Choose the word which best fills the blank from the four options given:

1. The Colonel _____ his brave soldiers.

(A) ordered   (B) ordered to   (C) requested to   (D) said that

Ans. (A) ordered

Sol. Correct form of the correct verb 'order' applicable here.

2. I was _____ by the maddening behaviour of the clerk at the post office.

(A) impressed   (B) infuriated   (C) delighted   (D) admired

Ans. (B) infuriated

Sol. 'infuriated' means to make someone very angry

3. I played football _____.

(A) today   (B) yesterday   (C) tomorrow   (D) tonight

Ans. (B) yesterday

Sol. The time reference of this sentence is past, so an adverb of past tense will be used here.

4. I was not hungry, I had just _____ my lunch.

(A) have   (B) not have   (C) not had   (D) had

Ans. (D) had

Sol. Considering the time reference,Past perfect tense needs to be used in the sentence.

5. The dog was jumping around me, _____ my face and hands.

(A) licking   (B) liking   (C) leaking   (D) looking

Ans. (A) licking

Sol. 'licking' means to pass the tongue over a surface

6. When Neeta _____ to my home yesterday I was writing a letter.

(A) come   (B) has come   (C) was coming   (D) came

Ans. (D) came

Sol. The time reference of the sentence is Simple Past.

7. I last went to a tour two years _____

(A) before   (B) ago   (C) after   (D) then

Ans. (B) ago

Sol. The only correct Preposition used in such a context is 'ago'.

8. _____ of the boys gave a rupee to the beggar.

(A) Every   (B) Anyone   (C) All   (D) Each

Ans. (D) Each

Sol. The only correct Determiner used in such a context is 'each'

9. The Himalayas _____ the highest mountain ranges in the world.

(A) is   (B) are   (C) am   (D) can

Ans. (B) are

Sol. A Plural subject takes a plural verb.

10. A wise enemy is _____ than a foolish friend.

(A) good   (B) better   (C) best   (D) none of these

Ans. (B) better

Sol. A commonly used proverb.

Directions: Questions 11 to 20

     Choose the most appropriate word to fill in the blanks.

11. Alexander was taken _____ with the question.

(A) aback   (B) for   (C) rough   (D) rude

Ans. (A) aback

Sol. "taken aback' as a Phrasal verb means greatly surprised.

12. My school building is bigger _____ my house.

(A) then   (B) den   (C) than   (D) that

Ans. (C) than

Sol. This comparative degree is followed by 'than'

13. Life is an eternal teacher for _____ of us.

(A) none   (B) all   (C) some   (D) any

Ans. (B) all

Sol. As a general truth, this sentence implies that 'Life is an eternal teacher for all of us'

14. I claim to be _____ to none in all Paris.

(A) first   (B) second   (C) third   (D) fourth

Ans. (B) second

Sol. A commonly used phrase 'second to none' meaning better than the others or the best.

15. Winners should not laugh ___ the losers.

(A) on   (B) over   (C) at   (D) in

Ans. (C) at

Sol. The preposition 'at' follows the verb 'laugh'

16. I had to go to the work_____ .

(A) cite   (B) sight   (C) site   (D) slight

Ans. (C) site

Sol. 'site' means a piece of land where something that we speak of is located.

17. My _____ brother is a doctor.

(A) oldest   (B) older   (C) senior   (D) eldest

Ans. (D) eldest

Sol. The correct Adjective used in this context of family relations.

18. Dr. Abdul Kalam had a _____ desire to fly.

(A) long-cherished   (B) dormant   (C) dull   (D) feeble

Ans. (A) long cherished

Sol. The only correct adjective in this context.

19. Do not search for God in _____ places.

(A) clean   (B) vague   (C) obscure   (D) known

Ans. (C) obscure

Sol. 'obscure' means remote and separate physically or socially as intended in this sentence.

20. Do not _____ to have wanted things in life.

    (A) aspire   (B) expire   (C) ceasefire   (D) none of these

Ans. (A) aspire

Sol. 'aspire' means to have an ambitious plan or a lofty goal

Directions: Questions 21 to 30.

The following passage contains numbered blank spaces. Fill in the blanks with the appropriate word given in each case. Students who are very fond of reading are 21 labelled by their companions as 22. This criticism generally comes from 23 who consider 24 better in sports. Students who shine in athletics or in games consider that it is 25 to spend time and energy in 26 arena than in a classroom or at 27 desk. All the same they do envy their 28 who shine academically. Academic honour has a glamour 29 is unique. It is not to be 30 that playing games is a useful and healthy activity.

21. (A) just   (B) often   (C) now   (D) never

Ans. (B) often

22. (A) readers   (B) book-worms   (C) fellows   (D) friends

Ans. (B) bookworms

23. (A) students   (B) readers   (C) writers   (D) none of these

Ans. (A) students

24. (A) them   (B) him   (C) themselves   (D) himself

Ans. (C) themselves

25. (A) better   (B) greater   (C) healthier   (D) finer

Ans. (A) better

26. (A) a report   (B) a sport   (C) a port   (D) a court

Ans. (B) a sport

27. (A) write   (B) read   (C) reading   (D) fine

Ans. (C) reading

28. (A) fellows   (B) juniors   (C) senior   (D) none of these

Ans. (A) fellows

29. (A) who   (B) whose   (C) which   (D) why

Ans. (C) which

30. (A) refused   (B) denied   (C) declined   (D) referred

Ans. (B)

Directions: Questions 31 to 40. Read the following passage carefully and answer the questions given below it.

Emperor Ashok was one of the earliest Indian monarchs who planted shady trees on roads and in public places. The Moghuls, too, realized the necessity of shade on the roads which they constructed. But there was no conscious planning and the peepal, banyan and pakur trees were indiscriminately mixed with neems, tamarinds and mahuas. It was only in Kashmir that they showed some preference for planning and planted magnificent avenues of chinar along the banks of the river Jhelum, which can be seen at their best at Ganderbal and Mattan on the way to Phalagam.

A plantation plan for our national, state and district highways is urgently needed. At present our roads are planted by the P.W.D engineers who are ignorant of trees. Ultimately, the planting of new trees and replacement of dead trees is left to gardeners alone who plant any tree which comes in handy. The result has been unfortunate and our roadside avenues have become a mixture of odd trees.

        Courtesy : NTSE

31. Who was one of the earliest Indian Monarchs who planted shady trees on roads and in public places?

(A) Ashok   (B) Moghul Empire   (C) P.W.D   (D) Engineer

Ans. (A) Ashok

Sol. Inferred from the line "Emperor Ashok was one of the earliest Indian monarchs"

32. The word 'monarch' has been used for

(A) Emperor Ashok   (B) Moghuls   (C) Engineeers   (D) None

Ans. (A) Emperor Ashok

Sol. Inferred from the line "Emperor Ashok was one of the earliest Indian monarchs"

33. 'Public places' means

(A) open places   (B) places open for public

(C) places of public interest   (D) places to be used by public

Ans. (B) places open for public

Sol. 'Public places' means any place to which the public has access.

34. Who realized the necessity of shade on the roads after Ashok?

(A) The public   (B) The Moghuls

(C) The engineers   (D) None of these

Ans. (B) The Moghuls

Sol. Inferred from the line "The Moghuls, too, realized the necessity of shade...."

