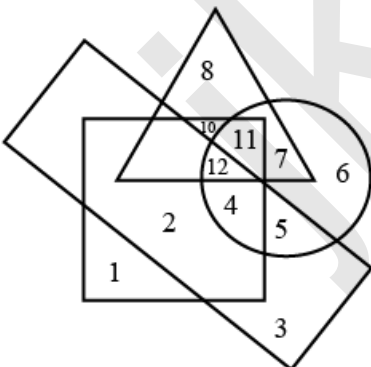
A 11

B 5

C 4

D 3

Answer: C

Question 7

Statements : All students are girls.
Some students are not talented.
Conclusions : I. No students is talented
II. Some girls are talented

A Only I follows

B Only II follows

C Both I and II follows

D Neither I nor II follows

Answer: D

Explanation:
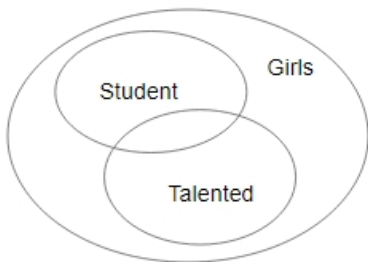
Neither I nor II follows.

∴ the correct answer is option D.

Question 8

Statements : 1. Tigers do not fly
2. Hens do not fly.
Conclusions : I. Tigers are birds
II. All birds cannot fly

A Only I follows

B Only II follows

C Both I and II follows

D Neither I nor II follows

Answer: D

Explanation:
From the both statements,

Neither I nor II follows.

∴ The correct answer is option D.

Instructions
For the following questions answer them individually

Question 9

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

Question figure

A

B

C

D
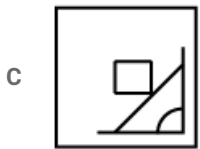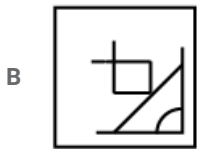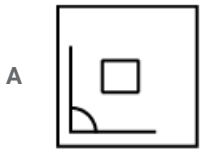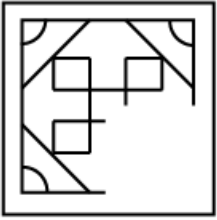
Answer: B

Question 10

From the given answer figures, select the one in which the question figure is hidden/embedded.

Question figure

A

B

C

D
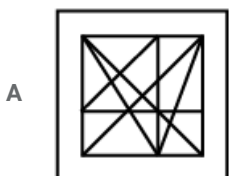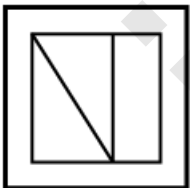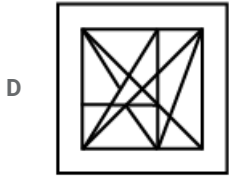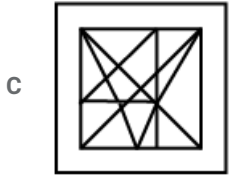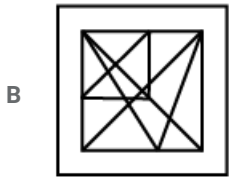
Answer: A

Question 11

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

Question figures

A

B

C

D
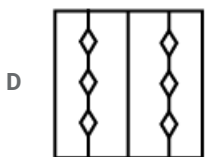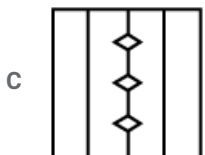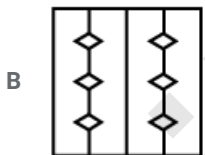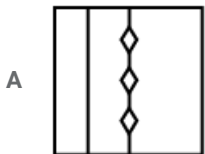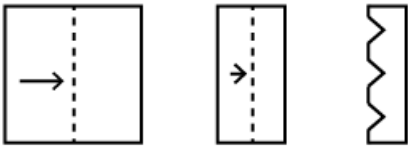
Answer: B

Question 12

Ramu's mother has three sons. The eldest one is called onekari, the second one is called twokari. Then the third son's name is

A   Teenkari

B   Sandu

C   Ramu

D   Nokari

    Answer: C

Explanation:
Third son s name is Ramu.

Question 13

Ashok is heavier than Gopal. Mahesh is lighter than Jayesh. Prashant is heavier than Jayesh but lighter than Gopal. Who among them is heaviest ?

A   Gopal

B   Ashok

C   Prashant

D   mahesh

    Answer: B

Explanation:
Ashok is heavier than Gopal so,

Ashok > Gopal

Mahesh is lighter than Jayesh so,

Jayesh > Mahesh

Prashant is heavier than Jayesh but lighter than Gopal so,

Gopal > Prashant > Jayesh

by the combination of all statements,

Ashok > Gopal > Prashant > Jayesh > Mahesh

So, Ashok is heaviest.

Question 14

**From the given alternative words, select the word which cannot be formed using the letters of the given word :
KILOMETERS**

A   OIL

B   MEET

C   TREES

D   STREET

    Answer: D

Explanation:
'STREET' cannot be formed using the letters of the 'KILOMETERS'.

Question 15

In a certain code language, if the word 'RHOMBUS' is coded as TJQODWU, then how is the word 'RECTANGLE' in that language ?

A   TGEVCPIMG

B   TGEVCPING

C   TGEWDPING

D   TGFWEPING

   Answer: B

Explanation:
'RHOMBUS is coded as,

R + 2   T
H + 2   J
O + 2   Q
M + 2   O
B + 2   D
U + 2   W
S + 2   U

Similarly,
R + 2   T
E + 2   G
C + 2   E
T + 2   V
A + 2   C
N + 2   P
G + 2   I
L + 2   N
E + 2   G
'RECTANGLE is coded as 'TGEVCPING'.

∴. The correct answer is option B.

Question 16

If in a certain code 'Education' is written as 3 6 5 7 9 8 2 1 4 then how 'Conduct' can be written?

