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SSC CHSL

Reasoning

Instructions

For the following questions answer them individually

Question 1

Select the related word/letters/number from the given alternatives. Five Point Someone : Chetan Bhagat :: Swami and Friends : ?

- A William Shakespeare
- B R.K. Narayan
- C Charles Dickens
- D Rabindra Nath Tagore

Answer: B

Explanation:

Chetan Bhagat is the author of book 'Five Point Someone', similarly 'Swami and Friends' is written by R.K. Narayan

=> Ans - (B)

Question 2

Select the related word/letters/number from the given alternatives. EFG : OPQ :: ? : STU

- A GHI
- B LMN
- C JKL
- D IJK

Answer: D

Explanation:

Expression = EFG : OPQ :: ? : STU

The pattern followed is :

E	F	G
(+10)	(+10)	(+10)
O	P	Q

Similarly, IJK : STU

I	J	K
(+10)	(+10)	(+10)
S	T	U

=> Ans - (D)

Question 3

Select the related word/letters/number from the given alternatives.

? : GA :: QR : JI

A KN

B RS

C NQ

D TZ

Answer: D

Explanation:

Expression = ? : GA :: QR : JI

Alphabets at the corresponding position from the reverse end are written.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
 ↓ ↓ ↓
 Z Y X W V U T S R Q P O N M L K J I H G F E D C B A

Similarly, TZ : GA

=> Ans - (D)

Question 4

Select the related word/letters/number from the given alternatives.

14 : 30 :: 16 : ?

A 68

B 36

C 34

D 56

Answer: C

Explanation:

Expression = 14 : 30 :: 16 : ?

The pattern followed is = $x : 2(x + 1)$

Eg :- $14 : 2(14 + 1) = 14 : 30$

Similarly, $2 \times (16 + 1) = 2 \times 17 = 34$

=> Ans - (C)

Question 5

Select the odd word/letters/number/number pair from the given alternatives.

A Singareni

B Raniganj

C Jharia

D Narora

Answer: D

Explanation:

Except Narora other three are coalfields, hence Narora is the odd one out.

=> Ans - (D)

Question 6

Select the odd word/letters/number/number pair from the given alternatives.

A ZBD

B JLN

C QSU

D NOP

Answer: D

Explanation:

(A) : Z (+2 letters) = B (+2 letters) = D

(B) : J (+2 letters) = L (+2 letters) = N

(C) : Q (+2 letters) = S (+2 letters) = U

(D) : N (+1 letter) = O (+1 letter) = P

=> Ans - (D)

Question 7

Select the odd word/letters/number/number pair from the given alternatives.

A 1356

B 5497

C 8764

D 9943

Answer: A

Explanation:

Apart from 1356, sum of digits of other numbers is 25, hence 1356 is the odd one out.

=> Ans - (A)

Question 8

Select the odd word/letters/number/number pair from the given alternatives.

A 79

B 59

C 53

D 75

Answer: D

Explanation:

Apart from 75, all other are prime numbers, hence 75 is the odd one out.

=> Ans - (D)

Question 9

A series is given with one term missing. Select the correct alternative from the given ones that will complete the series. Pranab Mukherjee, Pratibha Patil, APJ Abdul Kalam,?

A Rajendra Prasad

B K.R.Narayanan

C Shankar Dyal Sharma

D V.V.Giri

Answer: B

Explanation:

The successive series of presidents of India.

= Pranab Mukherjee -> Pratibha Patil -> APJ Abdul Kalam -> K.R.Narayanan

=> Ans - (B)

Question 10

A series is given with one term missing. Select the correct alternative from the given ones that will complete the series. DE, HI, LM, ?

A QA

B PR

C PQ

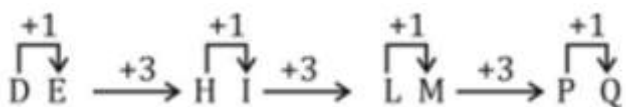
D PU

Answer: C

Explanation:

Expression : DE, HI, LM, ?

The pattern followed is :



Thus, missing term = PQ

=> Ans - (C)

Question 11

A series is given with one term missing. Select the correct alternative from the given ones that will complete the series. PR, VX, BD, ?

A EF

B HI

C HJ

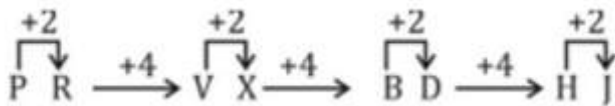
D HK

Answer: C

Explanation:

Expression : PR, VX, BD, ?

The pattern followed is :



Thus, missing term = HJ

=> Ans - (C)

Question 12

A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

4, 13, 40, 121, ?

A 350

B 360

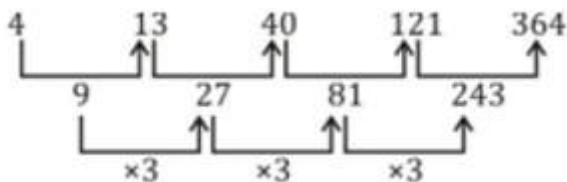
C 364

D 362

Answer: C

Explanation:

The pattern followed is :



Thus, missing number = 364

=> Ans - (C)

Question 13

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

Statement:

(I) 28 athletes are facing legal cases due to doping incidents.

(II) The new wave of Olympic doping cases is based on evidences.

Conclusions:

(I) The report of doping is based on the test that happen.

(II) Doping practice is very common these days among athletes.

A Only conclusion II follows

B Conclusion I and II both follow

- C Neither I nor II follow
- D Only conclusion I follows

Answer: C

Question 14

There are five boys Prem, Raju, Sundar, Hari and Ompal. Raju has more share of land than Sundar but lesser than Prem. Ompal has the least share and Hari has lesser share of land than Sundar. Who owns the highest share of land?

- A Sundar
- B Raju
- C Hari
- D Prem

Answer: D

Explanation:

Raju has more share of land than Sundar but lesser than Prem, \Rightarrow Prem > Raju > Sundar.

