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# SSC JE

## General Intelligence and Reasoning

### Instructions

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

#### Question 1

5 : 26 :: 8 : ?

A 67

B 64

C 65

D 66

Answer: C

#### Explanation:

$$5^2 + 1 = 25 + 1 = 26$$

$$8^2 + 1 = 64 + 1 = 65$$

? = 65

#### Question 2

Pyorrhea : Teeth :: Eczema : ?

A Skin

B Heart

C Lungs

D Eye

Answer: A

#### Explanation:

Pyorrhea is a foul-smelling disorder of teeth similarly Eczema is a skin disease

#### Question 3

$N \times O : 14 \times 15 :: G \times S : ?$

A  $5 \times 17$

B  $15 \times 16$

C  $6 \times 18$

D  $7 \times 19$

Answer: D

#### Explanation:

$$G \times S = 7 \times 19$$

$\therefore G = 7$  and  $S = 19$

#### Question 4

Writer : Book :: ?

- A Composer : Song
- B Building : Architect
- C Poem : Poet
- D Chair : Carpenter

**Answer: A**

**Explanation:**

Writer is related to book similarly,

Composer is related to song.

**Question 5**

**BMCX : CNDY :: ? : EXFW**

- A DWEV
- B DUGT
- C FGUT
- D DTGU

**Answer: A**

**Explanation:**

In the BMCX : CNDY

B + 1 → C

M + 1 → N

C + 1 → D

X + 1 → Y

Similarly,

E - 1 → D

X - 1 → W

F - 1 → E

W - 1 → V

So, ? DWEV

∴ Option A is the correct answer.

**Question 6**

**24 : 288 :: 22 : ?**

- A 248
- B 238
- C 240
- D 242

**Answer: D**

**Explanation:**

$$(24)^2/2 = 576/2 = 288$$

$$22^2/2 = 484/2 = 242$$

∴ Option D is the correct option.

### Question 7

**Car : Garage :: Aircraft : ?**

- A Airdrome
- B Shelter
- C Hangar
- D Jetty

**Answer: C**

### Explanation:

Car is parked in garage similarly,

Aircraft is parked in hanger.

### Question 8

$$3 : 12 :: 4 : ?$$

$$8 : 32 :: 5 : ?$$

- A  $\frac{16}{20}$
- B  $\frac{4}{6}$
- C  $\frac{5}{6}$
- D  $\frac{10}{23}$

**Answer: A**

### Explanation:

$$\frac{3 \times 4}{8 \times 4} = \frac{12}{32}$$

similarly,

$$\frac{4 \times 4}{5 \times 4} = \frac{16}{20}$$

### Instructions

For the following questions answer them individually

### Question 9

**Which one of the following is always associated with JUSTICE ?**

- A Autocracy
- B Hypocrisy
- C Democracy
- D Legitimacy

**Answer: D**

### Explanation:

Legitimacy is always associated with JUSTICE.

**Instructions**

In the following questions find the odd number/letters/ figure/ numberpair from the given alternatives.

**Question 10**

A 21 - 27

B 9 - 27

C 9 - 12

D 15 - 19

**Answer:** D

**Explanation:**

Except '15 - 19' remaining all pair divisible by 3.

∴ The correct answer is option D.

**Question 11**

A 38 - 76

B 28 - 84

C 34 - 76

D 23 - 64

**Answer:** D

**Explanation:**

In the pair 23 - 64, one number odd and another even.

∴ The correct answer is option D.

**Question 12**

A 5 - 7

B 3 - 8

C 6 - 8

D 4 - 5

**Answer:** C

**Explanation:**

Only 6 and 8 is divisible by 2.

∴ The correct answer is option C.

**Question 13**

A Sphere

B Triangle

C Circle

D Oval

**Answer:** B

**Explanation:**

Except **triangle** remaining all are circular shape with no angles.

**Question 14**

- A Rosemary
- B Mint
- C Peepal
- D Coriander

**Answer:** C

**Explanation:**

Rosemary, mint and coriander all are plant while peepal is a tree.

**Question 15**

- A ZXUR
- B ZXWU
- C YWVT
- D WUTR

**Answer:** A

**Explanation:**

In ZXUR,

$Z - 2 \rightarrow X - 2 \rightarrow U - 4 \rightarrow R$

In ZXWU,

$Z - 2 \rightarrow X - 1 \rightarrow W - 2 \rightarrow U$

In YWVT,

$Y - 2 \rightarrow W - 1 \rightarrow V - 2 \rightarrow T$

In WUTR,

$W - 2 \rightarrow U - 1 \rightarrow T - 2 \rightarrow R$

Odd term ZXUR

**Question 16**

- A Gold
- B Iron
- C Brass
- D Copper

**Answer:** C

**Explanation:**

All except Brass, all are metals, while Brass is alloy.

**Question 17**

- A Thrive

- B Excite
- C Flourish
- D Prosper

**Answer: B**

**Explanation:**

Flourish, prosper, and thrive are all synonyms; excite does not mean the same thing

**Question 18**

- A Krishna
- B Vaigai
- C Kaveri
- D Narmada

**Answer: D**

**Explanation:**

All except Narmada are rivers which flow into Bay of Bengal, while Narmada flows into the Arabian Sea.

∴ Option D is correct answer.

**Instructions**

For the following questions answer them individually

**Question 19**

**Which one of the given response would be a meaningful order of the following ?**

- (1) Tissue
- (2) Cell
- (3) Organ

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

**Answer: D**

**Explanation:**

Meaningful order - Cell, Tissue, Organ

∴ Option D is the correct option

**Question 20**

**Which item will appear third in the dictionary ?**

- A pair
- B pain
- C page
- D pall

**Answer: A**

**Explanation:**

Order according to the dictionary,

page, pain, pair, pall

∴ 'pair' will appear third in the dictionary.

**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 21**

1, 2, 8, ?, 148, 765

A 74

B 32

C 40

D 33

**Answer: D**

**Explanation:**

The series follows pattern as,

$$1 \times 1 + 1^2 = 2$$

$$2 \times 2 + 2^2 = 4 + 4 = 8$$

$$8 \times 3 + 3^2 = 24 + 9 = 33$$

$$33 \times 4 + 4^2 = 132 + 16 = 148$$

$$148 \times 5 + 5^2 = 740 + 25 = 765$$

Missing term = 33

**Question 22**

BC, FGH, KLMN, ?, XYZABC

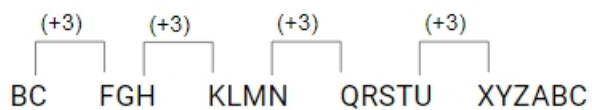
A QRSTU

B RSTUV

C PQRST

D QRST

**Answer: A**

**Explanation:**

Missing term = QRSTU

**Question 23**

DE, ?, JL, MO

A LN



B CE

C GI

D AC

**Answer: C**

**Explanation:**

The series follows pattern as,

**(D + 3 = G), (E + 3 = I)**

(G + 3 = J), (I + 3 = L)

(J + 3 = M), (L + 3 = O)

The missing term = JL

**Question 24**

**7, 12, 19, 28, 39, ?**

A 51

B 49

C 57

D 52

**Answer: D**

**Explanation:**

The series follows pattern as,

7 + 5 = 12

12 + 7 = 19

19 + 9 = 28

28 + 11 = 39

**39 + 13 = 52**

Missing term = 52

**Question 25**

**DMP, FLN, HKL, JJJ, ?**

A MIH

B MII

C LIH

D MIF

**Answer: C**

**Explanation:**

The series follows pattern as,

(D + 2 = F), (M - 1 = L), (P - 2 = N)