A   7 1 4 6 5 7 8

B   6 5 4 7 8 7 1

C   1 4 5 8 7 7 6

D   6 4 8 5 7 6 7

   Answer: A

Explanation:
E   3
D   6
U   5
C   7
A   9
T   8
I   2
O   1
N   4

'Conduct can be written as '7146578'.

Question 17

If 7x = 8k and 5y = 6k then the value of ratio x is to y is

A 20 : 21

B 21 : 20

C 35 : 48

D 48 : 35

Answer: A

Explanation:
7x   8k

x   8k/7

and 5y   6k

y   6k/5

x : y $$\frac{8k}{7} : \frac{6k}{5}$$ 20 : 21

Question 18

If 44 + 12 = 30, 77 + 14 = 61, 84 + 16 = 66 then what should be for 44 + 22 = ?

A 28

B 20

C 32

D 24

Answer: B

Explanation:
44 - (12 + 2)   30

77 - (14 + 2)   61

84 - (16 + 2)   66

Similarly,

44 - (22 + 2) = 20

∴ The correct answer is option B.

Question 19

Select the set of symbols which can be fitted correctly in the equation,
8____4____2____6____3 = 32

A $\times, -, +, \div$

B $+, \times, \div, -$

C $+, \div, \times, -$

D $-, \times, \div, +$

Answer: A

Explanation:
From option A),

LHS

$8 \times 4 - 2 + 6 \div 3$

32 - 2 + 2

  32

RHS

∴ Option A is the correct answer

Instructions

In the following question, which one of the given responses would be a meaningful order of the following?

Question 20

1. Village
2. State
3. Nation
4. District

A   1, 2, 4, 3

B   1, 4, 2, 3

C   2, 3, 1, 4

D   4, 2, 3, 1

    Answer: B

Explanation:
Village are comes under the District, District comes under the State and State comes under the Nation.

Question 21

1. Branches
2. Root
3. Trunk
4. Leaf
5. Flower

A   4, 1, 3, 2, 5

B   2, 3, 1, 4, 5

C   1, 2, 3, 4, 5

D   4, 3, 1, 2, 5

    Answer: B

Explanation:
The order of the parts of a tree - Root, Trunk, Branch, Leaf, Flower

∴ Option B is the correct answer.

Question 22

1. Adulthood
2. Babyhood
3. Childhood
4. Infancy

A   4, 3, 2, 1

B   4, 2, 3, 1

C   4, 1, 2, 3

D 4, 3, 1, 2

Answer: B

Explanation:

The first stage of every person is infancy then babyhood after then childhood and the next stage adulthood so order,

Infancy, babyhood, childhood, adulthood

∴ Option B is the correct answer.

Instructions

In the following questions, a series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.

Question 23

CDDP DEER EFFT FGGV GHHX ?

A ZIIH

B HIIZ

C HJJY

D HIJZ

Answer: B

Explanation:

In the series, every letter increased by 1 in each term. So,

Next term HIIZ
∴ The correct answer is option B.

Question 24

l m n m n o p n o p q r ?

A pqrst

B lmnop

C opqrs

D hpqrs

Answer: C

Explanation:

The series follows pattern as,

l**mn**/m**nop**/n**opqr**/o**pqrst**

∴ The correct answer is option C.

Question 25

R I A T N I E ?

A A

B B

C C

D D

   Answer: B

Explanation:
In the alphabet 'R' is the 9 letter from the reverse order.

I is the 9th letter from R
A is the 8th letter from I
T is the 7th letter from A
N is the 6th letter from T
I is the 5th letter from N
E is the 4th letter from I
So,
The 3rd letter from E is B.
∴. The correct answer is option B.

Question 26

$\left(\frac{1}{8}\right), \left(\frac{1}{4}\right), \left(\frac{1}{2}\right), 1, ?, 4$

A $\left(\frac{3}{8}\right)$

B $\left(\frac{2}{8}\right)$

C   2

D   6

   Answer: C

Explanation:
The series follows pattern as,

$\frac{1}{8} \times 2 = \frac{1}{4}$,

$\frac{1}{4} \times 2 = \frac{1}{2}$,

$\frac{1}{2} \times 2 = 1$,

$1 \times 2 = 2$,

$2 \times$ 4$$

Missing term   2

Question 27

11, 12, 16, 25, ?

A   45

B   41

C   43

D   49

   Answer: B

Explanation:
$11 + 1^2$ 12

$12 + 2^2$ 16

$16 + 3^3$ 25

25 + 4^2 = 41

Question 28

3, 9, 21, 45, ?

A 54

B 78

C 87

D 93

    Answer: D

Explanation:

the series follows pattern as,

0 + 3   3

3 + 6   9

9 + 12   21

21 + 24   45

45 + 48 = 93

∴ Option D is the correct answer.

Instructions

In the following questions, select the missing number from the given responses.

Question 29

13	15	12
2	4	5
4	5	8
30	65	?

A 64

B 69

C 65

D 68

    Answer: D

Explanation:

13 × 2 + 4   30

15 × 4 + 5   65

12 × 5 + 8   68

Question 30

20	30	12
3	4	8
80	?	116

A 120

B 60

C   100

D   140

  Answer: D

Explanation:

20 × 3 + 20   80

12 × 8 + 20   116

30 × 4 + 20 = 140

Instructions

For the following questions answer them individually

Question 31

Hospital is 12 km towards east of Rupin's house. His school is 5 km towards south of Hospital. What is the shortest distance between Rupin's house and school?

A   16 km

B   17 km

C   12 km

D   13 km

  Answer: D

Explanation:

From the Pythagoras,

$$(AC)^2 \quad (AB)^2 + (BC)^2$$
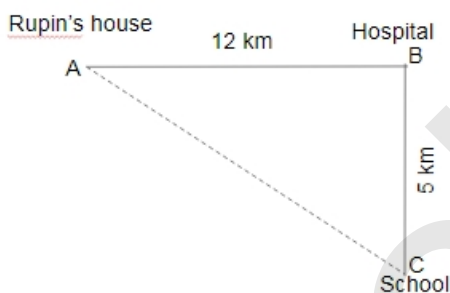
$(AC)^2 = (12)^2 + (5)^2$

$(AC)^2 = 169$

AC   13 km

Shortest distance   13 km.