Hari has lesser share of land than Sundar, \Rightarrow Sundar > Hari.

Also, Ompal has the least share.

Combining above statements, we get : **Prem > Raju > Sundar > Hari > Ompal**

\therefore Prem owns the highest share of land.

\Rightarrow Ans - (D)

Question 15

Arrange the given words in the sequence in which they occur in the dictionary.

i. Permanence ii. Permanent iii. Permafrost iv. Permeability

- A ii, iii, iv, i
- B iii, ii, i, iv
- C iv, ii, i, iii
- D iii, i, ii, iv

Answer: D

Explanation:

As per the order of dictionary :

= Permafrost -> Permanence -> Permanent -> Permeability

≡ iii, i, ii, iv

=> Ans - (D)

Question 16

In a certain code language, "TOAST" is written as "03210" and "RIGID" is written as "45759". How is "DOOR" written in that code language?

A 9331

B 9334

C 3390

D 1314

Answer: B

Explanation:

The codes for each letter is given :

D -> 9

O -> 3

O -> 3

R -> 4

Thus, DOOR : **9334**

=> Ans - (B)

Question 17

Find the missing Number from the given Table

3	12	24
4	5	7
5	13	?

A 17

B 18

C 22

D 25

Answer: D

Question 18

If "+" means "minus", "x" means "divided by", "÷" means "plus" and "-" means "multiplied by", then $81 \times 9 + 10 - 6 \div 5 = ?$

A 46

B -46

C -47

D -74

Answer: B

Explanation:

Expression : $81 \times 9 + 10 - 6 \div 5 = ?$

$$\equiv 81 \div 9 - 10 \times 6 + 5$$

$$= 9 - 60 + 5$$

$$= 14 - 60 = -46$$

=> Ans - (B)

Question 19

In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?

a_c_e_b_de

A acab

B abcd

C bdac

D abdc

Answer: C

Explanation:

The pattern followed is that in groups of 5, the term 'abcde' is repeated.

= abcde abcde

=> Ans - (C)

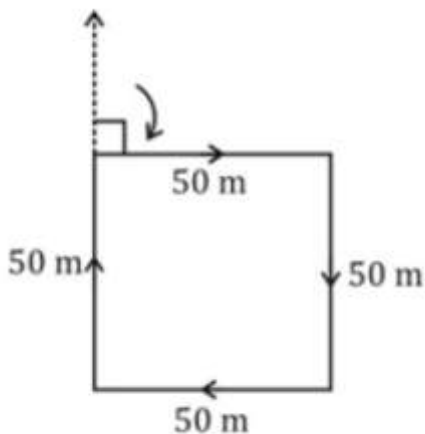
Question 20

Amit is facing north. He turns 90° right and walks for 50 m, then turns towards the south and walks 50 m, then turns right to walk for another 50 m and from there, he walks 50 m towards north. In which direction/position is he from his original position?

- A South-west
- B At the original position
- C North-east
- D North-west

Answer: B

Explanation:



Amit is facing north. He turns 90° right and walks for 50 m towards east, then turns towards the south and walks 50 m, then turns right to walk westwards for another 50 m and finally, he walks 50 m towards north.

Thus, he is at his original position.

=> Ans - (B)

Question 21

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 shown in the given two matrices. 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, for example, 'N' can be represented by 21, 43 etc. and 'R' can be represented by 66, 58 etc. Similarly, you have to identify the set for the word "HAIRY"

MATRIX 1

	0	1	2	3	4
0	A	S	E	H	A
1	Q	D	H	L	S
2	W	N	T	K	D
3	H	D	Y	A	F
4	R	G	A	N	G

MATRIX 2

	5	6	7	8	9
5	Y	T	I	R	F
6	G	R	P	L	R
7	I	O	U	R	M
8	D	F	R	K	Q
9	S	R	W	D	Y

- A 03,33,57,77,99
- B 03,33,57,78,96
- C 03,33,57,78,99
- D 03,33,75,79,99

Answer: C

Explanation:

(A) : 03,33,57,77,99 = HAIUY

(B) : 03,33,57,78,96 = HAIRR

(C) : 03,33,57,78,99 = **HAIRY**

(D) : 03,33,75,79,99 = HAIMY

=> Ans - (C)

Question 22

Introducing a boy, a girl says, "He is the son of the sister of my mother's brother." How is the boy related to the girl?

- A Cousin
- B Brother-in-law
- C Father-in-law
- D Niece

Answer: A

Explanation:

Sister of the girl's mother's brother = girl's aunt

Now, the boy is son of girl's aunt.

=> Boy and girl are cousins.

=> Ans - (A)

Question 23

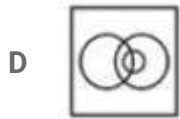
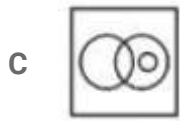
If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?



Answer: B

Question 24

Identify the diagram that best represents the relationship among the given classes. Politician, Minister, Human



Answer: B

Explanation:

All ministers are politicians and all politicians are humans.

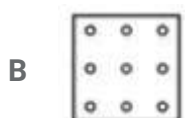
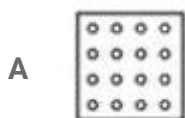
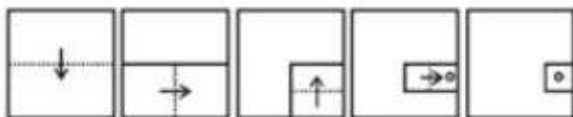
Thus, the venn diagram that best describes above relationship is :

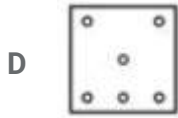
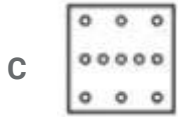


=> Ans - (B)

Question 25

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





Answer: A

English

Instructions

For the following questions answer them individually

Question 26

Rearrange the parts of the sentence in correct order.

This may be essential at

P-where the market fails to deliver

Q-swath of an economy

R-times, but there is a wide

A QRP

B QPR

C PRQ

D RQP

Answer: D

Question 27

Improve the bracketed part of the sentence.