35. Planting of trees was first planned in

(A) Kashmir   (B) public places

(C) states   (D) None of these

(A) Kashmir

Sol. Inferred from the line "It was only in Kashmir that they showed some preference for planning"

36. At present, who plants the roads?

(A) The government   (B) The P.W.D

(C) The state   (D) Engineers

Ans. (B) The P.W.D

Sol. Inferred from the line "At present our roads are planted by the P.W.D engineers"

37. The avenues of chinar are to be found

(A) on highways   (B) on state ways

(C) in public places   (D) Along the banks of Jhelum

Ans. (D) along the banks of Jhelum

Sol. inferred from the line "magnificent avenues of chinar along the banks of the river Jhelum,"

38. What do 'tamarind' and 'mahua' represent?

(A) Name of trees   (B) Name of the roads

(C) Name of places   (D) Name of the river

Ans. (A) Name of trees

Sol. Inferred from the lines "the peepal, banyan and pakur trees were indiscriminately mixed with neems, tamarinds and mahuas"

39. The word 'ultimately' means

(A) firstly   (B) lastly   (C) finally   (D) finely

Ans. (C) finally

Sol. Ultimately means Finally

40. The planting of new trees and replacement of dead trees is left to gardeners who plant?

(A) Systematically   (B) Methodically

(C) any tree that comes handy   (D) nothing

Ans. (C) any tree that comes handy

Sol. Inferred from the lines "gardeners alone who plant any tree which comes in handy."

Directions: Questions 41 to 50. Fill in the blanks with appropriate words given at the end.

41. Rabindranath Tagore was awarded the Nobel Prize for

(A) History   (B) Science   (C) Music   (D) Literature

Ans. (D) Literature

Sol. As evident from our knowledge of history

42. She is _____ a nurse nor a doctor.

(A) either   (B) or   (C) neither   (D) none

Ans. (C) Neither

Sol. The Corelative Conjunction 'Neither.... nor' is used in this sentence of negative connotation

43. The patient had died _____ the doctor came.

(A) before   (B) after   (C) just   (D) soon

Ans. (A) before

Sol. The most logical adverb of time that fits in here.

44. Nitin is richer ____ his elder brother Sachin.

(A) as   (B) than   (C) then   (D) with

Ans. (B) than

Sol. This comparative degree is followed by 'than'

45. He played cricket _____ I worked.

(A) and   (B) but   (C) at   (D) test

Ans. (B) but

Sol. A Coordinating Conjunction indicating contrast as required in this sentence.

46. Just look after my luggage while I go and get the ticket from the _____.

(A) Book office   (B) Booking office   (C) Office   (D) None of these

Ans. (B) Booking office

Sol. 'Booking Office' means a place where tickets are booked.

47. He is sad but hoping for the _____

(A) Last   (B) best   (C) jest   (D) None of these

Ans. (B) best

Sol. The only logical adjective that can fit in here.

48. The bird _____ the branch.

(A) flew on   (B) fell   (C) flew off   (D) flew of

Ans. (C) flew off

Sol. The only correct Phrasal Verb that fits in here.

49. Which house did you live _____ ?

(A) on   (B) in   (C) into   (D) at

Ans. (B) in

Sol. The correct preposition that would follow the verb 'live' in this context.

50. The dog jumped _____ the river.

(A) in   (B) into   (C) with   (D) on

Ans. (B) into

Sol. 'Into' is the preposition used for expressing movement to a position in something.

Directions: In question nos 1 to 5 there is a number series with one term missing shown by Question mark (?) This term is one of the alternative given. Choose that number.

1. 2,5,11,23,47,?

(A) 77   (B) 97   (C) 95   (D) 85

Ans. (C)

Sol. 2,5,11,23,47,?

2×2+1=5

11×2+1=11

23×2+1=47

470+2+1=95

2. 3,15,4, 16, 5, 17, 6, ?, 7

(A) 12   (B) 13   (C) 15   (D) 18

Ans. (D)

Sol. 3, 15, 4, 16, 5, 17, 6, 18, 7

Alternetively, divide into two series

3, 4, 5, 6, 7 and 15, 16, 17, 18

3. 2, 6, 12,20,30, ?

(A) 46   (B) 48   (C) 42   (D) 40

Ans. (C)

Sol. 2, 6, 12, 20, 30 42

Add, +4, +6, +8, +10, +12

4. 68,81,96, ?, 132

(A) 105   (B) 110   (C) 113   (D) 130

Ans. (C)

Sol. 68, 81, 96, ? , 132

Add : + 13, + 15 , +17, +19

5. 1,1,6,6, 11 ,11, 16, ?, ?

(A)16, 21   (B) 13, ,11   (C) 17,21   (D) 21,16

Ans. (A)

Sol. 1,1, 6, 6, 11, 11, 16, ? , ?

Alternate, divide into

two series....

1, 6, 11, 16, 21 and 1, 6, 11, ? 16

Add 5 to first and second series

Directions: In Question no. 6-10, there is a question mark in the blank space and it is only one of satisfies the same relation as is found between the two patterns to the left of the sign :: given in the question. Find the correct alternative.

6. Elbow :wrist:: knee: ?

(A) Ankle   (B) Fingers   (C) Foot   (D) Toes

Ans. (A)

Sol. Elbow : wrist : : knee : $\boxed{\text{Ankle}}$

7. Food: stomach : : fuel : ?

(A) Automobile   (B) Engine   (C) Tmck   (D) Plane

Ans. (B)

Sol. Food : Stomach : : Fuel : $\boxed{\text{Engine}}$

8. Wine: grapes : : vodka:?

(A) Apples   (B) Potatoes   (C) Oranges   (D) Flour

Ans. (B)

Sol. Wine : Grapes : : Votka : $\boxed{\text{Potato}}$

(Hint: Votka made up by grain also)

9. BVSC : YEHX:: MRCP: ?

(A) NJXK   (B) LKXM   (C) NIXK   (D) DIYM

Ans. (C)

Sol. From the left and right ends in English alphabets

In BVSC : YEHX

2nd,	5th,	8th,	3rd
from left	from right	from right	from left

In MRCP: ?

13th,	9th,	3rd,	11th
from left	from right	from left	from right

Sol. BVSC : YEHX : : MRCP : $\boxed{\text{NIXK}}$

10. 211 : 333 : : 356 : ?

(A) 358   (B) 359   (C) 423   (D) 388

Ans. (D)

Sol. 211 : 333 : : 356 : ?

Hint : 211 = 2 + 1 + 1 = 4

333 = 3 + 3 + 3 = 9

difference = 9 – 4 = 5

Also 356 = 3 + 5 + 6

= 14

$\boxed{388}$ = 3 + 8 + 8 = 19

difference = 19 – 14 = 5

11. Sunita's mother is the only daughter of Ajay's father. What is the relation of Ajay with Sunita?

(A) Brother   (B) Paternal uncle   (C) Maternal uncle   (D) Father

Ans. *(C)*

Sol.
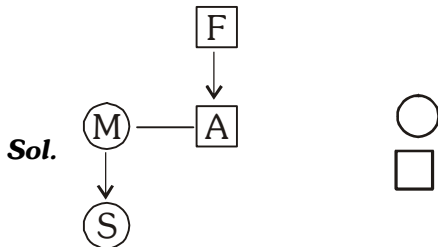
It means Ajay is the maternal uncle of sunita

12. Seema is older than Geeta, Ramesh is younger than Seema and Sujata. Sujata is younger than Geeta. Who is youngest'among all?