Question 32

Two cars started from a particular spot. The car A ran Straight at the speed of 30 kmph for 2 hours north and then took a right turn. It run 40 km and again turned right. It stopped after east at the speed of 20 kmph for 2 hours and tuned left. it ran for 100 km and then stopped. How far were there two cars from each other when both of them stopped at last ?

A   17 km

B   18 km

C   19 km

D   20 km

Answer: D

In the following questions, select the related word/ letters/number from the given alternatives.

Question 33

CHAIR : FURNITURE : : FORK : ?

A SPOON

B CUTLERY

C CROCKERY

D FOOD

  Answer: B

Explanation:
Chair comes under the furniture similarly fork comes under the cutlery.

Question 34

Compass : Ship : : Vastu : ?

A Building

B Flat

C Home

D Land

  Answer: C

Explanation:
Compass used to find the correct direction of ships similarly vastu used to to find the correct direction of **home**.

Question 35

BOOK : LIBRARY :: ? : FILE

A COMPUTER

B DATA

C FOLDER

D BYTES

  Answer: B

Explanation:
Books are available in the library similarly **data** is available in file.

Question 36

q : d :: b : ?

A p

B d

C q

D b

    Answer: A

Explanation:

Water image of 'q' is 'd'.

Similarly,

Water image of 'b' is 'p'.

∴. The correct answer is option A.

Question 37

ABB : EGJ :: FHL : ?

A BDH

B JMT

C FHH

D JJL

    Answer: B

Explanation:

In ABB : EGJ,

A + 4 → E

B + 5 → G

B + 6 → H

Similarly,

In FHL : ?,

F + 4 → J

H + 5 → M

L + 6 → T

Missing term - JMT

Question 38

EV : KP :: TG : ?

A ZA

B AZ

C ZZ

D AA

    Answer: A

Explanation:
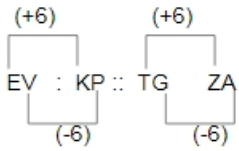
Missing term   ZA

Question 39

21 : 65 :: 31 : ?

A   78

B   80

C   85

D   95

   Answer: D

Explanation:

$21 \times 3 + 2$ 65

$31 \times 3 + 2 = 95$

∴ Option D is the correct answer.

Question 40

17 : 102 :: 23 : ?

A   112

B   138

C   216

D   413

   Answer: B

Explanation:

17×6 102

Similarly,

23×6 138

Question 41

25   36   ?

A   9 : 25

B   16 : 25

C   25 : 49

D   81 : 121

   Answer: B

Explanation:

$5^2 = 25$

$(5 + 1)^2 = 6^2 = 36$

Similarly,

$4^2 = 16$

$(4 + 1)^2 = 65^2 = 25$

∴ Option B is the correct answer.

Instructions

In the following questions, find the odd word/number pair from the given alternatives.

Question 42

A stare

B glance

C look

D hug

   Answer: D

Explanation:
Except 'hug' remaining all words mean to look something.

∴ The correct answer is option D.

Question 43

A Analogy

B Reasoning

C Decoding

D Cycling

   Answer: D

Explanation:
Except **cycling** remaining all are subjects.

Question 44

A Nephrology

B Astrology

C Pathology

D Entomology

   Answer: B

Explanation:
Except astrology remaining all are related to study of animals.

∴ The correct answer is option B.

Question 45

A accdff

B prrsu

C mnnoqq

D egghij

　　Answer: C

Explanation:

Except option C, all other options have difference of the 1 letter in between first and 2nd letter.

∴ The correct answer is option C.

Question 46

A OQTX

B JMNQ

C EGJN

D XZCG

　　Answer: B

Explanation:

In OQTX,

O + 2　Q + 3　T + 4　X

In JMNQ,

J + 3 = M + 1 = N + 3 = Q

In EGJN,

E + 2　G + 3　J + 4　N

IN XZCG,

X + 2　Z + 3　C + 4　G

∴ The correct answer is option B.

Question 47

A NMOK

B PKQJ

C RLSK

D TGUF

　　Answer: A

Explanation:
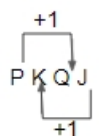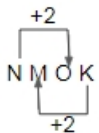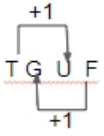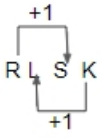
MNOK is odd.

∴ The correct answer is option A.

Question 48

A 997

B 976

C 778

D 895

   Answer: A

Explanation:

997 → 9 + 9 + 7   25

976 → 9 + 7 + 6   22

778 → 7 + 7 + 8   22

895 → 8 + 9 + 5   22

∴ The correct answer is option A.

Question 49

A 8

B 87

C 111

D 96

   Answer: A

Explanation:

87 → 8 + 7   15

111 → 1 + 1 + 1   3

96 → 9 + 6   15

The sum of the digits of 87, 111 and 96 is divisible by 3.

∴ The correct answer is option A.

Instructions
For the following questions answer them individually

Question 50

Pick the odd number from the sequence below :
2, 3, 6, 7, 11, 15, 30

A 7

B 11

C 6

D 30

  Answer: B

Explanation:
In first number: The number is first added to same number.
In second number: The answer should added by 1.

1 + 1   2

2 + 1   3

3 + 3   6

6 + 1   7

7 + 7   14

14 + 1   15

15 + 15   30

So, 11 is odd number.