As management we are accountable (to) the Board of Directors.

A towards

B with

C against

D no improvement

Answer: D

Question 28

In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.

A political leader who seeks support by appealing to popular desires and prejudices rather than by using rational argument.

A rebel

B radical

C demagogue

D anarchistic

Answer: C

Question 29

In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

to go for broke

A to risk everything in an all-out effort

B failure in relationship or partnership

C losing all money in an effort to revive a failing business

D to start again after failing in a business

Answer: A

Question 30

In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one, which best express the same sentence in Indirect/Direct speech.

Kunal said, "Tanu is coming this week."

A Kunal says that Tanu was coming that week.

B Kunal says that Tanu was coming this week.

C Kunal said that Tanu was going to be come this week.

D Kunal said that Tanu was coming that week.

Answer: D

Question 31

Select the word with the correct spelling.

A paterns

B smudeging

C dissuade

D fripery

Answer: C

Question 32

Improve the bracketed part of the sentence.

Usually the climate in the Northern parts of India is cooler (from) the Southern parts.

A as

B to

C than

D no improvement

Answer: C

Question 33

In the following question, sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

Jasbir has the _____ of a movie star.

A jinx

B charisma

C flash

D mysticism

Answer: B

Question 34

Select the antonym of 'apocalypse'

- A** catastrophe
- B** miracle
- C** decimation
- D** holocaust

Answer: B

Question 35

In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

The substitution of cream(A)/ instead of milk in the recipe (B)/makes for a rich dessert.(C)/No error(D)

- A** A
- B** B
- C** C
- D** D

Answer: C

Question 36

Select the antonym of 'to actuate'

- A** to retard
- B** to spur
- C** to impel
- D** to propel

Answer: A

Question 37

Rearrange the parts of the sentence in correct order.

We must urgently

P-ethics that respects, and responds

Q-humanely to, the strangers in our cities

R-and consciously develop a new

A RQP

B PQR

C RPQ

D QRP

Answer: C

Question 38

In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one, which best expresses the same sentence in Passive/Active voice.

I took the grinder yesterday.

A The grinder was took by me yesterday.

B The grinder was took by me the day before.

C The grinder had been took by me the day before.

D The grinder was taken by me yesterday.

Answer: D

Question 39

Choose the correct meaning of the idiom/phrase: In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

to go the extra mile

A to get an unexpected bonus

B to make a special effort to achieve something

C to lose one's way and walk aimlessly

D a vehicle which is very fuel efficient

Answer: B

Question 40

In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

The prince and princess(A)/made their way(B)/through the cheering crowd.(C)/No error(D)

A A

B B

C C

D D

Answer: D

Question 41

Select the synonym of "shimmering"

A stolid

B glinting

C daft

D daffy

Answer: B

Question 42

In the following question, sentence given with blank is to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

The enzyme was the that triggered the chemical reaction.

A catalyst

B support

C encouragement

D incitation

Answer: A

Question 43

Select the word with the correct spelling.

- A adendum
- B atlantise
- C inovate
- D abseiled

Answer: D

Question 44

In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.

The action of repeating something aloud from memory.

- A paraphrase
- B rendition
- C erudition
- D recitation

Answer: D

Question 45

Select the synonym of "boulder"

- A lout
- B mediocre
- C done
- D decorous

Answer: A

Question 46

In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

the many existing cyber warfare scenarios, not excluding a coordinated cyber attack that sabotage multiple infrastructure assets, erecting proper defences is . Anonymity and low cost have meant that small disaffected groups – apart from hostile states and official agencies – could to cyber techniques.
the many existing cyber warfare scenarios

- A Give
- B Given
- C Giving
- D To give

Answer: B

Question 47

In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

the many existing cyber warfare scenarios, not excluding a coordinated cyber attack that sabotage multiple infrastructure assets, erecting proper defences is . Anonymity and low cost have meant that small disaffected groups – apart from hostile states and official agencies – could to cyber techniques.
coordinated cyber attack that sabotage multiple infrastructure assets

- A would
- B should
- C could
- D will

Answer: C

Question 48

In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

the many existing cyber warfare scenarios, not excluding a coordinated cyber attack that sabotage multiple infrastructure assets, erecting proper defences is . Anonymity and low cost have meant that small disaffected groups – apart from hostile states and official agencies – could to cyber techniques.
erecting proper defences is .

- A vital
- B vitality
- C to vital
- D vitalness

Answer: A

Question 49

In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

the many existing cyber warfare scenarios, not excluding a coordinated cyber attack that sabotage multiple infrastructure assets, erecting proper defences is . Anonymity and low cost have meant that small disaffected groups – apart from hostile states and official agencies – could to cyber techniques. Anonymity and low cost have meant that small disaffected groups

- A too
- B not only
- C even
- D both

Answer: C

Question 50

In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

the many existing cyber warfare scenarios, not excluding a coordinated cyber attack that sabotage multiple infrastructure assets, erecting proper defences is . Anonymity and low cost have meant that small disaffected groups – apart from hostile states and official agencies – could to cyber techniques. hostile states and official agencies – could to cyber techniques.

- A camp
- B lodge
- C park
- D resort

Answer: D

General Awareness

Instructions

For the following questions answer them individually

Question 51

Group of Monuments at Hampi is in .

- A Karnataka
- B Madhya Pradesh
- C Maharashtra
- D Rajasthan

Answer: A

Question 52

Which movie has not won the National Film Award for Best Feature Film?

- A Court
- B Taare Zameen Par
- C Baahubali: The Beginning
- D Ship of Theseus

Answer: B

Question 53

Bambusa dendrocalmus is the scientific name of .

- A Banyan
- B Papaya
- C Bamboo
- D Pomegranate

Answer: C

Question 54

Acinonyx Jubatus is the scientific name of .

- A** Bear
- B** Horse
- C** Cheetah
- D** Zebra

Answer: C

Question 55

Atomic number of which of the following elements is greater than that of Zinc

- A** Copper
- B** Iron
- C** Chromium
- D** Bromine

Answer: D

Question 56

Commonly used abbreviation SEO in computer science stands for?