(A)Seema   (B) Sujata   (C) Geeta   (D) Ramesh

Ans. *(D)*

Sol. Seema > Geeta

Ramesh < Seema and Sujata

Sujata < Geeta

In the all above relation : combining above information

Seema > Geeta > Sujata > Ramesh

So, Ramesh is youngest among all.

13. If the 5th February was Sunday, how many Mondays were there in that month?

(A) 3   (B)4   (C) 5   (D) None of these

Ans. *(B)*

Sol. 5th February – Sunday

$\therefore$ 6th February – Monday

After every 7 days , the monday comes as 13th , 20th 27th february.

So, the number of Mondays in the month of February will be **four.**

14. Amit is Daya's brother. Daya is the son of Chandra. Vimal is the father of Chandra then how is Amit related to Vimal?

(A) Grandson   (B) Grandfather   (C) Brother   (D) Uncle

Ans. *(A)*

Sol.
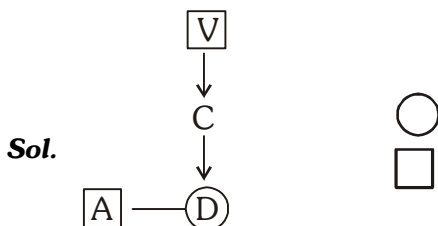
See, Amit (A) is the grandson of Vimal.

3

15. If today is Monday. After 61 days it will be -

(A) Wednesday   (B) Saturday   (C) Thursday   (D) Tuesday

Ans. ***(B)***

Sol. Today is Monday

then after 61 days,

on $7 \times 8 = 56$ Monday will be these After 5 days,

SATURDAY wil be these.

16. Which of the following letter-group is different from other groups?

(A) SUT   (B) XAZ   (C) BOC   (D) M IN

Ans. ***(B)***

Sol. XAZ

because, in SUT BOC and MON according to English alphabets S and T, B and C , M and N comes continueously but in XAZ, no alphabets is in continuation.

17. In a row of 35 students the place of Bobby is 12th from the beginning. The place of Ratan is 25th from the end. How many students are there between Bobby and Ratan?

(A) Zero (None)   (B) 1   (C) 3   (D) 2

Ans. ***(A)***

Sol. Total = 35 students
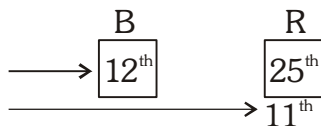
From beginning also Ratan will be at $35 - 25 + 1 = 11^{th}$ position. So this is no students.

18. Which of the following does not belong to others?

(A) Guitar   (B) Violin   (C) Flute   (D) Harp

Ans. ***(C)***

Sol. Flute

because no use of wire in flute

19. The number of ways in which first, second & third Prizes can be given to 5 competitors.

(A) 30   (B) 60   (C) 45   (D) 125

Ans. ***(B)***

Sol. There are three places

____ ____ ____

First   Second   Third

For the first prize, all 5 competitors can came, for second prize only 4 competitors can come and for third prize, only

3 competitors can come, so the total number of ways will be $5 \times 4 \times 3 = \boxed{60}$

4

20. Kavita walks from A in the East 10 feet. Then she turns towards right and walks 3 feet. Again she turns towards right and walks 14 feet. How far is she from A now?

(A) 27 feet   (B) 24 feet   (C) 5 feet   (D) 4 feet

Ans. *(C)*
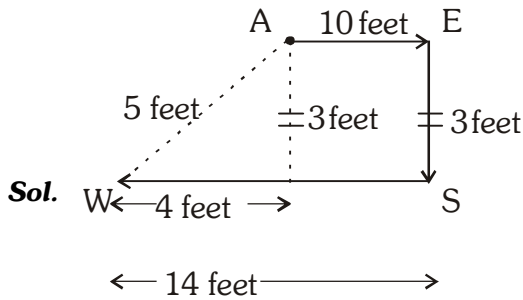
Sol.
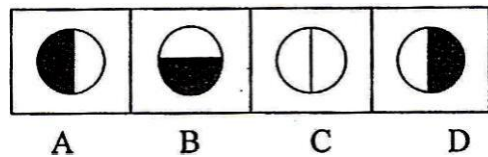

From figure 3, 4, 5 are the **Pythagorian Triplets.**

So, 5 feet is the required ans.

Directions: In Question Nos 21 to 25 there are two shapes in first part of the Question. Second part of the Question contains only one shape, choose 4th shape from answer shapes.

21. Question shapes -   Answer shapes -

Ans. *(D)*

Sol. The 4th figure will be

Half shaded in right side
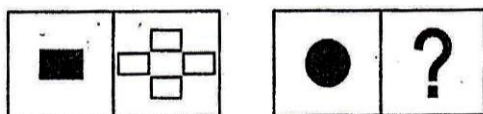
22. Question shapes   Answer shapes -
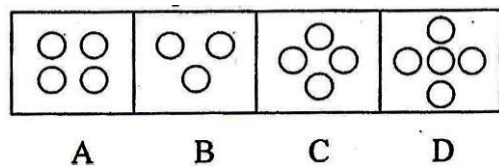
Ans. *(C)*

Sol. The 4th figure will be only four circles arranged in a circular form.
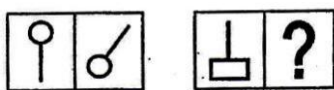
23. Question shapes-   Answer shapes -
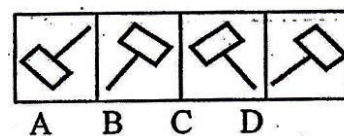
Ans. *(D)*

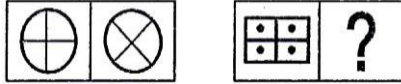**Sol.** The fourth figure will be the rotation of 135° in ACW direction

5

24. Question shapes -

Answer shapes -

A   B   C   D
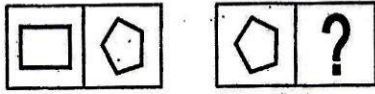
Ans. (C)

Sol. The 4ᵗʰ figure will be in Hexagonal shape

25. Question shapes -

Answer shapes -
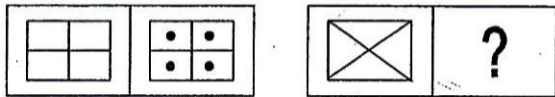

A   B   C   D

Ans. (B)

Sol. The 4th figure will be the rotation of interior shape only while the exterior shape is constant.

Directions: Question Nos 26 to 30 have a certain relation with each other in first two figures. Bearing that relationship in mind, pick up the fourth figure from the answer figures -

26. Question shapes -

Answer shapes -

A   B   C   D

Ans. (B)

Sol. The 4ᵗʰ figure, put the dots.

27. Question shapes -

Answer shapes -

A   B   C   D

Ans. (D)

Sol. The 4ᵗʰ figure, shaded triangle in same shape.

28. Question shapes -

Answer shapes -

A   B   C   D

Ans. (D)

Sol. The 4ᵗʰ figure , remove length of rectangle , in ACW direction.