(F + 2 = H), (L - 1 = K), (N - 2 = L)

(H + 2 = J), (K - 1 = J), (L - 2 = J),

(J + 2 L), (J - 1 I), (J - 2 H),

Missing term LIH

**Question 26**

**Z3A, W9D, ?, Q81J, N243M**

**A** R31E

**B** V21H

**C** T27G

**D** S29F

**Answer:** C

**Explanation:**

The pattern follows as,

$$3 \times 3 = 9$$

$$9 \times 3 = 27$$

$$27 \times 3 = 81$$

$$81 \times 3 = 243$$

Missing term by option T27G

**Instructions**

For the following questions answer them individually

**Question 27**

If 'EVENT' is coded as 54552 then 'REVENGE' is coded as :

**A** 9545575

**B** 8455753

**C** 9845575

**D** 8755475

**Answer:** A

**Explanation:**

In the EVENT,

E coded as 5.

V coded as 4.

N coded as 5.

T coded as 2.

Similarly,

'REVENGE' is coded as '\_5455\_5'.

By the option A), 9545575.

∴ Option A is the correct answer.

**Question 28**

**Figure**

A 15.300

B 1.5300

C 153.00

D 1530.00

Answer: B

**Question 29**

If BACTERIA can be written as ABIARCET then how PROTOZOA can be written :

A AROZOTOPO

B ORPTOZOA

C APORZOOT

D TOZOAPRO

Answer: C

**Explanation:**

In the 'ABIARCET' 1st, 3rd, 5th, and 7th letter replace by 8th, 7th, 6th and 5th letter respectively so,

'PROTOZOA' can be written as 'APORZOOT'.

∴ Option C is the correct answer.

**Question 30**

Unscramble these letters to make a ..... EYDSNY

A mountain

B city

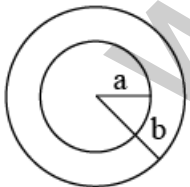
C animal

D river

Answer: B

**Question 31**

If radius b is double that of radius a, the area of the smaller circle to that of the larger circle is in proportion :



A 1 : 16

B 1 : 2

C 1 : 4

D 1 : 8

Answer: C

**Explanation:**b  $2a$ area of circle  $\pi r^2$ The area of the smaller circle to that of the larger circle is in proportion  $\pi a^2 : \pi b^2 = a^2 : 4a^2 = 1 : 4$ **Instructions**

Insert the arithmetic signs in the following numerical figure:

**Question 32****6, 3, 6 = 24****A**  $+ \times$ **B**  $--+$ **C**  $- \times$ **D**  $--\div$ **Answer: A****Explanation:**

From option A,

LHS,

$$6 + 3 \times 6$$

$$6 + 18$$

$$24$$

RHS

Hence, Option A is the correct answer.

**Question 33****9, 3, 4, 6 = 29****A**  $\times + -$ **B**  $+ - \times$ **C**  $\times - +$ **D**  $+ \times -$ **Answer: C****Explanation:**

From the option C) -

LHS-

$$9 \times 3 - 4 + 6$$

$$27 - 4 + 6$$

$$29$$

RHS

 $\therefore$  Option C is correct answer.**Instructions**

For the following questions answer them individually

**Question 34**

If  $7x - 5y = 20$  and  $12x + 5y = 75$ , what is the value of  $xy$ ?

- A 30
- B 15
- C 18
- D 20

**Answer: B**

**Explanation:**

$$7x - 5y = 20 \text{ ---(1)}$$

$$12x + 5y = 75 \text{ ---(2)}$$

Eq(1) + (2),

$$19x = 95$$

$$x = 5$$

From eq(1),

$$7 \times 5 - 5y = 20$$

$$5y = 15$$

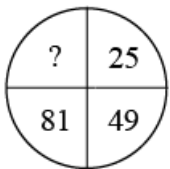
$$y = 3$$

$$xy = 5 \times 3 = 15$$

**Instructions**

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

**Question 35**



- A 100
- B 36
- C 121
- D 42

**Answer: C**

**Explanation:**

$$(5)^2 = 25$$

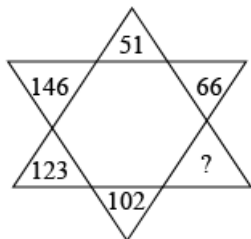
$$(7)^2 = 49$$

$$(9)^2 = 81$$

$$(11)^2 = 121$$

∴ The correct answer is option C.

## Question 36



- A 82  
B 81  
C 83  
D 84

Answer: C

## Explanation:

$$7^2 + 2 = 51$$

$$8^2 + 2 = 66$$

$$9^2 + 2 = 83$$

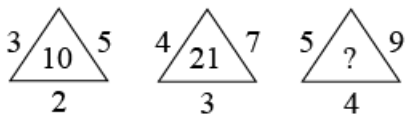
$$10^2 + 2 = 102$$

$$11^2 + 2 = 123$$

$$12^2 + 2 = 146$$

∴ the correct answer is option C.

## Question 37



- A 24  
B 45  
C 63  
D 36

Answer: D

## Explanation:

Question follows pattern as,

$$5 \times 2 = 10$$

$$7 \times 3 = 21$$

Similarly,

$$9 \times 4 = 36$$

## Instructions

For the following questions answer them individually

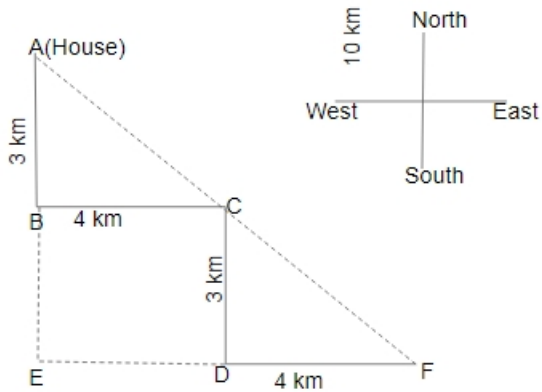
## Question 38

Ram started from his house and travelled 3 km towards South. Then turned left and travelled 4 km. Then again he turned right and travelled 3 km. From there, he turned left and travelled 4 km. At what distance is he now from his house ?

- A 15 km
- B 5 km
- C 10 km
- D 14 km

**Answer: C**

**Explanation:**



From the figure,

$$AE = 3 + 3 = 6 \text{ km}$$

$$EF = 4 + 4 = 8 \text{ km}$$

In  $\triangle AEF$ ,

$$(AF)^2 = (AE)^2 + (EF)^2$$

$$(AF)^2 = (6)^2 + (8)^2$$

$$(AF)^2 = 36 + 64$$

$$(AF)^2 = 100$$

$$AF = 10 \text{ km}$$

$$\text{Distance} = 10 \text{ km}$$

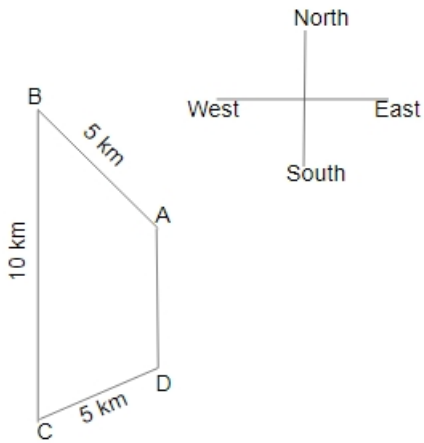
### Question 39

From point A, Ravi walks 5 km North-West to point B, from point B he walks 10 km South to point 'C'. From point C he moves 5 km North - East to point D. From point D he was back to point A. If Ravi always walked in a straight line what figure has he traced ?