- A** System Engine Optimization
- B** Search Engine Optimization
- C** Structured Engine Optimization
- D** Single Engine Optimization

Answer: B

Question 57

Chang Lo is a folk dance of .

- A Arunachal Pradesh
- B Punjab
- C Assam
- D Nagaland

Answer: D

Question 58

If one more cobbler is hired the output of a shoe making unit will increase from 50 pairs of shoes to 55 pairs per day, but then the shoe making unit will have to reduce the price of a pair of shoes from Rs 3200 to Rs 3000 per pair to sell the additional output, the marginal revenue product of the last cobbler is

- A Rs 1000
- B Rs 5000
- C Rs 4000
- D Rs 200

Answer: B

Question 59

The Law of Demand is based on the concept that people .

- A buy more of a good as their income increases.
- B buy more of a good as the price of the good falls.
- C will spend all of their money on something.
- D want more of everything even if they have no money to buy anything.

Answer: B

Question 60

The ozone layer is mainly found in the lower portion of the .

- A stratosphere

- B** troposphere
- C** mesosphere
- D** thermosphere

Answer: A

Question 61

Ranthambore Tiger Reserve is in which state?

- A** Rajasthan
- B** Andhra Pradesh
- C** Arunachal Pradesh
- D** Uttarakhand

Answer: A

Question 62

How many Union Territories are there in India?

- A** 6
- B** 7
- C** 8
- D** 9

Answer: B

Question 63

A hard coal containing little volatile matter is called .

- A** Loess
- B** Anthracite
- C** Atoll
- D** Lava

Answer: B

Question 64

Port of Spain is the Capital City of .

- A Saudi Arabia
- B North Korea
- C Czech Republic
- D Trinidad and Tobago

Answer: D

Question 65

Chanakya was the chief advisor of .

- A Babur
- B Chandragupta Maurya
- C Akbar
- D Kautilya

Answer: B

Question 66

Battle of Haldighati in 1576 was fought between Akbar and .

- A Sher Shah
- B Maharana Pratap
- C Hemu Vikramaditya
- D Nader Shah

Answer: B

Question 67

Who invented JavaScript the programming language?

- A Brendan Eich
- B Willem Einthoven
- C George Eastman
- D Emil Erlenmeyer

Answer: A

Question 68

of a material is defined as the minimum amount of the work necessary to remove a free electron from the surface of the material.

- A The electro-repulsive force
- B The coulomb factor
- C The power factor
- D The work function

Answer: D

Question 69

Human beings' hearing range is .

- A 50 to 50,000 Hz
- B 40 to 40,000 Hz
- C 30 to 30,000 Hz
- D 20 to 20,000 Hz

Answer: D

Question 70

Which State has the highest Lok Sabha seats in India?

- A Maharashtra
- B Madhya Pradesh
- C Uttar Pradesh
- D Bihar

Answer: C

Question 71

The number of parliamentary seats (Lok Sabha) of Andhra Pradesh is .

- A 2
- B 13
- C 20
- D 25

Answer: D

Question 72

Number of players in a Kabaddi team is .

- A 3
- B 7
- C 5
- D 9

Answer: B

Question 73

Who is the author of "India: From Midnight to the Millennium"?

- A Anuj Tiwari
- B Mitali Meelan
- C Shashi Tharoor

D Jhumpa Lahiri

Answer: C

Question 74

Decane has how many hydrogen atoms?

A 22

B 33

C 11

D 44

Answer: A

Question 75

The pale yellow colour of urine is due to the presence of which pigment?

A Urochrome

B Urophyll

C Chlorophyll

D Chloroplast

Answer: A

Mathematics

Instructions

For the following questions answer them individually

Question 76

In a class of 60 students there are 30 girls. The average weight of these girls is 58 Kg and average weight of the full class is 63 kgs. What is the average weight of the boys of the class?

A 67

B 66

C 68

D 65

Answer: C

Explanation:

Total number of students = 60 and number of girls = 30

=> Number of boys in class = $60 - 30 = 30$

Average weight of girls = 58 kg

=> Total weight of girls = $58 \times 30 = 1740$ kg

Similarly, total weight of full class = $63 \times 60 = 3780$ kg

=> Total weight of boys = $3780 - 1740 = 2040$ kg

\therefore Average weight of boys = $\frac{2040}{30} = 68$ kg

=> Ans - C)

Question 77

Two students appeared for an examination. One of them secured 21 marks more than the other and his marks were 80% of the sum of their marks. The marks obtained by them are

A 88 and 67

B 89 and 68

C 28 and 7

D 98 and 77

Answer: C

Explanation:

Let marks scored by 1st student = x

=> Marks scored by another student = $(x + 21)$

According to question, => $(x + 21) = \frac{80}{100} \times (x + x + 21)$

=> $x + 21 = \frac{4}{5} \times (2x + 21)$

=> $5x + 105 = 8x + 84$

=> $8x - 5x = 105 - 84 = 21$

=> $x = \frac{21}{3} = 7$

\therefore Marks scored by other student = $7 + 21 = 28$

=> Ans - (C)

Question 78

Pannalal has done $\frac{1}{3}$ rd of a job in 20 days, Saiprasad completes the rest of the job in 10 days. In how many days can they together do the job?

- A 12 days
- B 6 days
- C 3 days
- D 24 days

Answer: A

Explanation:

Let total work to be done = 60 units

Work done by Pannalal in 20 days = $\frac{1}{3} \times 60 = 20$ units

Pannalal's efficiency = $\frac{20}{20} = 1$ unit/day

Remaining work = $60 - 20 = 40$ units

Saiprasad completes 40 units in 10 days

\Rightarrow Saiprasad's efficiency = $\frac{40}{10} = 4$ units/day

(Pannalal + Saiprasad)'s 1 day's work = $1 + 4 = 5$ units/day

\therefore Time taken by them together to do the job = $\frac{60}{5} = 12$ days

\Rightarrow Ans - (A)

Question 79

If Giridhar's salary is $\frac{5}{3}$ times of Hariraj's and Shaunak's is $\frac{2}{3}$ times of Hariraj's, what is the ratio of Giridhar's salary to Shaunak's.