29. Question shapes -

Answer shapes -

A   B   C   D

Ans. (C)

Sol. The 4ᵗʰ figure, remove dots.
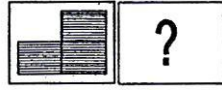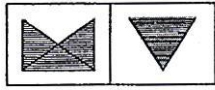
6

Courtesy : NTSE
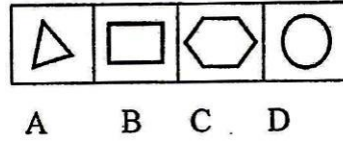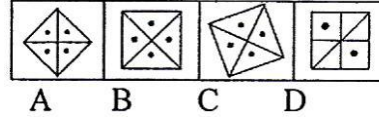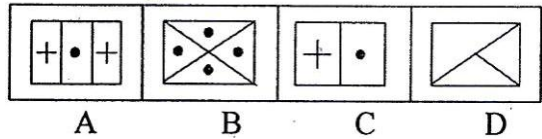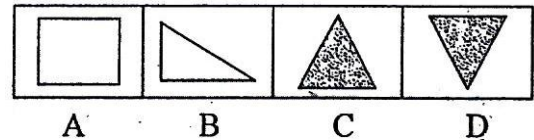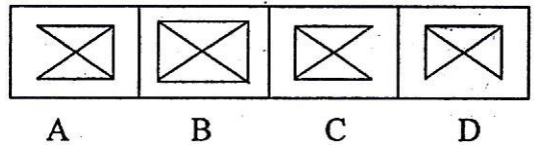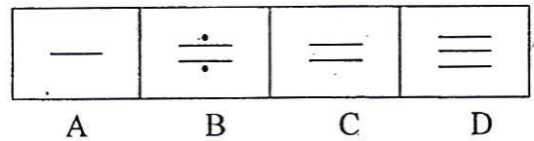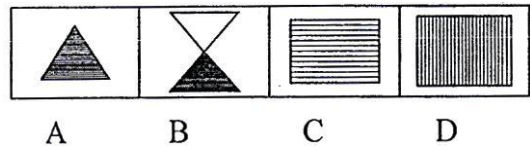
30. Question shapes -   Answer shapes -

Ans. *(C)*

Sol. The fourth figure, incomplete part will be the embedded with the same shaded shape.

On the basis of following arrangement give answers of 31 to 35 -

1 8 5 9 4 7 1 2 5 8 3 6 5 9 2 7 6 4 5 2 9 2 6 4 1 2 3 5 1 4 2 8 3

31. Which digit is the 5th left of 12th from right?

(A) 3   (B) 1   (C) 2   (D) 7

Ans. *(N.A.)*

Sol. *(Controvercial)* See 12th from right is 2 and the fifth left of 2 is 6 but in the given option, 6 is not there.

32. How many 5 are there in the arrangement immediate after which is the digit smaller than 5?

(A) None   (B) One   (C) Two   (D) Three

Ans. *(C)*

Sol. 1 8 5 9 4 7 1 2 5 8 3 6 5 9 2 7 6 4 $\boxed{5 , 2}$ 9 2 6 4 1 2 3 $\boxed{5 , 1}$ 4 2 8 3

33. How many 4 are there having an even number immediate before it and odd number immediate after it?

(A) None   (B) One   (C) Two   (D) Three

Ans. *(C)*

Sol. 1 8 5 9 4 7 1 2 5 8 3 6 5 9 2 7 $\boxed{6 , 4 , 5}$ 2 9 2 $\boxed{6 , 4 , 1}$ 2 3 5 1 4 2 8 3

34. After removing all even numbers 7th number from left of the arrangement is-

(A) 9   (B) 5   (C) 1   (D) 3

Ans. *(D)*

Sol. After removing all even numbers

1, 5, 9, 7, 1, 5, $\boxed{3}$, 5 , 9 , 7, 5 , 9, 1, 3, 5, 1, 3

∴ 7th digit from the left is $\boxed{3}$

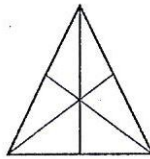**35.** How many 1 are there in the arrangement having complete square immediate before it?

(A) None   (B) One   (C) Two   (D) Three

Ans. *(B)*

Sol. 1 8 5 9 4 7 1 2 5 8 3 6 5 9 2 7 6 4 5 2 9 2 6 $\boxed{4 , 1}$ 2 3 5 1 4 2 8 3

36. How many triangles are there in the following figure?

(A) 8   (B) 12   (C) 14   (D) 16

Ans. *(D)*
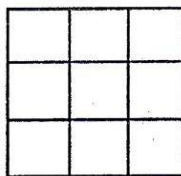
Sol. Count sigle units, the number of triangles = 6

Count two units, the number of triangles   = 3

Count three units, the number of triangles = 6

Count the large one   = 1   (Add)

_____

So, the total number of triangles   = 16

37. How many squares are there in the figure below?

(A) 14   (B) 16   (C) 10   (D) 20

Ans. *(A)*

Sol. Count the number of single units   = 9

Count the number of fourth units   = 4

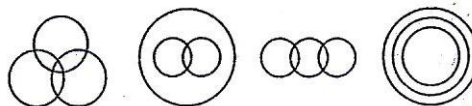Count the number of bigger one units   = 1   (Add)

                                   = 14

or Total number of squances = $1^2 + 2^2 + 3^2 = \boxed{14}$

38. Given below are four diagrams represented as A, B, C and D from the following diagrams which diagram represent a correct relationship between these words given below?

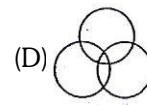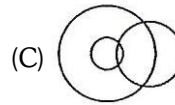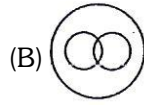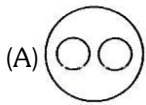Women, Teacher, Doctor

        A   B   C   D

(A) A   (B) B   (C) C   (D) D

Ans. *(C)*

Sol. The appropriate figure is (C). Teacher and Doctor are different profession and women is common to both.
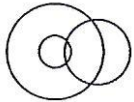
39. Choose the diagram that illustrates the relationship of females, mothers & postgraduates.
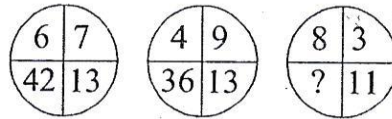
(A)   (B)   (C)   (D)

Ans. *(C)*

Sol. The appropriate figure is (C). All mothers are females and some females and mothers are post graduates.

40. Choose the correct option in the following.

(A) 30   (B) 24   (C) 18   (D) 12

Ans. *(B)*

$$\begin{vmatrix} 6 + 7 = 42 \\ 6 + 7 = 13 \end{vmatrix} \quad \begin{vmatrix} 4 \times 9 = 36 \\ 4 + 9 = 13 \end{vmatrix} \quad \begin{vmatrix} 8 \times 3 = \boxed{24} \\ 8 + 3 = 11 \end{vmatrix}$$

Directions: In Question Nos 41 to 45, select the related letter/word/number from the given alternatives:

41. DEF : EFD : : FGH : ?

(A) FHG   (B) HGF   (C) HFG   (D) GHF

Ans. *(D)*

Sol. DEF : EFD : : FGH : ?
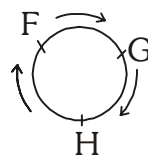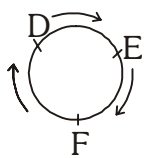
They are in cyclic order, so GHF is the required answer.