General Awareness

Instructions
For the following questions answer them individually

Question 51

The storage form of glucose is

A Insulin

B Glycogen

C Glucagon

D Fructose

  Answer: B

Question 52

Thigmotropism is the response of the plant to

A Gravity

B Water

C Light

D Contact

  Answer: D

Question 53

Root hairs are produced from

A   trichotnes

B   trichiblast

C   rhizodermis

D   epidermis

   Answer: C

Question 54

Second Ozone hole was detected over

A   Antartica

B   Artica

C   Sweden

D   Northern hemisphere

   Answer: A

Question 55

Glycolysis during fermentation results in not gain of

A   1 ATP

B   2 ATPs

C   3 ATPs

D   4 ATPs

   Answer: B

Question 56

The disadvantage of self-pollination is

A   seeds are less in number

B   no dependence of pollinating agents

C   mechanism is too simple

D   no wastage of pollengrains

   Answer: A

Question 57

By increasing the intensity of incident light on the surface, the photo electric current

A   increases

B   decreases

C   unchanged

D increases initially and then decreases

Answer: D

Question 58

The Phenomenon of light splitting into seven distinct colours when it passes through prism is

A diffraction

B polarisation

C dispersion

D reflection

Answer: C

Question 59

A block placed on an inclinedc plane of slope angle θ slides down with a constant speed. The coefficient of kinetic friction is equal to

A $\sin\theta$

B $\cos\theta$

C $\tan\theta$

D $\cot\theta$

Answer: C

Question 60

A plumb bob is hanging from the ceiling of a car. If the car moves with an acceleration a, the angle made by the string with the vertical is

A $\sin^{-1}\left(\frac{a}{g}\right)$

B $\sin^{-1}\left(\frac{g}{a}\right)$

C $\tan^{-1}\left(\frac{a}{g}\right)$

D $\tan^{-1}\left(\frac{g}{a}\right)$

Answer: C

Question 61

Who is called the 'Father of Indian Cinema'?

A Raj Kapoor

B Dilip kumar

C Mehboob Khan

D Dada Saheb Phalke

Answer: D

Question 62

Name the first Indian woman to climb Mount Everest

A   Santosh Yadav

B   Backhendri Pal

C   Rita Farai

D   Leela Seth

   Answer: B

Question 63

Which IPL Team won the eighth edition of the Indian Premier League?

A   Mumbai Indians

B   Chennai Super Kings

C   Delhi Daredevils

D   Kolkata Knight Riders

   Answer: A

Question 64

Nehru Trophy is associated with which sport in India?

A   Football

B   Cricket

C   Hockey

D   None of the above

   Answer: C

Question 65

Aung San Suu Kyi, a prodemocracy compaigner, is from which of the following countries?

A   Nepal

B   Myanmar

C   Bangladesh

D   China

   Answer: B

Question 66

Usain Bolt is famous as

A   an astronaut

B   a boxer

C an athlete

D a cricketer

Answer: C

Question 67

Which of the following is the morning 'Ragg' in music ?

A Sohini

B Bhairavi

C Sarang

D Malhaar

Answer: B

Question 68

When was the first All India Postage Stamp issued?

A 1854

B 1858

C 1850

D 1856

Answer: A

Question 69

In which country was paper currency first used?

A India

B Egypt

C China

D Japan

Answer: C

Question 70

The murder of Archduke Ferdinand and his wife triggered off which of the following events?

A Crimean War

B Balkan War

C First World War

D Second World War

Answer: B

Question 71

com represents

A   communication domain

B   Educational domain

C   Commercial domain

D   Government domain

Answer: A

Question 72

IKE stands for

A   Internet Key Exchange

B   Information Key Execution

C   Information Key Exchange

D   Infrastructure Key Encryption

Answer: A

Question 73

When salt is added to water, the boiling point of water is

A   Lowered

B   Unaffected

C   Increased

D   Constant

Answer: C

Question 74

The gas dissolved in water that makes it acidic

A   hydrogen

B   nitrogen

C   carbon dioxide

D   ammonia

Answer: C

Question 75

The hydrogen ion concentration of a solutin is measured using a

A   thermometer

B   pH meter

C   hydrometer

D   barometer

   Answer: B

Question 76

Non-bonding valence electrons are

A   Involved only in covalent bond formation

B   Involved only in ionic bond formation

C   Involved in both ionic and covalent bond formation

D   Not involved in covalent bond formation

   Answer: C

Question 77

When is the World Earth Day celebrated?

A   4 April

B   22 April

C   1 May

D   23 March

   Answer: B

Question 78

World "No Tabacco Day" was observed globally on

A   31 May

B   2 June

C   15 June

D   20 June

   Answer: A

Question 79

The greenhouse gases, otherwise called radioactively active gases include

A   Carbon dioxide

B CH_4

C N_2O

D   All of these

   Answer: D

Question 80

The most serious environmental effect posed by hazardous wastes is

A air pollution

B contamination of ground water

C increased use of land of landfills

D None of the above

   Answer: B

Question 81

Which Delhi Sultan resorted to price control and rationing?

A Balban

B Muhammad-bin-Tughluq

C Bahlul Lodi

D Alaud-din-Khilji

   Answer: D

Question 82

The Maratha ruler Shivaji ruled his kingdom with the help of a Council of Ministers called

A Ashtapradan

B Ashtadigajas

C Navarathnas

D Mantriparishad

   Answer: A

Question 83

Ms. Florence Nightingale was associated with

A Seven years War

B Thirty Years War

C Crimean War

D Hundred Years War

   Answer: C

Question 84

Who among the following Gupta emperor was known as 'Vikramaditya'?

A Samudra Gupta

B Kumar Gupta

C   Chandra Gupta I

D   Chandra Gupta II

   Answer: D

Question 85

The finely painted cotton fabric made in Golkanda was called

A   Calico

B   Muslin

C   Kalamkari

D   Palampore

   Answer: C

Question 86

Which of the best type of cotton grown in the world?

A   Long staple

B   Medium staple

C   Short staple

D   Thick staple

   Answer: A

Question 87

Which one of the following is first multipurpose project constructed in India?

A   Rihand

B   Thungabadra

C   Farraka Barrage

D   Damodar

   Answer: D

Question 88

What is the symbol of (WWF) World Wildlife Fund?