- A Trapezium.
- B Rhombus
- C Kite
- D Parallelogram

**Answer: A**

**Explanation:**



From the diagram, Ravi traced the Trapezium figure.

**Question 40**

Identify the answer figure from which the given pieces in question figure are found.

Question figure :



A



B



C



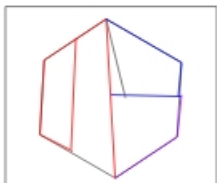
D



Answer: B

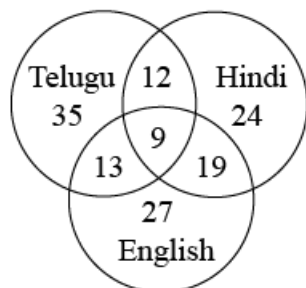
Explanation:





#### Question 41

This Venn diagram shows the no. of people who can speak Telugu, Hindi and English. Find out the total no. of people who can speak all the three languages?



- A 19
- B 13
- C 12
- D 9

Answer: D

#### Explanation:

The total no. of people who can speak all the three languages = 9

\$\$

∴ The correct answer is option D.

#### Question 42

How many triangles are there in the figure ?



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

Answer: B

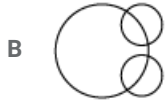
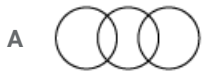
#### Explanation:

Total number of triangles = 13

∴ The correct answer is option B.

#### Question 43

Indicate the est relation among blackboard, classroom and school.

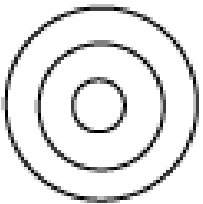


Answer: D

#### Explanation:

Blackboard is in the class and class s in the school.

So, related Venn diagram,



#### Instructions

In the following questions, one or two Statements is given followed by two Conclusions I, and II. You have to consider the statement to be true, even if it seems to be at variance from commonly known facts. You are to decide which of the given conclusions can definitely be drawn from the given statement. Indicate your answer.

#### Question 44

**Statement: Some fishes are crocodiles.**

**Some Crocodiles are snakes.**

**No snake is snail.**

**All snails are tortoises.**

**Conclusion:**

**I. Some snakes are Crocodiles.**

**II. Some Crocodiles are tortoise**

A None of these Conclusions I and II follow

B Conclusion I follow

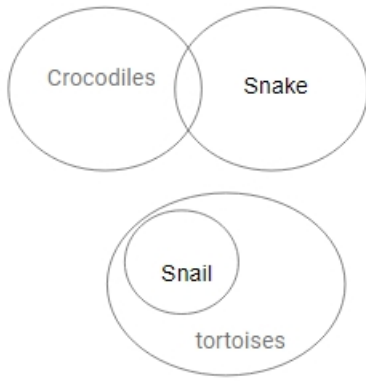
C Conclusion II follow

D Both the Conclusions I and II follow

Answer: B

#### Explanation:

Venn diagram,



From the Venn diagram, only conclusion I follow.

#### Question 45

##### Statement:

Jessica has 4 children. Two of them have blue eyes and two have brown eyes. Half of the children are girls.

##### Conclusions:

- I. At least one girl has blue eyes
- II. Two of the children are boys.
- III. The boys have brown eyes.

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

**Answer: B**

##### Explanation:

Only Statement II is true because 'Two of the children are boys' is definitely true.

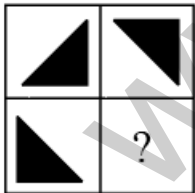
Option B is the correct answer.

##### Instructions

In the following questions, which answer figure will complete the pattern in the question figure.

#### Question 46

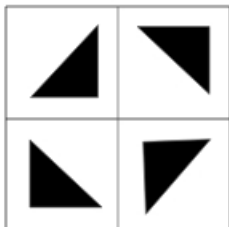
Question figure :





Answer: C

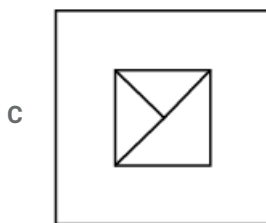
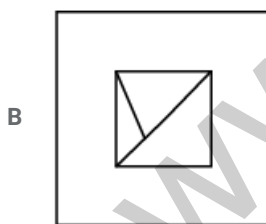
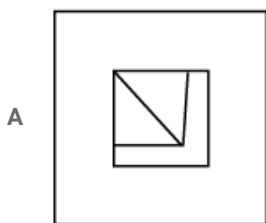
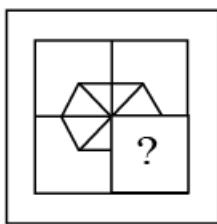
Explanation:

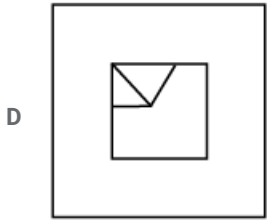


∴ The correct option is D.

Question 47

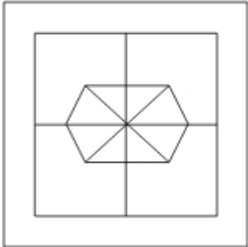
Question figure :





Answer: D

Explanation:



The correct answer is option D.

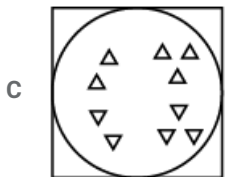
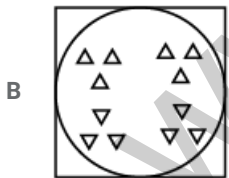
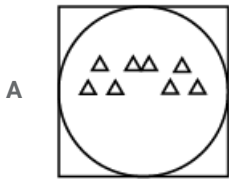
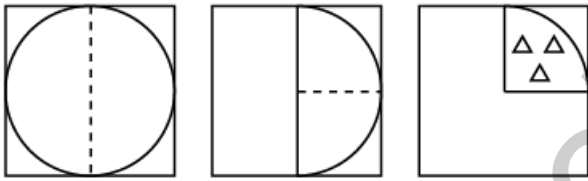
**Instructions**

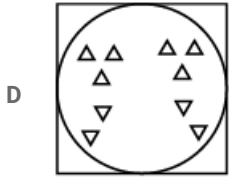
For the following questions answer them individually

**Question 48**

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

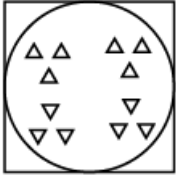
Question figure :





Answer: B

Explanation:

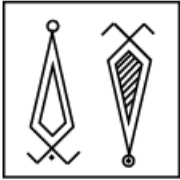


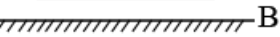
The correct answer is option B.