42. AZB : CYD : : EXF : ?

(A) GWH   (B) FGV   (C) TMR   (D) QSV

Ans. *(A)*

Sol. A Z B : C Y D : : E X F : G W H

43. Maharashtra : India : : Texas : ?

(A) Canada   (B) Mexico   (C) Brazil   (D) U.S.A.

Ans. *(D)*

Sol. Texas state in USA

44. Heart : Cardiologist : : Kidney : ?

(A) Endocrinologist   (B) Orthodontist   (C) Nephrologist   (D) Neurologist

Ans. *(C)*

Sol. Kidney specialist is known as Nephrologist

45. 5 : 36 : : 6 : ?

(A) 48   (B) 49   (C) 50   (D) 56

Ans. *(B)*

Sol. $5 : (5 + 1)^2 : : 6 : (6 + 1)^2$

So , 49 is the ans.

46. In a certain code PAINT i.s coded as RCKPV and STOMP is coded as UVQOR. What will be the code of HELPS?

(A) JGNRU   (B) GJNRU   (C) KONRU   (D) JGNSU

Ans. *(A)*

Sol.

```
P  A  I  N  T      S  T  O  M  P
+1 +1 +1 +1 +1     +1 +1 +1 +1 +1
↓  ↓  ↓  ↓  ↓      ↓  ↓  ↓  ↓  ↓
R  C  K  P  V      U  V  Q  O  R

H  E  L  P  S
+1 +1 +1 +1 +1
↓  ↓  ↓  ↓  ↓
J  G  N  R  U
```

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

(A) 12   (B) 13   (C) 15   (D) 17

Ans. *(D)*
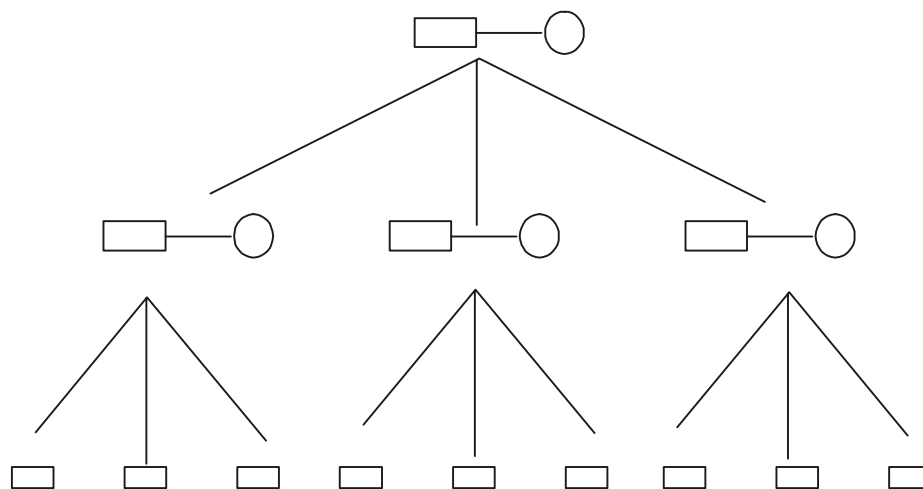
Sol.

Total number of family members = 17

10

48. Last day of a century cannot be -

(A) Monday   (B) Friday   (C) Tuesday   (D) Sunday

Ans. *(C)*

Sol. Last day of a century may be FRI , WED, MON or SUN

So , TUESDAY cannot be a last day of century

49. $1\frac{1}{5}$ of $1\frac{1}{2}$ of which number is 216 ?

(A) 100   (B) 120   (C) 140   (D) 180

Ans. *(B)*

Sol. Let the required number be x

$$\frac{6}{5} \times \frac{3}{2} \times x = 216$$

$$\frac{9x}{5} = 216$$

$x = 120$

50. A 25 feet 6 inches long piece of wood is cut to make three pieces of equal length. The length of each piece is-

(A) 8 ft. 1 inches   (B) 8 ft. 6 inches   (C) 8 ft. 3 inches   (D) 8 ft. 4 inches

Ans. *(B)*

Sol. 1 feet = 12 inches

25 feet = 25×12 = 300 inches

So, 25 feet 6 inches = 306 inches

(Divided it by 3)

So, the length of each piece = 102 inches

$\frac{102}{12}$ = 8feet 6 inches

     Courtesy : NTSE

1. Which one of the following is not a star?

(A) Sun　　　　　(B) Moon　　　　　(C) Big Bear　　　　　(D) Libra

Ans. (B)

2. The focal length of a spherical mirror is 20 cm. The radius of curvature of this

(A) 10cm　　　　　(B) 20cm　　　　　(C) 40cm　　　　　(D) 80cm

Ans. (C)

3. If λ_r and λ_V are wavelengths of light rays of red and violet colours respectively then:

(A) $\lambda_r < \lambda_V$　　　　　(B) $\lambda_r > \lambda_V$　　　　　(C) $\lambda_r = \lambda_V$　　　　　(D) None of these

Ans. (B)

4. To correct the defect Myopia or near sightedness, we have to use:

(A) convex lens　　　　　(B) concave lens　　　　　(C) plane glass　　　　　(D) none of the above

Ans. (B)

5. Which of the following colours is not a primary colour?

(A) White　　　　　(B) Green　　　　　(C) Red　　　　　(D) Blue

Ans. (A)

6. The image of an object in human eye is formed at:

(A) Cornea　　　　　(B) Iris　　　　　(C) Pupil　　　　　(D) Retina

Sol. *Ans. (D)*

7. The work done in carrying a charge of 2 micro coulomb from point A to point B is 6×10^{-4} Joule. The potential difference between these points will be:

(A) 600 volts　　　　　(B) 500 volts　　　　　(C) 300 volts　　　　　(D) 100 volts

Ans. (C)

Sol. $Q = 2\,\mu C$

$\quad\quad = 2 \times 10^{-6}$ C

$W = 6 \times 10^{-4}$ J

$V = \dfrac{W}{q} = \dfrac{6 \times 10^{-4}}{2 \times 10^{-6}} = 3 \times 10^2$ volt

$\quad = 300$ volt

8. A current of 0.2 Ampere is passing through a resistance of 20 ohm. The voltage applied at the ends of resistance is:

(A) 40 volts　　　　　(B) 20 volts　　　　　(C) 10 volts　　　　　(D) 4 volts

Ans. (D)

Sol. $V = IR = 0.2 \times 20$

$\quad\quad = 4$ volt

1

9. Electric motor is a device which converts:

(A) Electrical energy into thermal energy   (B) Electrical energy into mechanical energy

(C) Thermal energy into electrical energy   (D) Thermal energy into mechanical energy

Ans. (B)

10. Dynamo works on the principle of

(A) Electrolysis   (B) Thermal Radiation

(C) Electromagnetic Induction   (D) None of these

Ans. (C)

11. Four resistances of 4 ohms are connected in parallel. The resultant resistance will be:

(A) 4 ohms   (B) 3 ohms   (C) 2 ohms   (D) 1 ohm

Ans. (D)

Sol. $\dfrac{1}{R_P} = \dfrac{1}{4} + \dfrac{1}{4} + \dfrac{1}{4} + \dfrac{1}{4} = \dfrac{4}{4} = 1\Omega$

12. The frequency of alternating current supplied in India is:

(A) 50 Hz   (B) 60 Hz   (C) 100 Hz   (D) 220 Hz

Ans. (A)