A   Red Panda

B   Rhododendron

C   Bear

D   White Tiger

   Answer: A

Question 89

Market Gardening comes in this category

A Horticulture

B Monoculture

C Subsistence farming

D Sericulture

　Answer: A

Question 90

A deep or french in the ocean floor is called

A Ridges

B Crest

C Trough

D Continental Shelf

　Answer: B

Question 91

Name the co-operative society that provides housing loan facility at reasonable rates

A Credit co-operatives

B Housing co-operatives

C Consumer co-operatives

D Producer s co-operatives

　Answer: B

Question 92

Name the biggest employer in India

A Steel Authority of India Ltd (SAIL)

B Post & Telecom Department

C Food Corporation of India (FCI)

D Indian Railways

　Answer: D

Question 93

Which of the following is an allied activity of agriculture

A Livestock

B Small Scale Industry

C   Money lending

D   Insurance

   Answer: A

Question 94

Disguised unemployment means

A   Working as Self-Employed

B   Not working whole day

C   Marginal Productivity is zero

D   Production is less

   Answer: C

Question 95

Cartel is a part of

A   Monopoly

B   Oligopoly

C   Perfect competition

D   Monopolistic competition

   Answer: B

Question 96

In the presidential system of government, the President is

A   Head of the state

B   Head of the state and Head of the Government

C   Head of the Government

D   Head of the Executive

   Answer: B

Question 97

The Chief Election Commissioner of India is appointed by

A   Chief Justice of India

B   Prime Minister

C   President

D   Parliament

   Answer: C

Question 98

The Election Commission of India is

A   An independent body

B   Quasi-judicial body

C   Quasi-legislative body

D   Executive body

   Answer: A

Question 99

Articles 23 and 24 of the Indian Constitution deal with

A   Right against Exploitation

B   Right to Freedom

C   Right to Freedom of Religion

D   Right to Education

   Answer: A

Question 100

Which of the following ideologies aims at the spiritualization of politics?

A   Marxism

B   Socialism

C   Sarvodaya

D   Pularlism

   Answer: C

General Engineering (Mechanical)

nstructions

For the following questions answer them individually

Question 101

n a homogeneous, isotropic elastic material, the modulus of elasticity E in terms of G and K is equal to

A $\dfrac{9KG}{G\ 3K}$

B $\dfrac{9KG}{3G\ K}$

C $\dfrac{3K\ G}{3G\ K}$

D $\dfrac{6KG}{K\ 3G}$

   Answer: A

Question 102

n a composite bar the resultant strain produced will be

A sum of the strain produced by the individual bars

B same as the strain produced in each bar

C difference of strain produced by the individual bars

D same as the stress produced in each bars

Answer: B

Question 103

Two springs of of stiffness k_1 and k_2 respectively are connected in series, what will be the stiffness of the composite spring?

A $k = \frac{k_1 k_2}{k_1 \ k_2}$

B $k = \frac{k_1 \ k_2}{k_1 k_2}$

C $k = k_1 + k_2$

D $k = k_1 k_2$

Answer: A

Question 104

A solid shaft transmits 44 kW power at 700 rps. Calculate the torque produced

A 10 Nm

B 100 Nm

C 600 Nm

D 60 Nm

Answer: A

Question 105

What are the equilibrium conditions to be satisfied for a particle applied with a system of non-coplanar concurrent forces?

A $\sum F_x = 0$ and $\sum Fy = 0$

B $\sum F_x = 0, \sum Fy = 0$ and $\sum M_{z \ \ axis} = 0$

C $\sum F_x = 0, \sum Fy = 0$ and $\sum F_z = 0$

D $\sum F_x = 0, \sum Fy = 0, \sum F_z = 0, \sum M_x = 0, \sum My = 0,$ and $\sum M_z = 0$

Answer: D

Question 106

As per first law of thermodynamics, when any system confined within a boundary is carried through a series of operations such that the final state is same as the initial state, then

A the net work transfer is higher than the net heat transfer

B the network transfer is lower than the net heat transfer

C the network transfer is equal to the net heat transfer

D the network transfer is equal to or higher than the net heat transfer

Answer: C

Question 107

Enthalpy is calculated as the

A sum of internal energy and the product of pressure and volume of the system

B sum of internal energy and the product of pressure and density of the system

C difference between the internal energy and the product of pressure and density of the system

D difference between the internal energy and the product of pressure and volume of the system

Answer: A

Question 108

The area below the p-V diagram of a non-flow process represents

A heat transfer

B mass transfer

C work transfer

D entropy transfer

Answer: C

Question 109

A heat engine is a device that operates on a thermodynamics cycle

A to convert the heat supplied into complete work energy under reversible conditions

B to convert the heat supplied into complete work energy under all conditions

C to produce useful work from the heat received from a source and also rejects the remaining heat to the sink under all conditions

D to produce useful work from the heat received from a source and also rejects the remaining heat to the sink under reversible conditions

Answer: C

Question 110

Sub-cooling in a vapour compression cycle

A decreases the required work and refrigeration effect

B increase the required work and refrigeration effect

C increases the required work and decrease the refrigeration effect

D does not affect the required work and increases the refrigeration effect

  Answer: D

Question 111

An ideal flow of any fluid must fulfil the following

A Boundary layer theory

B Continuity equation

C Newton s law of viscosity

D Pascal s law

  Answer: B

Question 112

If w is the specific weight of the liquid and h the depth of any point from the surface, then the pressure intensity at that point will be

A h

B wh

C w/h

D h/w

  Answer: B

Question 113

The stress-strain relation of the newtonian fluid is

A Hyperbolic

B Inverse type

C Linear

D Parabolic

  Answer: C

Question 114

When a vertical wall is subjected to pressure due to liquid on both sides, the resultant pressure is the_____of the two pressures.