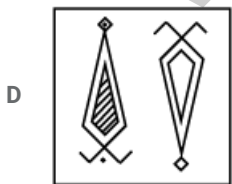
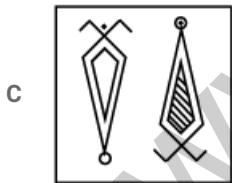
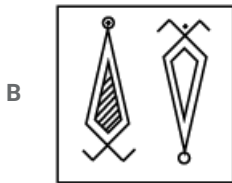
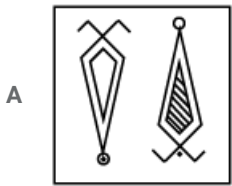
Question 49

if a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure:

Question figure:

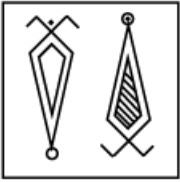


A  B



Answer: C

Explanation:



∴ The correct answer is option C.

#### Question 50

In the following question, a matrix of certain characters is given. These characters follow a certain trend, row - wise or column - wise. Find out this trend and choose the missing character accordingly.

Z	?	S
J	G	?
?	T	P

- A WCV
- B RHS
- C WCW
- D RQM

**Answer: C**

#### Explanation:

Z - 3 W - 4 S

J - 3 G - 4 C

W - 3 T - 4 P

Missing character WCW

∴ The correct answer is option C.

## General Awareness

#### Instructions

For the following questions answer them individually

#### Question 51

During National emergency, the following article cannot be suspended:

- A Article 20
- B Article 17
- C Article 21
- D Article 19

**Answer: C**

#### Question 52

Which one of the following states has a separate Constitution ?

- A Sikkim
- B Assam
- C Jammu and Kashmir

D Arunachal Pradesh

Answer: C

**Question 53**

"Origin of Species by Natural Selection" was written by:

A William Harvey

B Lamarck

C Charles Darwin

D Wallace

Answer: C

**Question 54**

How many islands are there in Lakshadweep ?

A 47

B 17

C 27

D 36

Answer: C

**Question 55**

Cockroach is:

A Sanguivorous

B Carnivorous

C Herbivorous

D Omnivorous

Answer: D

**Question 56**

Which of the following plant is grown for the reclamation of ravines ?

A Eucalyptus globulus

B Prosopis juliflora

C Dalbergia sissoo

D All of the above

Answer: B

**Question 57**

The Brahma Samaj was founded by:



- A Keshab Chandra Sen
- B Raja Rammohan Roy
- C Devendranath Tagore
- D Dayananda Saraswathi

Answer: B

#### Question 58

The banks are required to maintain a certain ratio between their cash in hand and total assets. This is called :

- A CLR (Central Liquid Reserve)
- B SBR (Statutory Bank Ratio)
- C SLR (Statutory Liquid Ratio)
- D CBR (Central Bank Reserve)

Answer: C

#### Question 59

The chemical substance present in bones and teeth is :

- A  $Ca_3(BO_3)_2$
- B  $Ca(NO_3)_2$
- C  $Ca_3(PO_4)_2$
- D  $CaF_2$

Answer: C

#### Question 60

What is the primary effect of excess phosphorous in the aquatic environment called ?

- A Radiation
- B Fixation
- C Nitrification
- D Eutrophication

Answer: D

#### Question 61

MS Office, Photoshop and Animagic are examples of:

- A Device driver
- B Application software
- C System software

D Operating system

Answer: B

**Question 62**

**Indian Income Tax is:**

A Indirect and Progressive

B Direct and Proportional

C Indirect and Proportional

D Direct and Progressive

Answer: D

**Question 63**

**NABARD is a:**

A Department

B Bank

C Bureau

D Board

Answer: B

**Question 64**

**The onset of reproductive life is called :**

A Maturation

B Menarche

C Menopause

D Puberty

Answer: D

**Question 65**

**Which among the following instruments produces electricity ?**

A Transmitter

B Electrografers

C Dynamo

D Voltametre

Answer: C

**Question 66**

**Unit of electric current is :**

- A Velocity
- B Volts
- C Ampere
- D Calorie

**Answer: C**

**Question 67**

**Reservation for the Scheduled Castes and Scheduled Tribes in the services has been provided in the Indian Constitution under:**

- A Article 375
- B Article 315
- C Article 335
- D Article 365

**Answer: C**

**Question 68**

**Nucleolus is present within the:**

- A Lysosome
- B Cytoplasm
- C Mitochondria
- D Nucleus

**Answer: D**

**Question 69**

**The subject on which both the Centre and State Governments can legislate are contained in:**

- A Residuary List
- B The Union List
- C The State List
- D The Concurrent List

**Answer: D**

**Question 70**

**Plants are green because of the presence of a pigment called:**

- A Oxygen
- B Glucose
- C Nitrogen

D Chlorophyll

**Answer: D**

**Question 71**

**One billion bytes is approximately equal to:**

A Gigabyte

B Megabyte

C Terabyte

D Petabyte

**Answer: A**

**Question 72**

**The term 'NIFE' refers to:**

A Ocean floor

B Earthquakes

C Core of the earth

D Crust of the earth

**Answer: C**

**Question 73**

**The river cauvery originates from which of the following states ?**

A Madhya Pradesh

B Andhra Pradesh

C Tamil Nadu

D Karnataka

**Answer: D**

**Question 74**

**The Jawaharlal Nehru Port is located at :**

A Kolkata

B Paradip

C Cochin

D Mumbai

**Answer: D**

**Question 75**

**Which type of energy is converted into electrical energy by a battery ?**

- A Thermal
- B Mechanical
- C Chemical
- D Biological

**Answer: C**

**Question 76**

**Birthday of which Indian personality is celebrated on 2<sup>nd</sup> October along with M.K. Gandhi?**

- A V.P. Singh
- B Rabindranath Tagore
- C Bal Gangadhar Tilak
- D Lal Bahadur Shastri

**Answer: D**

**Question 77**

**The 24<sup>th</sup> Tirthankara of Jainism**

- A Mahaveera
- B Vrushabha
- C Parshwanatha
- D Ashwagosha

**Answer: A**

**Question 78**

**Mohamud Ghazni's last famous expedition to Hindustan was against:**

- A Somanath
- B Kalinjar
- C Kannauj
- D Mathura

**Answer: A**

**Question 79**

**Savanna grasslands in Brazil are called:**

- A Campos
- B Downs
- C Prairies

D Pampas

Answer: A

**Question 80**

Which of the following is a triploid plant ?

A Orange

B Wheat

C Banana

D Mango

Answer: C

**Question 81**

The fundamental duties are incorporated in Article 51A of the constitution of India by the:

A 44<sup>th</sup> Amendment Act

B 41<sup>st</sup> Amendment Act

C 42<sup>nd</sup> Amendment Act

D 43<sup>rd</sup> Amendment Act

Answer: C

**Question 82**

A consumer is said to be in equilibrium, if:

A He is able to locate new sources of income.

B He is able to fulfill his needs with a given level of income.

C His income and expenditure are equal.

D He can fulfill his needs without consumption of certain items.

Answer: B

**Question 83**

Which metal gives  $H_2$ , with steam in Red heat condition?

A Pb

B Cu

C Fe

D Ag

Answer: C

**Question 84**

The source of River Vaigais in the hills of :

- A Cardamom
- B Agasthiar
- C Amarkantak
- D Jawadi

**Answer:** A

**Question 85**

The universal energy currency of plants and animals is:

- A ATP
- B Chlorophyll
- C Calorie
- D NADP

**Answer:** A

**Question 86**

Air pollution is caused by :

- A Loud speakers
- B Insecticides
- C Sewage
- D Smoke

**Answer:** D

**Question 87**

Who among the following can be removed from the office without impeachment ?