13. If the current flowing through a fixed resistor is halved, the heat produced in it becomes:

(A) Double   (B) Half   (C) One fourth   (D) Four times

Ans. (C)

Sol. $H = I^2 Rt$

$H' = \left(\dfrac{I}{2}\right)^2 Rt$

$H' = \dfrac{I^2 Rt}{4} = \dfrac{H}{4}$

14. When in the blue solution of Copper sulphate, zinc snip is dipped, after some time the colour changes to:

(A) Pink   (B) Green

(C) Colourless   (D) Remains blue

Ans. (C)

Sol. $ZnSO_4$ - Colourless

$CuSO_4 + Zn \rightarrow ZnSO_4 + Cu$

15. Formula of Teflon is:

(A) $(-CH_2 - CH_2 -)$ n

(B) $\left[\text{........}CH_2 - \overset{\vdots}{\underset{Cl}{CH}}\right]$ n

(C) $(-CF_2 - CF_2 -)$ n
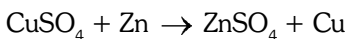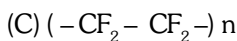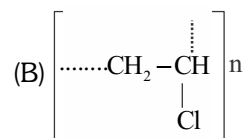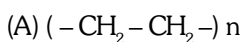
(D) None of these

Ans. (C)

Sol. Fact

2

16. In SO_3, what is the valency of sulphur atom?

(A) 3   (B) 1   (C) 5   (D) 6

Ans. *(D)*

Sol. SO_3

$x + 3 \times (-2) = 0$

$x + (-6) = 0$

$x = +6$

17. Proton was discovered by:

(A) J. J. Thomson   (B) Chedwick   (C) E. Goldstein   (D) Rutherford

Ans. *(C)*

Sol. Fact

18. What is the electronic configuration of Cl^-?

(A) 2, 8, 7   (B) 2, 8, 8   (C) 2, 8, 6   (D) 2, 8, 8, 1

Ans. *(B)*

Sol. $Cl^- \rightarrow e^- \rightarrow 18$

2. 8. 8

19. Write the RJPAC name of $H_3C - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_3$

(A) Neo-pentane   (B) 2, 2 dimethyl propane

(C) 2 - methyl butane   (D) 2, 3 dimethyl propane

Ans. *(B)*

Sol. $H_3\overset{1}{C} - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{\overset{2}{C}}} - \overset{3}{C}H_3$ 2, 2 dimenthyl propane

20. Which type of bond is present between carbon-carbon atoms in acetylene?

(A) Single covalent bond   (B) Double covalent bond

(C) Triple covalent bond   (D) Electrovalent bond

Ans. *(C)*

Sol. $H - C \equiv C - H$

21. What is the electronic configuration of the elements of II group?

(A) $1s^2, 2s^2 2p^2$ (B) $1s^2, 2s^2 2p^1$ (C) $1s^2, 2s^2 2p^6, 3s^2$ (D) $1s^2, 2s^2 2p^6, 3s^1$

Ans. *(C)*

Sol. II group : Consists of two electrons in their valence shell

$\therefore \ 1s^2 \ 2s^2 \ 2p^6 , \ \underline{3s^2}$

22. Chemical formula of Gypsum is

(A) $CaSO_4$ (B) $ZnSO_4$ (C) $CaSO_4. 2H_2O$ (D) $CaSO_4.H_2O$

Ans. *(C)*

Sol. Fact

23. If there are 12 neutrons in an atom and its atomic number is 11. How many protons are present in it?

(A) 11   (B) 12   (C) 23   (D) 1

Ans. (A)

Sol. Atomic number: No. of protons

24. Brass contains :

(A) Cu and Sn   (B) Cu and Ni   (C) Cu and Zn   (D) Mg and Al

Ans. (C)

Sol. Brass : Cu 70% & Ni 30%

25. What is the structure of aldehyde function group ?

(A) $-C = O$ (B) $\rightarrow O = \overset{|}{C} - H$ (C) $-O = \overset{\overset{O}{\|}}{C} - H$ (D)

Ans. (C)

Sol. aldehyde group $\boxed{-\overset{\overset{O}{\|}}{C} - H}$

26. On passing CO_2 gas in excess in aqueous solution of sodium carbonate, the substannce obtained as :

(A) NaOH   (B) $NaHCO_3$ (C) $Na_2CO_3.10H_2O$ (D) $Na_2CO_3.H_2O$

Ans. (B)

Sol. $Na_2CO_3 + H_2O + Cl_2 \rightarrow 2NaHCO_3$

27. Number of mitotic divisions required to produce 128 cells from a single cell is -

(A) 7   (B) 8   (C) 6   (D) 4

Ans. (A)

28. Obelia belongs to -

(A) Coelenterata   (B) Porifera   (C) Annelida   (D) Arthropoda

Ans. (A)

29. In binomial nomenclature first word indicates

(A) Species   (B) Genus   (C) Sub species   (D) None of these

Ans. (B)

30. Whale belongs to :

(A) Mammalia   (B) Amphibia   (C) Annelida   (D) Reptilia

Ans. (A)

31. Deficiency of vitamin 'A' causes -

(A) Beri-Beri   (B) Anaemia   (C) Night blindness   (D) Scruvy

Ans. (C)

32. Which of the following cannot be considered as a receptor ?

(A) Muscle   (B) Ear   (C) Eye   (D) Nose

Ans. (A)

33. Chipko andolan is association with :

(A) Tomatoes   (B) Turtles   (C) Trees   (D) Lions

Ans. (C)

34. Which of the following is not a biodegradable material ?

(A) Aluminium foil   (B) Animal bone   (C) Wood   (D) Cotton

Ans. (A)

35. The visible characteristics in an organism are known as :

(A) Penotype   (B) Genotype   (C) Stereotype   (D) Prototype

Ans. (A)

36. Sexually transmitted disease is :

(A) Malaria   (B) Diarrhoea   (C) AIDS   (D) Hepatitis

Ans. (C)

37. Kreb's Cycle takes place in :

(A) Cytoplasm   (B) Mitochondria   (C) Nucleus   (D) Ribosome

Ans. (B)

38. Acid Rain is caused by :

(A) CO   (B) SO_2 (C) O_2 (D) All of the above

Ans. (B)

39. Which one of the following is a renewable resource ?

(A) Coal   (B) Oil   (C) Forest   (D) Petrol

Ans. (C)

40. Botanical name of Margosa (Neem) is :

(A) Azadirachta indica   (B) Pisum sativum   (C) Cassia fistula   (D) Brassica Compestris

Ans. (A)

41. Which of the following city is not related with Indus civilization ?

(A) Mohanjodaro   (B) Kalibanga   (C) Lothal   (D) Patliputra

Ans. (D)

Sol. Patliputra is associated with Magadha Mahajanapada.

42. Which of the following was the oldest veda ?

(A) Rigveda   (B) Samveda   (C) Atharvaveda   (D) Yajurveda

Ans. (A)

Sol. The Rigveda is an ancient Indian Collection of Vedic Sanskrit Hymns. The Hymns are dedicated to Rigvedic Deities

43. Founder of Gupta Dynasty was:

(A) Shree Gupt   (B) Kumar Gupt   (C) Skand Gupt   (D) Samudra Gupt

Ans. (A)

Sol. Shree Gupta was the founder of Gupta dynasty and ruled for the period of 240-280 CE.