A Sum

B Difference

C Arithmetic

D Geometric mean

  Answer: A

Question 115

A flow in which each liquid particle has a definite path, and the paths of individual particles do not cross each other is called

A Steam flow

B Uniform flow

C Streamline flow

D Turbulent flow

   Answer: B

Question 116

A fluid is said to be ideal, if it is

A inviscous and incompressible

B inviscous and compressible

C viscous and compressible

D viscous and incompressible

   Answer: A

Question 117

Netwon's law of viscosity is a relationship between

A pressure, velocity and temperature

B shear stress and rate of shear strain

C shear pressure and rate of shear strain

D rate of shear strrain and temperature

   Answer: B

Question 118

The coefficient of discharge of an orifice varies with

A Reynolds number

B Weber number

C Froude number

D Mach number

   Answer: A

Question 119

In manometer a better liquid combination is one having

A lower surface tension

B higher surface tension

C high viscosity

D low viscosity

   Answer: A

Question 120

A micrometer with inclined tube is called is

A inverted manometer

B differential manometer

C closed tube manometer

D sensitive manometer

   Answer: D

Question 121

Hydrometer is used to determine

A density of liquids

B specific gravtity of the liquid

C flow of liquids

D relative humidity

   Answer: B

Question 122

Continuity equation for a compressible fluid is

A $A_1 V_1 = A_2 V_2$

B $\rho_1 A_1 V_1 = \rho_2 A_2 V_2 (A \to area)$

C $\dfrac{A_1 V_1}{\rho_1} = \dfrac{A_2 V_2}{\rho_2} \ (V \to velocity)$

D $\dfrac{\rho_1 A_1}{V_1} = \dfrac{\rho_2 A_2}{V_2} \ (\rho \to density)$

   Answer: B

Question 123

For the same maximum temperature in the cycle, the average temperature of heat addition of a Rankine cycle compared to that of Carnot cycle is

A lower

B higher

C same

D not related

   Answer: B

Question 124

f a reheater is added to a Rankine Cycle, then usually,

A the network and efficiency increase

B the network and efficiency decrease

C the network remain same and efficiency increases

D the network remain same and efficiency remains same

Answer: A

Question 125

The Babcock and Wilcox boiler is considered asa

A natural convection fire tube boiler

B forced convection fire tube boiler

C natural convection water tube boiler

D forced convection water tube boiler

Answer: C

Question 126

Boiler accessories are used to ensure

A improved performance

B safe operation

C easy maintenance

D automatic control

Answer: A

Question 127

The Benson boiler has

A two drums - one for water and another for steam

B a horizontal steam drum

C a vertical steam drum

D no steam drum

Answer: D

Question 128

For air compressor, least work input will be needed if the compression is

A isentropic

B isothermal

C   polytropic

D   hyperbolic

   Answer: B

Question 129

Rotary compressor is best suited for

A   large quantity of air at high pressure

B   small quantity at high pressure air

C   small quantity at low high pressure air

D   large quantity of air at low pressure

   Answer: D

Question 130

Steam nozzle converts

A   heat energy to kinetic energy

B   kinetic energy to heat energy

C   heat energy to potential energy

D   potential energy to heat energy

   Answer: A

Question 131

The degree of reaction of a steam turbine is the ratio between the enthalpy drops in

A   moving blades and that in the stage

B   moving blades and that in the nozzle

C   in the nozzle and that in the moving blades

D   in the nozzle and that in the stage

   Answer: A

Question 132

The expansion process in the throttling device of a vapour compression cycle is

A   isothermal process

B   adiabatic process

C   isenthalpic process

D   isentropic process

   Answer: C

Question 133

Lowering the evaporator pressor in a vapour compression cycle

A　decreases the required work and COP

B　increases the required work and COP

C　increases the required work and decreases the COP

D　decreases the required work and increases the COP

　Answer: C

Question 134

In ammonia-water vapour absorption refrigeration system

A　ammonia is the refrigerant and water is absorbent

B　ammonia is the absorbent and water is refrigerant

C　both ammonia and water are refrigerants

D　both ammonia and water are absorbents

　Answer: A

Question 135

Air refrigeration is preferably used in aircrafts because

A　it uses air that is available in plenty in the atmosphere

B　it has high COP

C　its weight per tons of refrigeration is low

D　it is cheaper

　Answer: C

Question 136

What is the ratio of maximum tangential stress (σ_t) and maximum radial stress (σ_r) of a solid disk flywheel ?

A　$\frac{\sigma_t}{\sigma_r}$ 0.5

B　$\frac{\sigma_t}{\sigma_r}$ 1.0

C　$\frac{\sigma_t}{\sigma_r}$ 1.5

D　$\frac{\sigma_t}{\sigma_r}$ 2.0

　Answer: B

Question 137

The cone angle of a pivot bearing is increased by 2%. The maximum load carrying capacity at the bearing will increase by

A　0.05%

B 1%

C 0.5%

D 0%

   Answer: C

Question 138

Why are gear teeth made harder?

A To avoid wear

B To avoid pitting

C To avoid abrasion

D To avoid tensile strength

   Answer: A

Question 139

A structural member subjected to an axial compressive force is called

A beam

B Column

C frame

D strut

   Answer: B

Question 140

Volumetric strain of a rectangular body subjected to an axial force, in terms of linear strain e and Poisson's ratio μ, is equal to

A $e\left(1 - 2\mu\right)$

B $e\left(1 - \mu\right)$

C $e\left(1 - 3\mu\right)$

D $e\left(1 + \mu\right)$

   Answer: A

Question 141

Torsional rigidity of a solid circular shaft of diameter d is proportional to

A d

B d^2

C d^4

D $\frac{1}{d^2}$

   Answer: C

Question 142

Two shafts, one solid and the other hollow, are made of the same materials and are having length and weight. The hollow shaft as compared to solid shaft is

A   More strong

B   Less strong

C   Have some strength

D   None of the above

Answer: A

Question 143

The point of contra-flexure occurs only in

A   Continuous beams

B   Cantilever beams

C   Overhanging beams

D   Simply supported beams

Answer: C

Question 144

Which of the following theorem is used for the equilibrium of the body applied with three concurrent coplanar forces?