- A Chief Election Commissioner
- B President of India
- C Chief Justice of India
- D Governor of a State

**Answer:** D

**Question 88**

The fundamental Rights of Indian citizen are contained in :

- A Part VIII of constitution
- B Part III of constitution
- C Part IV of constitution

D The seventh schedule of the constitution

Answer: B

Question 89

'School Capital' of India is :

A Lucknow

B Dehradun

C Bangalore

D Delhi

Answer: B

Question 90

Where in India can you find the highest cricket ground above sea level?

A Guwahati

B Dehradun

C Chail

D Gwalior

Answer: C

Question 91

The fertilizer Nitrolym is:

A  $CaCN_2 + C$

B  $CaCN_2$

C  $CaCN + C$

D  $Ca(CN)_2 + CO_2$

Answer: A

Question 92

'Sambalpur' is situated on the bank of which of the following rivers ?

A Mahanadi

B Yamuna

C Saraswati

D Saryu

Answer: A

Question 93

The Per Capita Income is obtained by :



- A Dividing the total national capital with the profit earned.
- B Summing up the income of the citizens of the country.
- C Dividing the national income by the population.
- D Estimating the minimum income of individual citizens.

**Answer: C**

**Question 94**

**Mistral is a cold wind which blows down the valley of:**

- A Volga
- B Rhine
- C Rhone
- D Seine

**Answer: C**

**Question 95**

**The largest nationalized bank of India is the :**

- A Central Bank of India
- B State Bank of India
- C Reserve Bank of India
- D Bank of India

**Answer: B**

**Question 96**

**With increasing quantum number, the energy difference between adjacent energy levels in atoms:**

- A Decreases first and then increases
- B Decreases
- C Increases
- D Remains constant

**Answer: B**

**Question 97**

**Megasthenes was a Greek Ambassador sent by:**

- A Seleukos
- B Alexander
- C Philippos

D Justin

Answer: A

**Question 98**

In the etching of glass, we use the acid :

A HBr

B HCl

C HF

D HI

Answer: C

**Question 99**

Steppe grassland is found in:

A Russia

B Africa

C South America

D Australia

Answer: A

**Question 100**

The Sikh religion originated with the teaching of:

A Rangit Singh

B Ramdas

C Guru Nanak

D Govind Singh

Answer: C

## General Engineering (Mechanical)

**Instructions**

For the following questions answer them individually

**Question 101**

For laminar flow in a pipe, average velocity is equal to:

A  $2U_{max}$

B  $U_{max}$

C  $0.5U_{max}$

D  $0.25U_{max}$

**Answer: C**

**Question 102**

Crude oil of kinematic viscosity 2.25 stokes flows through a 20 cm diameter pipe, the rate of flow being 1.5 litres/s. the flow will be

- A Uncertain
- B Laminar
- C Turbulent
- D Transition

**Answer: B**

**Question 103**

The power transmitted by a belt is maximum when the maximum tension in the belt compared to centrifugal tension is

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

**Answer: C**

**Question 104**

Effort lost in friction in a simple machine is:

- A  $P - 2P_0$
- B  $2P - P_0$
- C  $P_0 - \frac{P}{2}$
- D  $P - P_0$

**Answer: A**

**Question 105**

Non uniform ramming of moulding sand may lead to the following casting defect

- A Scabs
- B Swells
- C Blow holes
- D Bends

**Answer: A**

**Question 106**

A bell Coleman cycle is

- A Reversed stirling cycle
- B Reversed Carnot cycle
- C Reversed Joule cycle
- D Reversed Atkinson cycle

Answer: C

#### Question 107

For a centrifugal blower, power consumption is proportional to:

- A Cubic power of r.p.m.
- B r.p.m.
- C Square of r.p.m.
- D Square root of r.p.m.

Answer: C

#### Question 108

A reaction turbine (hydraulic) discharge  $34 \text{ m}^3/\text{s}$  under a head of 8 m and with an overall efficiency of 91%. The power developed in MW is:

- A 4.32
- B 3.24
- C 2.43
- D 2.34

Answer: C

#### Question 109

The equivalent evaporation (kg/hr) of a boiler producing 2000kg/hr. of steam with enthalpy content of 2426 kJ/kg from feed water at temp,  $40^\circ\text{C}$  (liquid enthalpy = 168 kJ/kg; enthalpy of vaporization of water at  $100^\circ\text{C}$  = 2258 kJ/kg) is:

- A 1649
- B 2000
- C 2149
- D 1682

Answer: B

#### Question 110

For maximum work output in a two stage expansion gas turbine with perfect, the intermediate pressure (P) has the following relationship with maximum pressure ( $P_1$ ) and minimum pressure ( $P_2$ ) of the cycle:

A 
$$P = \sqrt{\frac{P_1}{P_2} \cdot \frac{P_2}{P_1}}$$

B  $P = \sqrt{P_1 P_2}$

C  $P = \left(\frac{P_1}{P_2}\right)^{\frac{1}{2}}$

D  $P = \left(\frac{P_1 + P_2}{4}\right)^{\frac{1}{2}}$

Answer: B

**Question 111**

Discharge (Q) of a centrifugal pump is given by:

where, D = diameter of impeller at inlet

b = Width of impeller at inlet

$V_f$  = velocity of flow at inlet

A  $bV_f$

B  $\pi DV_f$

C  $\pi bV_f$

D  $\pi dbV_f$

Answer: D

**Question 112**

When steam flows over moving blades of an impulse turbine:

A Both pressure and velocity decreases

B Pressure drops and velocity increases

C Pressure remains constant and velocity decreases

D Both pressure and velocity remains constant

Answer: C

**Question 113**

Electrode used in TIG is:

A Copper

B Tungsten

C Aluminium

D Cast iron

Answer: B

**Question 114**

Maximum efficiency for a single pure impulse blading (symmetric) with nozzle angle ' $\alpha$ ' is

A  $\cos^2 \left(\frac{\alpha}{2}\right)$

B  $\cos \alpha$

C  $\cos^2 \alpha$

D  $\cos \left( \frac{\alpha}{2} \right)$

Answer: C

**Question 115**

The crank pin is to be connected in the bush and the dimensions for the bush and crank are given Respectively of in mm

16  $\begin{matrix} 0.017 & 0.035 \\ 0.00016 & 0.062 \end{matrix}$

A 0.079 mm

B 0.0079 mm

C 0.035 mm

D 0.062 mm

Answer: A

**Question 116**

How many links does a pantograph mechanism contain?