- A 9:10
- B 10:9
- C 5:2
- D 2:5

Answer: C

Explanation:

Let Hariraj's salary = $3x$

\Rightarrow Giridhar's salary = $\frac{5}{3} \times 3x = 5x$

\Rightarrow Shaunak's salary = $\frac{2}{3} \times 3x = 2x$

$$\therefore \text{Ratio of Giridhar's salary to Shaunak's} = \frac{5x}{2x}$$

$$= 5 : 2$$

=> Ans - (C)

Question 80

If $\sec -7\pi/4 = x$, then the value of x is

A $\sqrt{2}$

B $-\sqrt{2}$

C $-1/\sqrt{3}$

D -1

Answer: A

Explanation:

Expression : $\sec -7\pi/4 = x$

$$\because \sec(-x) = \sec(x)$$

$$= \sec\left(\frac{-7\pi}{4}\right) = \sec\left(\frac{7\pi}{4}\right)$$

$$= \sec\left(2\pi - \frac{\pi}{4}\right) = \sec\left(\frac{\pi}{4}\right)$$

$$= \sqrt{2}$$

=> Ans - (A)

Question 81

What should be the missing digit so that the number 275_476 becomes exactly divisible by 11?

A 6

B 4

C 2

D 3

Answer: D

Explanation:

For a number to be divisible by 11, difference between the sum of digits at odd places and even places (starting from right to left) should be divisible by 11.

Let the number be = 275x476

$$\text{Sum of digits at odd places} = 6 + 4 + 5 + 2 = 17$$

$$\text{Sum of digits at even places} = 7 + x + 7 = (14 + x)$$

$$\text{Difference} = 17 - 14 - x = 3 - x$$

Now, for $(3 - x)$ to be divisible by 11, it should be equal to 11 or 0 but if it is equal to 11, then x will be negative, thus

$$\Rightarrow 3 - x = 0$$

$$\Rightarrow x = 3 - 0 = 3$$

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

Question 82

If $\tan(A/2) = x$, then the value of x is

A $(1 - \cos A)/\sin A$

B $(1 + \cos A)/\sin A$

C $\sqrt{[(1 - \cos A)/\sin A]}$

D $\sqrt{[(1 + \cos A)/\sin A]}$

Answer: A

Explanation:

Using double angle formula, we know that $\cos(2\theta) = \cos^2\theta - \sin^2\theta$

$$\Rightarrow \cos(2\theta) = (1 - \sin^2\theta) - \sin^2\theta$$

$$\Rightarrow \cos(2\theta) = 1 - 2\sin^2\theta$$

Replacing θ by $\frac{A}{2}$, we get :

$$\Rightarrow \cos A = 1 - 2\sin^2\left(\frac{A}{2}\right)$$

$$\Rightarrow 2\sin^2\left(\frac{A}{2}\right) = 1 - \cos A$$

$$\Rightarrow \sin^2\left(\frac{A}{2}\right) = \frac{(1 - \cos A)}{2}$$

$$\Rightarrow \sin\left(\frac{A}{2}\right) = \sqrt{\frac{(1 - \cos A)}{2}}$$

$$\text{Similarly, } \Rightarrow \cos\left(\frac{A}{2}\right) = \sqrt{\frac{(1 + \cos A)}{2}}$$

Now, to find : $\tan\left(\frac{A}{2}\right)$

$$= \sin\left(\frac{A}{2}\right) \div \cos\left(\frac{A}{2}\right)$$

$$= \sqrt{\frac{(1 - \cos A)}{2}} \div \sqrt{\frac{(1 + \cos A)}{2}}$$

$$= \sqrt{\frac{(1 - \cos A)}{2}} \times \sqrt{\frac{2}{(1 + \cos A)}}$$

$$\begin{aligned}
&= \sqrt{\frac{1-\cos A}{1+\cos A}} \\
&= \sqrt{\frac{1-\cos A}{1+\cos A} \times \frac{1-\cos A}{1-\cos A}} \\
&= \sqrt{\frac{(1-\cos A)^2}{1-\cos^2 A}} = \sqrt{\frac{(1-\cos A)^2}{\sin^2 A}} \\
&= \frac{1-\cos A}{\sin A}
\end{aligned}$$

=> Ans - (A)

Question 83

If $(\sec A - \tan A)^2 = x$, then the value of x is

- A $(1 + \sin A)/(1 - \sin A)$
- B $\sqrt{[(1 - \sin A)/(1 + \sin A)]}$
- C $(1 - \sin A)/(1 + \sin A)$
- D $\sqrt{[(1 + \sin A)/(1 - \sin A)]}$

Answer: C

Explanation:

Expression : $(\sec A - \tan A)^2$

$$\begin{aligned}
&= \left(\frac{1}{\cos A} - \frac{\sin A}{\cos A}\right)^2 \\
&= \left(\frac{1-\sin A}{\cos A}\right)^2 = \frac{(1-\sin A)^2}{\cos^2 A} \\
&= \frac{(1-\sin A)^2}{1-\sin^2 A} \\
&= \frac{(1-\sin A)^2}{(1-\sin A)(1+\sin A)} \\
&= \frac{1-\sin A}{1+\sin A}
\end{aligned}$$

=> Ans - (C)

Question 84

If a cylinder of radius 4 cm and height 8 cm is melted and constructed into a cone of the same radius, what will be the height of this cone?