A   Varignon s theorem

B   Lame s theorem

C   Pythagoras theorem

D   Hamilton theorem

Answer: B

Question 145

A body of mass 5 kg accelerates at a constant rate of 2 m/s^2 on a smooth horizontal surface due to an external force acting at $30°$ with horizontal. The magnitude of the force is

A $10\cos 30 N$

B $10\sin 30 N$

C $\frac{10}{\cos 30} N$

D $\frac{10}{\text{s n} 30} N$

Answer: C

Question 146

In case of a circular section the section modulus is given as

A $\frac{\pi d^2}{16}$

B $\frac{\pi d^3}{16}$

C $\frac{\pi d^3}{32}$

D $\frac{\pi d^4}{64}$

   Answer: C

Question 147

.Leaf springs are subjected to

A bending stress

B tensile stress

C shear stress

D compressive stress

   Answer: A

Question 148

The strength of a beam mainly depends on

A centre of gravity of the section

B its weight

C section modulus

D bending moments

   Answer: C

Question 149

According to Bernoulli's equation

A $Z + \frac{P}{W} + \frac{V^2}{2g} = constant$

B $Z + \frac{P}{W} - \frac{V^2}{2g} = constant$

C $Z - \frac{P}{W} + \frac{V^2}{2g} = constant$

D $Z - \frac{P}{W} - \frac{V^2}{2g} = constant$

   Answer: A

Question 150

The length of the divergent portion of venturimeter in comparison to convergent portion is

A less

B more

C same

D more of less depending on capacity

   Answer: B

Question 151

Orifice meter is used for measurement of

A Temperature

B Pressure

C Rate of flow

D Viscosity

   Answer: C

Question 152

.When Venturimeter is inclined, then for a given flow it will show

A less reading

B more reading

C same reading

D inaccurate reading

   Answer: C

Question 153

A Manometer is used to measure

A Discharge

B Pressure

C Volume

D Temperature

   Answer: B

Question 154

During the opening of a valve in a pipelines, the flow is

A Steady

B Unsteady

C Uniform

D Free vortex

   Answer: B

Question 155

Water at $20°C$ is flowing through a 20 cm diameter pipe. Take kinematic viscosity of water at $20°C = 0.0101$ stoke. Assume that the changes from laminar to turbulent at Re = 2320. The critical velocity will be

A   1.117 cm/s

B   11.17 cm/s

C   111.7 cm/s

D   0.117 cm/s

   Answer: A

Question 156

Froude number is the ratio of inertial force to

A   Gravitation force

B   Surface tension

C   Elasticity

D   Viscosity

   Answer: A

Question 157

Any change in load is adjusted by adjusting following parameter on turbine

A   Absolute velocity

B   Blade velocity

C   Net head

D   Flow

   Answer: D

Question 158

Kaplan turbine

A   is used where high head is available

B   has poor part-load efficiency

C   has inlet adjustable guide vanes

D   has adjustable runner vanes

   Answer: D

Question 159

The speed of an imaginary turbine, identical with the given turbine, which will develop a unit power under unit head, is known as

A   Normal speed

B Abnormal speed

C Unit speed

D Specific speed

   Answer: D

Question 160

In a centrifugal pump casing, the flow of water leaving the impeller is

A Rectilinear flow

B Radial flow

C Free vortex motion

D Forced vortex motion

   Answer: D

Question 161

The efficiency of a centrifugal pump is maximum when its blades are

A Bent forward

B Bent backward

C Bent forward first and then backward

D Bent backward first and then forward

   Answer: B

Question 162

To avoid cavitation in centrifugal pumps

A Suction pressure should be low

B Delivery pressure should be low

C Suction pressure should be high

D Delivery pressure should be high

   Answer: C

Question 163

Loss of energy per unit volume due to friction in case of flow through a pipe at length L and diameter D is expressed as

A $4fL \frac{v^2}{2gD}$

B $4f \left(\frac{L}{D} \right) \times \left(\frac{v^2}{g} \right)$

C $4f \left(\frac{L}{D} \right) \left(\frac{\rho v^2}{2g} \right)$

D $\quad 4f\left(\frac{L}{D}\right) \times \left(\frac{\rho v^2}{2}\right)$

   Answer: A

Question 164

In an isothermal process, the heat transfer is

A   less than the work transfer

B   equal to the work transfer

C   less than or equal to the work transfer

D   more than the work transfer

   Answer: B

Question 165

A heat engine receives 1000 kJ of heast and produces 600 kJ of work. The amount of hear rejected in kJ and the efficiency percentage of the engine, respectively will be

A   400, 40%

B   400, 60%

C   600, 40%

D   600, 60%

   Answer: B

Question 166

The efficiency of a Carnot Engine depends on

A   the nature of the working fluid

B   the duration of working of the engine

C   the capacity of the engine

D   the temperature limits of the working fluid

   Answer: D

Question 167

In case of S.I. engine to have high thermal efficiency of fuel air mixture ratio should be

A   lean

B   rich

C   irrespective of mixture

D   chemically correct

   Answer: D

Question 168

For the same output, same speed and same compression ratio the thermal efficiency of a two stroke cycle petrol engine as compared to that for stroke cycle petrol engine is

A more

B less

C same as long as compression ratio is same

D same as long as output is same

   Answer: B

Question 169

The chemically correct stoicheiometric ratio for petrol is

A 14.8 : 1

B 11 : 1

C 18 : 1

D 15 : 1

   Answer: A

Question 170

The mean effective pressure of an Otto cycle is the ratio between

A the network produced and the clearance volume

B the network produced and the swept volume

C the network produced and the cylinder volume

D the network produced and the crank case volume

   Answer: B

Question 171

The Otto cycle thermal efficiency, with usual notation, is given as, where r is compression ratio and γ is the adiabatic index