A Ten

B Two

C Four

D Nine

Answer: C

**Question 117**

A single-stage impulse turbine with a diameter of 120 cm runs at 3000 r.p.m. if the blade speed ratio is 0.42, the inlet velocity of steam will be:

A 900 m/s

B 80 m/s

C 200 m/s

D 450 m/s

Answer: D

**Question 118**

For hydrodynamically smooth boundaries, the friction factor for turbulent flow is:

A Dependent on relative roughness only

B Constant

C Dependent only a Reynolds number

D Function of Reynolds number and relative roughness

Answer: D

**Question 119**

An important factor to be taken into account while designing a core print is:

- A Pouring temperature
- B Pattern Material
- C Type of mould
- D Moulding sand characteristics

**Answer: D**

**Question 120**

The flow of water in wash basin through a central opening is an example of:

- A Rankine vortex
- B Free vortex
- C Forced vortex
- D Rotational vortex

**Answer: B**

**Question 121**

Which one of the following safety device is used to protect the boiler when the water level falls below a minimum level :

- A Safety valve
- B Water level indicator
- C Fusible plug
- D Blow off cock

**Answer: C**

**Question 122**

One stroke is equal to :

- A  $1 \text{ cm}^2/\text{sec}$
- B  $1 \text{ m}^2/\text{sec}$
- C  $1 \text{ mm}^2/\text{sec}$
- D  $10 \text{ m}^2/\text{sec}$

**Answer: A**

**Question 123**

Euler's number relates

- A Inertia force and elastic force

- B Inertia force and gravity force
- C Inertia force and Pressure force
- D Pressure force and viscous force

Answer: C

#### Question 124

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

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

Answer: B

#### Question 125

A casting defect which results in general enlargement of a casting is known as:

- A Swell
- B Shift
- C Sand wash
- D Blow hole

Answer: C

#### Question 126

A jet of water issues from nozzle with a velocity 20m/s on a flat plate moving away from it at 10m/s. The cross-sectional area of the jet is  $0.01 \text{ m}^2$  and the density of water =  $1000 \text{ kg/m}^3$ . The force developed on the plate in newton's is :

- A 2000
- B 9810
- C 5000
- D 7000

Answer: B

#### Question 127

The total number instantaneous centers for a mechanism consisting of 'n' links are:

- A  $\frac{n(n-1)}{2}$
- B  $\frac{n}{2}$
- C  $n$
- D  $\frac{n-1}{2}$



Answer: A

**Question 128**

Poisson's ratio is defined as the ratio of:

- A Shear stress to shear strain
- B Longitudinal stress to Lateral strain
- C Lateral strain to longitudinal strain
- D Axial stress and axial strain

Answer: C

**Question 129**

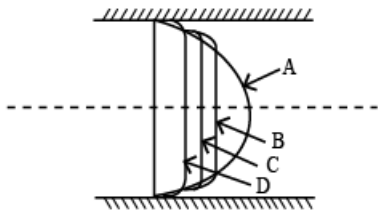
The product of circular pitch and diameter pitch is equal to:

- A  $\pi$
- B Module
- C Unity
- D  $\frac{1}{\pi}$

Answer: A

**Question 130**

The figure shows four curves for velocity distribution across a section for Reynolds number equal to 1000, 3000, 4000, and 5000. Curve A corresponding to Reynolds number:



- A 5000
- B 1000
- C 3000
- D 4000

Answer: A

**Question 131**

The dimensions of the surface tension are:

- A  $[M^1L^0T^2]$
- B  $[M^1L^0T^{-2}]$
- C  $[M^1L^1T^{-2}]$

D  $[M^1L^{-1}T^{-2}]$

Answer: B

**Question 132**

To prevent oscillation of the meniscus the length of the connecting tubes should be:

- A Unequal
- B Large
- C Small
- D Equal to 10 times diameter

Answer: C

**Question 133**

For an ideal gas the compressibility factor is:

- A Some finite value greater than unity
- B Zero
- C Units
- D Infinity

Answer: C

**Question 134**

A body of mass 5 kg is pushed up to 2 m on a smooth  $30^\circ$  incline by a force of 60 N acting parallel to the plane. The work done on the body is:

- A Zero
- B 70.95 J
- C 141.9 J
- D 35.47 J

Answer: B

**Question 135**

Reheat factor for a multi-stage steam turbine is the ratio of:

- A Inlet temperature to the exit temperature
- B Cumulative enthalpy drop to the total isentropic enthalpy
- C Total isentropic enthalpy drop to the total entropy increases
- D Total isentropic enthalpy drop to the exit temperature

Answer: C

**Question 136**

The purpose of the flywheel in an IC engine is:

- A To regulate the fuel supply
- B To keep the output power constant at the crank shaft
- C To increase the power capacity of the engine
- D To reduce the vibration in an engine

**Answer: C**

**Question 137**

The ratio of equivalent length of the column to minimum radius of gyration is called as:

- A Bulking factor
- B Factor of safety
- C Poisson's ratio
- D Co-efficient restitution

**Answer: A**

**Question 138**

The hot wire anemometer is used to measure:

- A Liquid velocities
- B Pressure in gases
- C Discharge of gases and liquids
- D Gas velocities

**Answer: D**

**Question 139**

An engine oil of viscosity  $22.5 \times 10^{-2}$  (Per.s) is flowing through a pipe of radius 1 m. average velocity of oil through the pipe is 1.2 m/sec. if the velocity profile is parabolic profile then maximum velocity of oil is:

- A 2.4 m/sec
- B 1.8 m/sec
- C 1.5 m/sec
- D 3.6 m/sec

**Answer: A**

**Question 140**

In a 1 = 100 scale model of a harbour, time which corresponds to the prototype tidal period of 12 Hrs will be in Hr:

- A 12

- B 1
- C 10
- D 1.2

Answer: D

#### Question 141

Two tensile forces, each of magnitude  $F$  are acting at a point perpendicular to each other, then their resultant force will be:

- A  $\sqrt{2}$
- B Zero
- C  $\sqrt{F}$
- D  $\sqrt{2F}$

Answer: D

#### Question 142

The Taylor's correlation between the cutting speed ( $V$ ) and the tool life ( $T$ ) is given by:

- A  $\frac{V^n}{T} = \text{Constant}$
- B  $VT^n = \text{Constant}$
- C  $\frac{V}{T^n} = \text{Constant}$
- D  $V^n T = \text{Constant}$

Answer: B

#### Question 143

The co-efficient of discharge, velocity and contraction  $C_d$ ,  $C_v$  and  $C_c$  are related as:

- A  $C_d = C_c - C_v$
- B  $C_d = \frac{C_c}{C_v}$
- C  $C_d = C_c \times C_v$
- D  $C_d = C_c + C_v$

Answer: C

#### Question 144

The expression for capillary rise is given by when,  $\sigma$  surface tension,  $\theta$  -angle of contact and  $\rho$  - density

- A  $h = \frac{2\sigma \sin \theta}{\rho g d}$
- B  $h = \frac{4\sigma \cos \theta}{\rho g d}$
- C  $h = \frac{2\sigma \cos \theta}{\rho g d}$

D  $h = \frac{4\sigma s n\theta}{\rho g d}$

Answer: B

**Question 145**

Notch is a device used for measuring:

- A Velocity through small channels
- B Rate of flow through pipes
- C Rate of flow through small channels
- D Velocity through pipes

Answer: C

**Question 146**

Which cross-section of a cantilever beam which is loaded with UDL can give economical design:

- A Square
- B Circular
- C I-section
- D Rectangular

Answer: C

**Question 147**

What torque is Nm is required to give 3m<sup>3</sup>/s of water, a moment of momentum, so that it has a tangential velocity of 3 m/s at a distance of 1.8m from the axis?

- A 16200
- B 157
- C 2624
- D 8138

Answer: A

**Question 148**

The device which permits the connection and disconnection of shafts is:

- A Bearing
- B Connector
- C Clutch
- D Pulley

Answer: C

**Question 149**

Heating wet steam at constant temperature is the same as heating at constant:

- A Entropy
- B Pressure
- C Volume
- D Enthalpy

**Answer: B**

**Question 150**

The term bleeding in a steam turbine refers to:

- A Removal of wet steam in the low pressure stages of turbine
- B Leakage of steam
- C Steam extracted for preheating feed water
- D Steam doing no useful work

**Answer: C**

**Question 151**

Which of the following is an extensive property?