- A 48 cm
- B 24 cm
- C 8 cm

D 12 cm

Answer: B

Explanation:

Radius of cylinder, $R = 4$ cm and height of cylinder, $H = 8$ cm

Let height of cone = h cm and radius of cone, $r = 4$ cm

According to ques, volume of cone = volume of cylinder

$$\Rightarrow \frac{1}{3}\pi r^2 h = \pi R^2 H$$

$$\Rightarrow \frac{1}{3} \times (4)^2 \times h = (4)^2 \times 8$$

$$\Rightarrow h = 8 \times 3 = 24 \text{ cm}$$

\Rightarrow Ans - (B)

Question 85

Points P and Q lie on side AB and AC of triangle ABC respectively such that segment PQ is parallel to side BC. If the ratio of AP:PB is 2:3, and area of $\triangle APQ$ is 8 sq cm, what is the area of trapezium PQCB?

A 50 sq cm

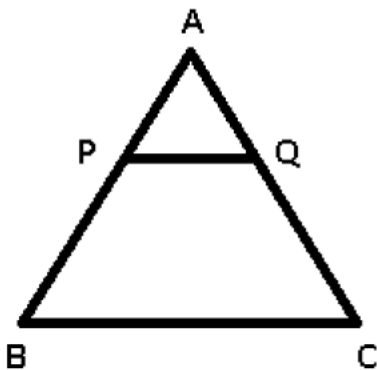
B 18 sq cm

C 14 sq cm

D 42 sq cm

Answer: D

Explanation:



It is given that $AP : PB = 2 : 3$

Let $AP = 2$ cm and $PB = 3$ cm

Let area of trapezium PQCB = x sq cm

In $\triangle APQ$ and $\triangle ABC$

$\angle PAQ = \angle BAC$ (common)

$\angle APQ = \angle ABC$ (Alternate interior angles)

$\angle AQP = \angle ACB$ (Alternate interior angles)

$\Rightarrow \triangle APQ \sim \triangle ABC$

\Rightarrow Ratio of Area of $\triangle APQ$: Area of $\triangle ABC$ = Ratio of square of corresponding sides = $(AP)^2 : (AB)^2$

$$= \frac{(2)^2}{(2+3)^2} = \frac{8}{(8+x)}$$

$$\Rightarrow \frac{8}{8+x} = \frac{4}{25}$$

$$\Rightarrow 8 + x = \frac{25 \times 8}{4} = 50$$

$$\Rightarrow x = 50 - 8 = 42 \text{ cm}^2$$

\Rightarrow Ans - (D)

Question 86

Find equation of the perpendicular bisector of segment joining the points (2,-5) and (0,7)?

A $x - 6y = 5$

B $x + 6y = -5$

C $x - 6y = -5$

D $x + 6y = 5$

Answer: C

Explanation:

Let line l perpendicularly bisects line joining A(2,-5) and B(0,7) at C, thus C is the mid point of AB.

$$\Rightarrow \text{Coordinates of C} = \left(\frac{2+0}{2}, \frac{-5+7}{2} \right)$$

$$= \left(\frac{2}{2}, \frac{2}{2} \right) = (1, 1)$$

$$\text{Now, slope of AB} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{(7+5)}{(0-2)}$$

$$= \frac{12}{-2} = -6$$

Let slope of line $l = m$

Product of slopes of two perpendicular lines = -1

$$\Rightarrow m \times -6 = -1$$

$$\Rightarrow m = \frac{1}{6}$$

Equation of a line passing through point (x_1, y_1) and having slope m is $(y - y_1) = m(x - x_1)$

\therefore Equation of line l

$$\Rightarrow (y - 1) = \frac{1}{6}(x - 1)$$

$$\Rightarrow 6y - 6 = x - 1$$

$$\Rightarrow x - 6y = 1 - 6 = -5$$

\Rightarrow Ans - (C)

Question 87

Raghunandan sells a machine for Rs 45 lakhs at a loss. Had he sold it for Rs 55 lakh, his gain would have been 9 times the former loss. Find the cost price of the machine.

A Rs 54 lakhs

B Rs 46 lakhs

C Rs 60 lakhs

D Rs 38 lakhs

Answer: B

Explanation:

Let cost price of the machine = Rs. x lakhs

When selling price = Rs. 45 lakhs

$$\Rightarrow \text{Loss} = \text{Rs. } (x - 45) \text{ lakhs}$$

If selling price = Rs. 55 lakhs

$$\Rightarrow \text{Profit} = \text{Rs. } (55 - x) \text{ lakhs}$$

According to ques, Profit = $9 \times$ loss

$$\Rightarrow (55 - x) = 9 \times (x - 45)$$

$$\Rightarrow 55 - x = 9x - 405$$

$$\Rightarrow 9x + x = 405 + 55 = 460$$

$$\Rightarrow x = \frac{460}{10} = \text{Rs. } 46 \text{ lakhs}$$

\Rightarrow Ans - (B)

Question 88

What is the measure of an interior angle of a regular decagon?

A 120°

B 140°

C 144°

D 150°

Answer: C

Explanation:

Sum of all interior angles of a polygon having n sides = $(n - 2) \times 180^\circ$

Number of sides of decagon, $n = 10$

=> Sum of interior angles = $(10 - 2) \times 180^\circ$

= $8 \times 180 = 1440^\circ$

In a regular decagon, all sides are equal and thus all angles are equal.

\therefore Measure of each angle = $\frac{1440}{10} = 144^\circ$

=> Ans - (C)

Question 89

The circumference of a circle is 88 cm, find its area?

A 616 sq cm

B 308 sq cm

C 154 sq cm

D 77 sq cm

Answer: A

Explanation:

Let the radius of circle = r cm

Circumference of circle = $2\pi r = 88$

=> $2 \times \frac{22}{7} \times r = 88$

=> $r = \frac{88 \times 7}{44} = 14$ cm

\therefore Area of circle = πr^2

= $\frac{22}{7} \times (14)^2$

= $22 \times 2 \times 14 = 616 \text{ cm}^2$

=> Ans - (A)

Question 90

At 15% discount the selling price of a microwave oven is Rs 34000, what is the selling price if the discount is 37.5%?