A $\eta_o = 1 - r^{\gamma\ 1}$

B $\eta_o = 1 - r^{\gamma}$

C $\eta_o = 1 - \left(r^{\frac{1}{\gamma\ 1}} \right)$

D $\eta_o = 1 - \left(\frac{1}{r^{\gamma}} \right)$

   Answer: C

Question 172

For the same inlet condition and compression ratio, the efficiency of an Otto cycle is

A lower than that of the diesel cycle

B   lower than or equal to that of the diesel cycle

C   higher than that of the diesel cycle

D   higher than or equal to that of the diesel cycle

   Answer: C

Question 173

.At triple point, there are

A   three constant thermodynamics properties

B   three states of matter in equilibrium

C   three or more modes of energy transfer

D   three degrees of freedom

   Answer: B

Question 174

As the pressure increases, the saturation temperature of the vapour

A   increases

B   decreases

C   increases first and then decreases

D   decreases first and then increases

   Answer: A

Question 175

The chemically correct stoicheiometric ratio for petrol is

A   14.8 : 1

B   11 : 1

C   18 : 1

D   15 : 1

   Answer: A

Question 176

Metacentric height is the distance between

A   metacentre and water surface

B   metacentre and centroid

C   metacentre and centre of gravity

D   metacentre and centre of buoyancy

   Answer: C

Question 177

The centre of gravity of the volume of the liquid displaced by an immersed body is called

A   metacentre

B   centre of buoynacy

C   centre of gravity

D   centroid

   Answer: B

Question 178

The ratio of actual measured head to head imparted to fluid vby impeller for a centrifugal pump is known as

A   mechanical

B   volumetric

C   manometric

D   impeller

   Answer: C

Question 179

The process used for relieveing the internal stresses previously set up in the metal and for increasing the machinability of steel, is

A   normalising

B   full annealing

C   process annealing

D   spheroidising

   Answer: B

Question 180

The process of making hollow casting of desired thickness by permanent mould without the use of cores is known as

A   die casting

B   slush casting

C   pressed casting

D   centrifugal casting

   Answer: D

Question 181

According to indian standard specifications, a plain carbon steel designated by 40C8 means that the percentage of carbon content is

A   0.04

B   0.35 to 0.45

C   0.4 to 0.6

D   0.6 to 0.8

    Answer: D

Question 182

A mobing mandrel is used in

A   wire drawing

B   tube drawing

C   metal cutting

D   forging

    Answer: B

Question 183

Crater wear takes place in a single point cutting tool at the

A   flank

B   side rake

C   face

D   tip

    Answer: C

Question 184

The relationship between tool life (T) and cutting speed (V) is expressed as, where n and C are constant

A $V^n T = C$

B $\dfrac{V}{T} = C$

C $VT^n = C$

D $\dfrac{T}{V} = 0$

    Answer: C

Question 185

Black colour is generally painted on

A   oxygen cylinder

B   acetylene cylinder

C   hydrogen cylinder

D   None of the above

    Answer: A

Question 186

Consumable electrodes is used in

A carbon arc welding

B submerged arc welding

C TIG arc welding

D MIG arc welding

   Answer: D

Question 187

The directional solidification in casting can be improved by using

A chills and chaplets

B chills and padding

C chaplets and padding

D chills, chaplets and padding

   Answer: B

Question 188

The purpose of chaplets is

A just like chills to ensure directional solidification

B to provide efficient venting

C to support the cores

D to join upper and lower parts of the moulding box

   Answer: C

Question 189

The centre of gravity of a complex link in a four bar chain mechanism will experience

A No acceleration

B Only linear acceleration

C Only angular acceleration

D Both linear and angular acceleration

   Answer: A

Question 190

The power from the engine to the rear axle of an automobile is transmitted by means of

A Worm and worm wheel

B Spur gears

C   Bevel gears

D   Hooke s joint

   Answer: D

Question 191

The included angle for the v-belt is usually

A $10° \ to \ 20°$

B $20° \ to \ 30°$

C $30° \ to \ 40°$

D $60° \ to \ 80°$

   Answer: C

Question 192

In railway axle boxes, the bearing used is

A   Cylindrical roller bearing

B   Deep groove ball bearing

C   Double row spherical roller bearing

D   Double row self-aligning ball bearing

   Answer: A

Question 193

When the sleeve of a Porter governor moves upwards, the governor speed

A   Increases

B   Decreases

C   Remains unaffected

D   First increases and then decreases

   Answer: A

Question 194

When the load on engine increases, it becomes necessary to increase the supply of working fluid and when the load decreases, less working fluid is required. The supply of the
working fluid to the engine is controlled by a

A   D-slide valve

B   Governor

C   Meyer s expansion valve

D   Fly wheel

   Answer: B

Question 195

For high speed engines, the cam follower should move with

A   Uniform velocity

B   Simple harmonic motion

C   Uniform acceleration and retardation

D   Cycloidal motion

   Answer: B

Question 196

The minimum required centre distance of two mating spur gears is decided based on

A   Surface compressive strength of the gear material

B   Bending strength of the gear material

C   Ultimate strength of the gear material

D   Fatigue strength of the gear material

   Answer: B

Question 197

Which of the following bearings can take large thrust loads?

A   Deep-Groove ball bearing

B   Filling-Notch ball bearing

C   Self-aligning ball bearing

D   Angular-Contact bearing

   Answer: D

Question 198

The cotter joint is used to connect two rods which are in

A   Tension only

B   Compression only

C   Tension and Compression only

D   Shear only

   Answer: C

Question 199

Which of the following statements regarding 'mitre gears' is correct?
These are employed for

A   minimum back-lash

B great speed reduction

C equal speed

D minimum axial thrust

Answer: C

Question 200

Regarding journal bearing under film lubrication condition, which of the following statements is correct? Frictional resistance is

A directly proportional to the presence

B independent of the area

C proportional to the speed of rotation

D inversely proportional to the viscosity of the lubricant

Answer: C