44. Huen Tsang came in the period of :

(A) Rajvardhan   (B) Harshvardhan   (C) Balivardhan   (D) Shrivardhan

Ans. (B)

Sol. Huen Tsang was the celeberated chinese traveller who visited India in ancient times. He was discribed as the 'Prince of Pilgrims'.

45. Which city was established by Harihar - bukka ?

(A) Bahmani   (B) Delhi   (C) Vijaynagar   (D) Mohammad Nagar

Ans. (C)

Sol. The Vijaynagar empire was founded by Harihar - Bukka, also called Sangama Brothers.

46. Taj Mahal built by :

(A) Babar (B) Akbar (C) Shahjahan (D) Aurangzeb

Ans. (C)

Sol. Taj Mahal was build by Shahjahan during 1632-1653.

47. Two great Indian Epics are :

(A) Geeta and Bible (B) Ramayana and Mahabharat

(C) Bible and Irani Avesta (D) Quran and Rigveda

Ans. (B)

48. Who was the last Moghul Emperor ?

(A) Alamgir II (B) Bahadurshah II (Zafar)

(C) Farrukh Siyar II (D) Shahalam II

Ans. (B)

Sol. Bahadur Shah Zafar was the last Mughal emperor. The son of Mirza Akbar Shah II and Lalbai, who was a Hindu Rajput, Zafar became Mughal Emperor when his father died on 28 September 1837.

49. Who was the first president of Indian National Congress ?

(A) Bomesh Chandra Banerjee (B) Jawaharlal Nehru

(C) Gandhiji (D) None of the above

Ans. (A)

Sol. Indian National Congress was founded in 1885 by A.O. Hume. Hume assumed office as the General Secretary and Bomesh Chandra Banerjee was elected as President.

50. Non Co-operation movement continued till _____

(A) 1920-22 (B) 1925-26 (C) 1918-20 (D) 1927-29

Ans. (A)

51. Lala Lajpat Rai led the extremist movement in :

(A) Punjab (B) Haryana (C) Sindh (D) Awadh

Ans. (A)

Sol. Lala Lajpat Rai, was an Indian Punjabi author and politician who is chiefly remembered as a leader in the Indian Independence movement. He was popularly known as Punjab Kesari.

52. Doctrine of lapse policy is related to

(A) Lord Dalhousi (B) Lord Hesting (C) William Bentick (D) Sir Thomas Ro

Ans. (A)

Sol. The Doctrine of Lapse was an annexation policy purportedly devised by Lord Dalhousie, who was the Governor General for the East India Company in India between 1848 and 1856.

53. Which city of Madhya Pradesh "Jhanda Satyagrah" was started ?

(A) Indore (B) Sagar (C) Jabalpur (D) Bhopal

Ans. (C)

Sol. Jhanda Satyagraha was started in Jabalpur and later spreaded to other cities including Nagpur during the period between 1923-24.

54. When was the Rowlatt Act Passed ?

(A) 1918 (B) 1919 (C) 1920 (D) 1922

Ans. (B)

Sol. Rowlatt Act was hurridely passed by British Legislature to curb political activities of Indians against British Colonial rule.

6

Courtesy : NTSE

55. Who established 'Forward Block' ?

(A) Bhagat Singh

(B) Chandrashekhar Azad

(C) Rasbihari Bose

(D) Subhash Chandra Bose

Ans. (D)

Sol. After split from Indian National Congress, Forward Block was founded by Subhash Chandra Bose on 3rd May 1939.

56. 'Tropic of Cancer' passes through how many states of India ?

(A) Five   (B) Six   (C) Seven   (D) Eight

Ans. (D)

Sol. Tropic of Cancer passes through 8 states (Gujarat, Rajasthan, Madhya Pradesh, Chattisgarh, Jharkhand, West Bengal, Tripura and Mizoram).

57. In which of the following area the ozone hole was observed for the first time in 1985 ?

(A) South America   (B) Western Europe   (C) Antarctica   (D) Alaska

Ans. (C)

Sol. For nearly a billion years, ozone molecules in the atmosphere have protected life on Earth from the effects of ultraviolet rays. The ozone layer resides in the stratosphere and surrounds the entire Earth.

58. How many islands are there in Andaman and Nicobar Islands ?

(A) 385   (B) 209   (C) 436   (D) 572

Ans. (D)

Sol. The Andaman & Nicobar Islands are an archipelago in India's Bay of Bengal.

59. Rajasthan receives very little rain because :

(A) It is too hot.

(B) Due to scarcity of water the winds remain dry.

(C) The winds do not come across any barrier in their path hence are not uplifted to get cool.

(D) Monsoon fails to reach this area.

Ans. (C)

As Aravalli ranges lie parallel to those winds hence do not create a barrier.

60. In which of the following state Black and Regur soil is not found ?

(A) Gujarat   (B) Punjab   (C) Madhya Pradesh   (D) Maharashtra

Ans. (B)

Sol. Punjab is a part of Northern plain and rich in alluvial soil.

61. Which of the following is the place of origin of Chambal River ?

(A) Mhow   (B) Neemuch   (C) Mandsaur   (D) Khandwa

Ans. (A)

Sol. Chambal originates from hills of Janapav, near MHOW (MP)

62. In which type of forest mangrove trees are found ?

(A) Tropical rainforests   (B) Temperate forests   (C) Tidal forests   (D) Thorny forests

Ans. (C)

Sol. Mangrove trees are found in mangrove forest also known as tidal forest specially in the Sunderban Delta region.

63. Hirakund Dam is built on which of the following rivers ?

(A) Satluj   (B) Krishna   (C) Mahanadi   (D) Ganga

Ans. (C)

Sol. Hirakud Dam is built across the Mahanadi River, about 15 km from Sambalpur in the state of Odisha in India.

64. Which of the following rivers join the sea through an estuary ?

(A) Ghaghra   (B) Son   (C) Narmada   (D) Gandak

Ans. (C)

Sol. The Narmada also called the Rewa, is a river in central India and the fifth longest river in the Indian subcontinent. It is the fourth longest river that flows entirely within India, after the Ganga, the Godavari, and the Krishna.

65. Which of the following rocks do not contain fossils ?

(A) Marble   (B) Igneous   (C) Shale   (D) Sandstone

Ans. (A)

Sol. Marble and Igneous both doesnot contain fossils (Controversial)

66. "Balaghat" is known for :

(A) Manganese production   (B) Religious place

(C) Railway workshop   (D) Diamond production

Ans. (A)

Sol. Balaghat lies on the manganese nod of triangular formation of Balaghat - Nagpur - Raipur. In Balaghat, manganese is mined under Manganese Ore India Limited (MOIL)

67. Where is National Geothermal Research Institute situated ?

(A) Mumbai   (B) Delhi   (C) Hyderabad   (D) Ahmedabad

Ans. (C)

Sol. Geothermal researches are conducted under National Geophysical Research Institute, Hyderabad

68. Which of the following is not a kharif crop ?

(A) Rice   (B) Pulses

(C) Jowar - Bajra (Sorghum - Pearl millet)   (D) Soyabean

Sol. Ans. (D)

All others are Kharif crops whereas Soyabean is not.