A Rs 25000

B Rs 15625

C Rs 17968.75

D Rs 29218.75

Answer: A

Explanation:

Let Marked Price of the oven = $Rs.100x$

If discount is 15%, Selling price = $\frac{100-15}{100} \times 100x = 85x$

According to ques, $\Rightarrow 85x = 34000$

$\Rightarrow x = \frac{34000}{85} = 400$

If discount is 37.5%, selling price = $\frac{100-37.5}{100} \times 100x = 62.5x$

$= 62.5 \times 400 = Rs.25,000$

\Rightarrow Ans - (A)

Question 91

Coefficient of x in $(x + 9)(8 - 5x)$ is

A 37

B -53

C -37

D 53

Answer: C

Explanation:

A coefficient is a numerical or constant quantity placed before and multiplying the variable in an algebraic expression. Eg : In ax^2 , coefficient is a

Expression : $(x + 9)(8 - 5x)$

$= 8x - 5x^2 + 72 - 45x$

$= -5x^2 - 37x + 72$

\therefore Coefficient of $x = -37$

\Rightarrow Ans - (C)

Question 92

At what rate of compound interest per annum will a sum of Rs 10000 become Rs 12321 in 2 years?

- A 22 percent
- B 11 percent
- C 7 percent
- D 15 percent

Answer: B

Explanation:

Let rate of interest = $r\%$

Sum under compound interest = Rs. 10,000 and time period = 2 years

$$\Rightarrow \text{Amount} = P\left(1 + \frac{R}{100}\right)^T = 12,321$$

$$\Rightarrow 10,000\left(1 + \frac{r}{100}\right)^2 = 12,321$$

$$\Rightarrow \left(1 + \frac{r}{100}\right)^2 = \frac{12321}{10000} = 1.2321$$

$$\Rightarrow 1 + \frac{r}{100} = \sqrt{1.2321} = 1.11$$

$$\Rightarrow \frac{r}{100} = 1.11 - 1 = 0.11$$

$$\Rightarrow r = 0.11 \times 100 = 11\%$$

\Rightarrow Ans - (B)

Question 93

If $x - y = -9$ and $xy = -20$, then find $x^2 + y^2$

- A 61
- B 41
- C 85
- D 113

Answer: B

Explanation:

Given : $(x - y) = -9$ and $xy = -20$

Using $(x - y)^2 = x^2 + y^2 - 2xy$

$$\Rightarrow (-9)^2 = (x^2 + y^2) - (2 \times -20)$$

$$\Rightarrow (x^2 + y^2) = 81 - 40 = 41$$

\Rightarrow Ans - (B)

Question 94

Two cars travel from city A to city B at a speed of 36 and 54 km/hr respectively. If one car takes 3.5 hours lesser time than the other car for the journey, then the distance between City A and City B is

A 454 km

B 567 km

C 302 km

D 378 km

Answer: D

Explanation:

Let the distance between City A and City B = d km

Speed of first car = 36 km/hr and speed of second car = 54 km/hr

Let time taken by first car = t hrs and time taken by second car = $(t - 3.5)$ hrs

Using, speed = distance/time for first car :

$$\Rightarrow \frac{d}{t} = 36$$

$$\Rightarrow d = 36t \text{ -----(i)}$$

$$\text{For second car, } \Rightarrow \frac{d}{t-3.5} = 54$$

Substituting value of d from equation (i), we get :

$$\Rightarrow 36t = 54t - 189$$

$$\Rightarrow 54t - 36t = 18t = 189$$

$$\Rightarrow t = \frac{189}{18} = \frac{21}{2} \text{ hrs}$$

$$\text{From equation (i), } \Rightarrow d = 36 \times \frac{21}{2} = 378 \text{ km}$$

\Rightarrow Ans - (D)

Question 95

Product of digits of a 2-digit number is 72. If we add 9 to the number, the new number obtained is a number formed by interchange of the digits. Find the number.

A 98

B 89

C 78

D 87

Answer: B

Explanation:

Let the unit's digit of the number be y and ten's digit be x

$$\Rightarrow \text{Number} = 10x + y$$

$$\text{Product of digits} = x \times y = 72 \text{ -----(i)}$$

$$\text{According to question, } \Rightarrow 10x + y + 9 = 10y + x$$

$$\Rightarrow 9y - 9x = 9$$

$$\Rightarrow y - x = \frac{9}{9} = 1 \text{ -----(ii)}$$

Solving equation (i) and (ii), we get : $x = 8$ and $y = 9$

\therefore Number = 89

\Rightarrow Ans - (B)

Question 96

If $4x - 5(2x - 1) > 2x + 3 > 2 - 3x$; then x can take which of the following values?

A 1

B 0

C 2

D -3

Answer: B

Explanation:

$$\text{Expression 1 : } 2x + 3 > 2 - 3x$$

$$\Rightarrow 2x + 3x > 2 - 3$$

$$\Rightarrow x > \frac{-1}{5} \text{ -----(i)}$$

$$\text{Expression 2 : } 4x - 5(2x - 1) > 2x + 3$$

$$\Rightarrow -6x + 5 > 2x + 3$$

$$\Rightarrow 2x + 6x < 5 - 3$$

$$\Rightarrow x < \frac{1}{4} \text{ ----(ii)}$$

Combining inequalities (i) and (ii), we get : $\frac{-1}{5} < x < \frac{1}{4}$

Thus, only value that x can take among the options = 0

\Rightarrow Ans - (B)

Question 97

Read data given in table and answer the Given Questions

What is the average bonus in rupees ?

	No of Employees	Annual salary	Bonus Percent of salary
Mnager	1	16	60%
Executive	5	16	30%
Trainee	1	2	20%

- A 485714
- B 6039999
- C 260000
- D 412000

Answer: A

Explanation:

Total bonus of managers (in lakh) = $1 \times 16 \times \frac{60}{100} = 9.6$ lakhs

Total bonus of executive (in lakh) = $5 \times 16 \times \frac{30}{100} = 24$ lakhs

Total bonus of trainee (in lakh) = $1 \times 2 \times \frac{20}{100} = 0.4$ lakhs

=> Average bonus in rupees = $\frac{(9.6+24+0.4)}{(1+5+1)}$

= $\frac{34}{7} = 4.85714$ lakhs = 4,85,714

=> Ans - (A)

Question 98

Read the Given Data in the table and answer the Given Questions

For which of the following pairs of Years the exports from the all the three companies are equal ?