- A Temperature
- B Pressure
- C Density
- D Enthalpy

**Answer: D**

**Question 152**

The latent heat of evaporation of water at  $100^{\circ}\text{C}$  is  $2560 \text{ kJ/kg}$ . What is the change of entropy associated with the evaporation?

- A  $-25.6 \text{ kJ/kg-k}$
- B  $25.6 \text{ kJ/kg-k}$
- C  $256 \times 10^3 \text{ kJ/kg-k}$
- D  $6.86 \text{ kJ/kg-k}$

**Answer: D**

**Question 153**

Using lubricants on engine parts is an example of reducing:

- A Motion

- B Force
- C Acceleration
- D Friction

**Answer: D**

#### Question 154

**One poise is equivalent to:**

- A 1 kg/m-hr
- B 1 gm/cm-sec
- C 98 dyne/sec
- D 68 kgf-sec/m<sup>2</sup>

**Answer: B**

#### Question 155

**For maximum discharge, ratio of the pressure at the exit and at inlet of nozzle  $\left(\frac{P_2}{P_1}\right)$  is equal to:**

- A  $\left[\frac{2}{(n-1)}\right]^{\frac{n-1}{n}}$
- B  $\left[\frac{2}{(n-1)}\right]^{\frac{n}{n-1}}$
- C  $\left[\frac{2}{(n-1)}\right]^{\frac{n-1}{n}}$
- D  $\left[\frac{2}{(n-1)}\right]^{\frac{n}{n-1}}$

**Answer: B**

#### Question 156

**The process of removing unwanted material from the casting is called:**

- A Blowing
- B Clearing
- C Finishing
- D Fettling

**Answer: D**

#### Question 157

**If in a diesel engine petrol is used then the engine will:**

- A Run at low speed
- B Explode
- C Run at high speed

D Run with high knocking

Answer: D

**Question 158**

For a closed system, the difference between heat added to the system and work done by the system, is equal to change in:

A Entropy

B Temperature

C Internal energy

D Enthalpy

Answer: C

**Question 159**

The indicator on a engine is used to determine:

A IHP and mcp

B BHP

C Speed

D Temperature

Answer: A

**Question 160**

The circular pitch of a toothed wheel having 24 teeth and module of 4.25 mm will be

A 8.50 mm

B 1.35 mm

C 4.25 mm

D 6.67 mm

Answer: B

**Question 161**

The process in which no heat enters or leaves the system is called as:

A Isentropic

B Isobaric

C Isochoric

D Isothermal

Answer: A

**Question 162**

Two gases X and Y having the same temperature T, the same pressure P and the same volume V are mixed. If the mixture has the volume V and temperature T, then the pressure of the mixture will be:



- A 4P
- B  $\frac{P}{2}$
- C P
- D 2P

Answer: D

#### Question 163

Which gas among the following has the highest value of adiabatic index?

- A Helium
- B Nitrogen
- C Oxygen
- D Methane

Answer: B

#### Question 164

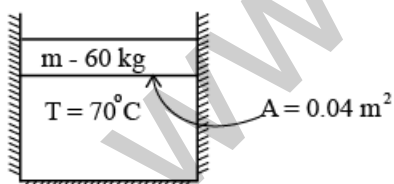
Rotameter is a device used to measure:

- A Rotation
- B Absolute pressure
- C Velocity of fluid
- D Flow rate

Answer: D

#### Question 165

The piston of a vertical piston-cylinder device containing a gas has a mass of 60 kg and a cross-sectional area  $0.04 \text{ m}^2$ . The entire system is placed in a vacuum chamber. If temperature of the gas is  $70^\circ\text{C}$ . What is the pressure of gas inside the cylinder?  $g = 9.8 \text{ m/s}^2$



- A 0.7 bar
- B 0 bar
- C 0.3 bar
- D 0.147 bar

Answer: B

**Question 166**

The only angle on which the strength of the tool depends, is:

- A Lip angle
- B Clearance angle
- C Rake angle
- D Cutting angle

**Answer: C**

**Question 167**

The size of the gear is usually specified by:

- A Pitch circle diameter
- B Pressure angle
- C Circular pitch
- D Diameter pitch

**Answer: A**

**Question 168**

The circumferential stress in a thin shell due to internal fluid is given by:

- A  $\frac{\pi Pd^2}{4}$
- B  $\frac{Pd}{t}$
- C  $\frac{4P}{\pi d^2}$
- D  $\frac{Pd}{2t}$

**Answer: D**

**Question 169**

A long circular cylinder has a diameter D and length L. The slenderness ratio of the column is:

- A  $\sqrt{\frac{L}{D}}$
- B  $\left(\frac{L}{D}\right)$
- C  $\left(\frac{2L}{D}\right)$
- D  $\left(\frac{4L}{D}\right)$

**Answer: D**

**Question 170**

Rivets generally specified by:

- A Diameter of head
- B Thickness of plates to be riveted
- C Length of rivet
- D Nominal diameter

**Answer: D**

**Question 171**

**A beam is fixed at one end and free at the other end. A load acts in the center. The maximum bending moment will occur at:**

- A Between center and fixed end
- B Under the load
- C Fixed end
- D Free end

**Answer: C**

**Question 172**

**Which of the following material is added to base sand to impart bonding strength?**

- A sea coal
- B Silica
- C Bentonite
- D Wood flour

**Answer: C**

**Question 173**

**The commercially available petrol in India has an octane rating of:**

- A 85-90
- B 20-30
- C 40-50
- D 60-75

**Answer: A**

**Question 174**

**Herring bone gears are:**

- A Double helical gears
- B Spur gears with small teeth
- C Large worm gears

D Spiral gears

Answer: A

Question 175

Which of the following fuel having maximum resistance to detonation?

A n-heptane

B Benzene

C Toluene

D Iso-octane

Answer: D

Question 176

In arc welding temperature generated is of the order of:

A  $8000^{\circ}C$

B  $1000^{\circ}C$

C  $3500^{\circ}C$

D  $5500^{\circ}C$

Answer: D

Question 177

A fan rotates at a constant speed at 60 rpm. The total angular displacement it makes in 10 sec is:

A Zero

B  $10\pi rad$

C  $40\pi rad$

D  $20\pi rad$

Answer: A

Question 178

Barometer is used to measure:

A Rain level

B Pressure in pipes and channels

C Atmospheric pressure

D Very low pressure

Answer: C

Question 179

Bending moment at the supports in case of simply supported beam is:

- A > 1
- B zero
- C 1
- D < 1

Answer: B

**Question 180**

A simply supported beam of 1 m length is subjected to a distributed load of 0.4 N/m. The maximum bending moment occurring in the beam is:

- A 1.0 N-m
- B 0.1 N-m
- C 0.05 N-m
- D 0.025 N-m

Answer: C

**Question 181**

The maximum speed and minimum speed in r.p.m. At a watt governor are 72 and 68 respectively. The range of speed of the governor is:

- A 4
- B 2
- C 8
- D 6

Answer: A

**Question 182**

The rate of change of moment of momentum represent the:

- A Power developed by the fluids
- B Force exerted by fluid
- C Torque applied by the fluid
- D Work done by the fluid

Answer: C

**Question 183**

Fan belt in automobiles is:

- A E-section V belt
- B A three layer flat belt

- C A five layer flat belt
- D B-section V belt

Answer: B

#### Question 184

For a particular ideal gas, the value of R is 0.280 kJ/kgK and the value of  $\gamma$  is 1.375. The value of  $C_p$  and  $C_v$  are, respectively, in kJ/kgK:

- A 1.25, 0.8
- B 1.0267, 0.7467
- C 1.111, 0.66
- D 1.2, 0.70

Answer: B

#### Question 185

The compression ratio for diesel engine lie in the range of:

- A 30 to 40
- B 5 to 8
- C 15 to 20
- D 3 to 6

Answer: C

#### Question 186

The degree of reaction of a Kaplan turbine is:

- A Equal to 1
- B Equal to 380
- C Greater than zero but less than  $\frac{1}{2}$
- D Greater than  $\frac{1}{2}$  but less than 1

Answer: D

#### Question 187

A fluid with kinematic viscosity  $0.4 \times 10^{-4} m^2/s$  flows through a 80 mm diameter pipe. The maximum velocity for laminar flow will be:

- A  $\leq 2m/s$
- B  $\leq 10mm/s$
- C  $< 1m/s$
- D  $\leq 1.5m/s$

Answer: C

Question 188

Which is not a part of magneto-ignition system?

- A Condenser
- B Battery
- C Induction coil
- D Circuit breaks

Answer: B

Question 189

If the x-component of a force is negative and the y-component is positive, the direction of that force must lie in the:

- A Fourth quadrant
- B First quadrant
- C Second quadrant
- D Third quadrant

Answer: C

Question 190

In a gear drive, module is equal to:

- A  $\frac{1}{\text{Diametralpitch}}$
- B  $\frac{1}{\text{Circularpitch}}$
- C  $\frac{\text{Circularpitch}}{\pi}$
- D  $\frac{\text{Diametralpitch}}{\pi}$

Answer: E

Question 191

The quantity, which is equal to rate of change of momentum is known as:

- A Impulse
- B Displacement
- C Acceleration
- D Force

Answer: D

Question 192

Multistage centrifugal pumps are used to obtain high:

- A Pumping of viscous fluids
- B Discharge
- C Head
- D Efficiency

**Answer: C**

**Question 193**

The diameter of core of a circular section is given as:

- A  $\frac{d}{\sqrt{2}}$
- B  $\frac{d}{2}$
- C  $\frac{d}{3}$
- D  $\frac{d}{4}$

**Answer: D**

**Question 194**

The path traced by a single particle of smoke issuing from a burning wooden stick is a:

- A Flow line
- B Stream line
- C Streak line
- D Path line

**Answer: D**

**Question 195**

What amongst the following is not related to a CI engine?

- A Flywheel
- B Fuel pump
- C Fuel injector
- D Carburettor

**Answer: D**

**Question 196**

The relation between the number of links (L) and number of pairs (P) is:

- A  $L = 2P - 3$
- B  $L = 2P - 2$
- C  $L = 2P - 4$



D L 3 - 2P

Answer: C

Question 197

A Current meter is a device for measuring

A Viscosity

B Velocity

C Current

D Pressure

Answer: B

Question 198

Density of water is maximum at:

A 277° Kelvin

B 0° C

C 0° Kelvin

D 100° C

Answer: A

Question 199

An isothermal process is one in which:

A The pressure of the gas in the system is proportional to the volume of the gas.

B The internal energy of the system under consideration decreases during the change

C The heat transfer of the system under consideration is zero

D The temperature of the system under consideration remains constant during the change

Answer: D

Question 200

In I.C. engine removing the burnt gases from combustion chamber of engine cylinder, is known as:

A Polymerisation

B Scavengeing

C Supercharging

D Detonation

Answer: B



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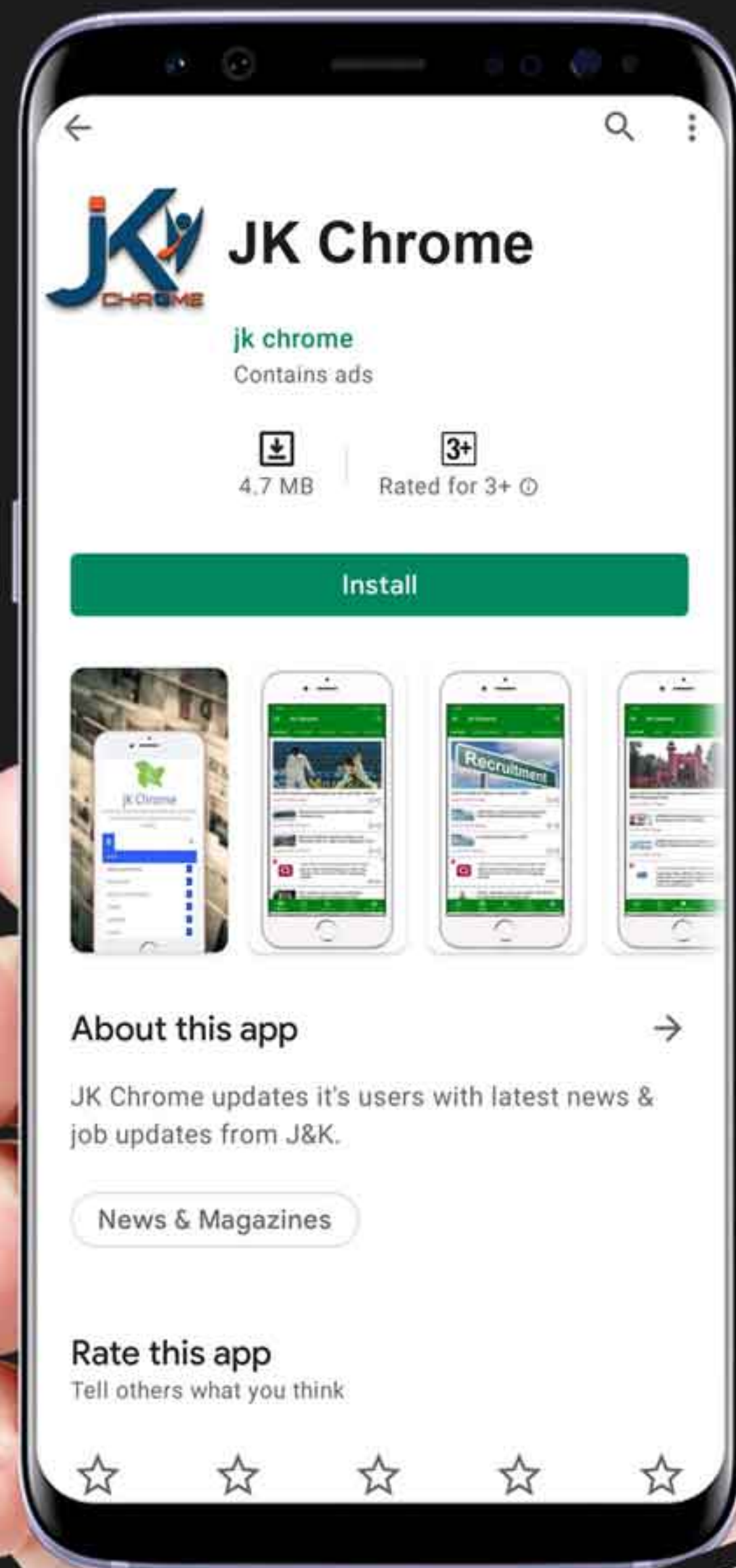
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