	2011	2012	2013	2014	2015
Company A	3000	4000	3000	3000	3000
Company B	2000	2000	1000	4000	2000
Company C	4000	3000	1000	3000	1000

- A 2011 & 2013
- B 2013 & 2015

C 2011 & 2012

D 2014 & 2015

Answer: C

Explanation:

Total exports from the three companies together in :

$$2011 = 3000 + 2000 + 4000 = 9000$$

$$2012 = 4000 + 2000 + 3000 = 9000$$

$$2013 = 3000 + 1000 + 1000 = 5000$$

$$2014 = 3000 + 4000 + 3000 = 10000$$

$$2015 = 3000 + 2000 + 1000 = 6000$$

Clearly, total exports in 2011 and 2012 are equal to 9000

=> Ans - (C)

Question 99

Read the following Data and answer the given Question

What was the total Profit or Loss of the Company over the five years?

Year	Profit/(-Loss) in Crores
2011	-25
2012	-20
2013	-5
2014	20
2015	-20

A Profit of Rs 50 crores

B Loss of Rs 60 crores

C Loss of Rs 50 crores

D Loss of Rs 90 crores

Answer: C

Explanation:

Total profit or loss in Rs. crore in last 5 years

$$= -25 - 20 - 5 + 20 - 20$$

$$= 20 - 70 = -50$$

Since, it is negative, thus loss of Rs. 50 crore

=> Ans - (C)

Question 100

Read the data and answer the given questions

Jewellery is what percentage of the Total Exports?

India's Exports in 2015	Value in Million US \$
Jewellery	1000
Softyware	725
Cotton	700
Steel	700
Electronics	700

- A 28.64 percent
- B 31.14 percent
- C 23.64 percent
- D 26.14 percent

Answer: D

Explanation:

Value in millions of Jewelry = 1000

Total exports = 1000 + 725 + 700 + 700 + 700 = 3825

=> % of Jewelry in total exports = $\frac{1000}{3825} \times 100$

= $\frac{4000}{153} \approx 26.14\%$

=> Ans - (D)



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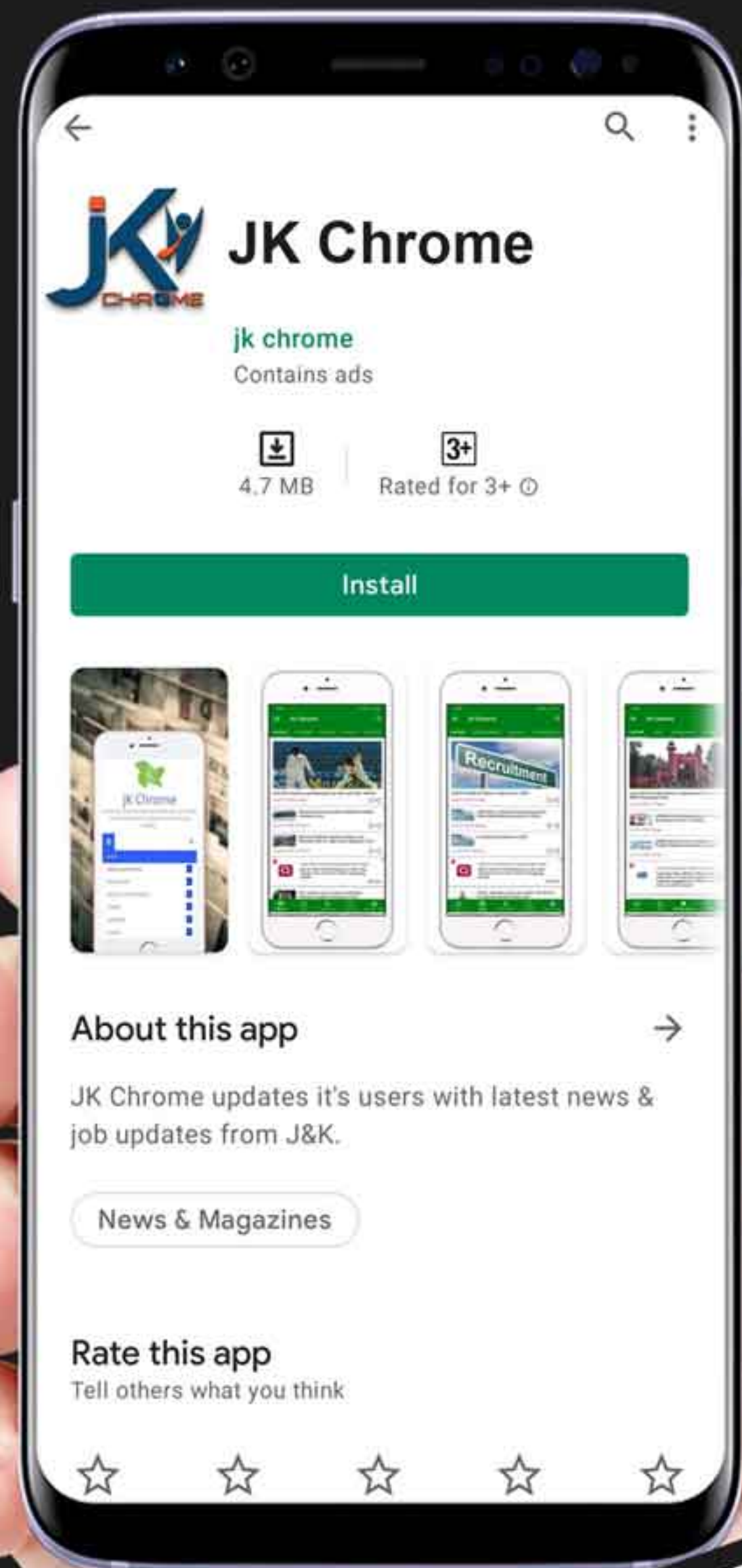
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