Sol. Some pulses as well as Jowar - Bajra can be grown in both Kharif and Rabi seasons (Controversial)

69. Which state has the lowest population density according to 2011 census ?

(A) Himachal Pradesh   (B) Arunachal Pradesh   (C) Assam   (D) Mizoram

Ans. (B)

Sol. Population density of Arunachal Pradesh is approximately $17/km^2$ which is lowest in India.

70. Which of the following is the biggest port in India ?

(A) Paradeep   (B) Tuticorin   (C) Kandla   (D) Mumbai

Ans. (D)

Sol. Jawaharlal Nehru Port, Mumbai is the biggest port in India.

71. Indian Constitution is ....

(A) Flexible   (B) Rigid

(C) Flexible and Rigid both   (D) None of the above

Ans. (C)

72. Fundamental Duties are included in the consitution of India in which year ?

(A) 1975   (B) 1976   (C) 1977   (D) 1978

Ans. (B)

Sol. Fundamental duties were added to the Indian Constitution by 42nd amendment in 1976. The Fundamental Duties are contained in Art. 51A of Indian Constitution.

73. How many seats are there in state legislation assembly in Madhya Pradesh ?

(A) 228   (B) 229   (C) 230   (D) 231

Ans. (C)

74. On which date Indian Cosntitution came into effect ?

(A) 26 January 1949   (B) 26 January 1950   (C) 26 November 1949 (D) 26 November 1950

Ans. (B)

Sol. Indian constitution was adopted on 26th November 1949 and came into effect on 26th January 1950.

75. The Chief Election Commissioner of India is appointed by -

(A) President   (B) Prime Minister   (C) Governor   (D) Speaker of Lok Sabha

Ans. (A)

Sol. The President of India based on a recommendation from the Government of India appoints the Election Commissioners. They have tenure of six years, or up to the age of 65 years, whichever is earlier.

76. When was land reform programme introduced in India ?

(A) During Vedic Period   (B) During Mughal Period

(C) During British Period   (D) After Independence

Ans. (D)

Sol. Land title formalization has been part of India's state policy from the very beginning.[1] Independent India's most revolutionary land policy was perhaps the abolition of the Zamindari system (feudal land holding practices).

77. Which five year plan is continuing in India, at present ?

(A) Fifth   (B) Eleventh   (C) Sixteenth   (D) Twelfth

Ans. (D)

Sol. 12th Five year plan (2012-2017)

78. Who among the following was great exponent of Panchayati Raj System ?

(A) Mahatma Gandhi   (B) Jawaharlal Nehru

(C) Shankar Dayal Sharma   (D) Lalbahadur Shastri

Ans. (A)

Sol. Mahatma Gandhi emphasied greatly on rural development. The village is the basic unit of Gandhian ideal soical order. Gandhi pointed out, "If the village perishes India will perish too".

79. As per development, Madhya Pradesh comes in which category ?

(A) Developed state   (B) Under-developed state

(C) Developing state   (D) Un-developed state

Ans. (B)

Sol. Despite remarkable achievements in agricultural sector, still M.P. falls in the category of under developed state.

80. 'Education' is included in which of the following sector ?

(A) Primary sector   (B) Secondary sector   (C) Tertiary sector   (D) None of the above

Ans. (C)

Sol. Educational field is providing services and placed in tertiary sector.

81. If U is any universal set and A is the subset of U, then AUA' =

(A) U   (B) ϕ (C) A   (D) A'

Ans. (A)

Sol. $AUA' = U$

82. In a two digit number, the number of ten's place is double of the number of unit's place. If we exchange the numbers mutually then the number decreases by 18, then the number is -

(A) 24   (B) 36   (C) 39   (D) 42

Ans. (D)

Sol. (10x + y) - (10y + x) = 18   (1)

x = 2y   (2)

x - y = 2, x = 2y $\Rightarrow$ y = 2, x = 4

$\therefore$ 42

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83. If in a right angled triangle ABC tan B = $\sqrt{3}$, then value of sin B and cos B is :

(A) 0, 1   (B) $\frac{1}{2}, \frac{\sqrt{3}}{2}$ (C) $\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}$ (D) $\frac{\sqrt{3}}{2}, \frac{1}{2}$
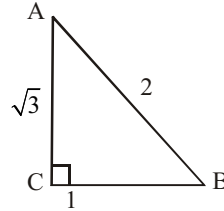
Ans. (D)

Sol. AB = 2 (Hypotenous)

$\tan B = \frac{\sqrt{3}}{1}$

$\sin B = \frac{AC}{AB} = \frac{\sqrt{3}}{2}$

$CosB = \frac{BC}{AB} = \frac{1}{2}$

84. The cost price of a horse is Rs. 27,000 = 00 and transportation charges are Rs. 2,400 = 00. If horse is sold in Rs. 33,810=00. The percentage of profit will be :

(A) 5%   (B) 10%   (C) 15%   (D) 20%

Ans. (C)

Sol. C.P. + Over head expenses = Actual CP

27000 + 2400 = 29400

S.P. = 33810/-, Profit =   33810/-

- 29400/-

4410/-

P% = $\frac{P}{CP} \times 100 = \frac{4410}{2940} \times 100 = 15\%$

85. Two coins are tossed simultaneously, the probability of getting at least one head is -

(A) $\frac{3}{4}$ (B) $\frac{1}{2}$ (C) $\frac{2}{3}$ (D) $\frac{3}{5}$

Ans. (A)

Sol. Sample space = {HH, HT, TH, TT} = 4

favourable = {HH, HT, TH} = 3

$P(F_2) = \frac{Far}{Total} = \frac{3}{4}$

86. The volume of a cube is 2744 cm^3. Its surface area is -

(A) 196 cm^2 (B) 1176 cm^2 (C) 784 cm^2 (D) 588 cm^2

Ans. (B)

Sol. Volume of cube = (side)^3 = 2744

$\Rightarrow$ side = $(2744)^{\frac{1}{3}}$

side = 14

S.A. = 6a^2 = 6(side)^2 = 6(14)^2 = 6 × 196 = 1176 cm^2

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87. The height of an equilibrium triangle is $\sqrt{6}$ cm. Its area is -

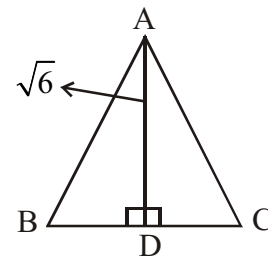(A) $2\sqrt{2}$ cm²   (B) $6\sqrt{2}$ cm²   (C) $2\sqrt{3}$ cm²   (D) $3\sqrt{3}$ cm²

Ans. (C)

Sol. Height of equilateral $\Delta = \dfrac{\sqrt{3}}{2}a$

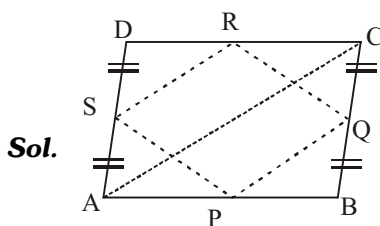$\sqrt{6} = \dfrac{\sqrt{3}}{2}a$

$a = 2\sqrt{2}$

Area of $\Delta = \dfrac{\sqrt{3}}{4}a^2 = \dfrac{\sqrt{3}}{4} \times \left(2\sqrt{2}\right)^2 = \dfrac{\sqrt{3}}{4} \times 4 \times 2 = 2\sqrt{3}\,cm^2$

88. The line segment joining the mid-points of the adjacent sides of a quadrilateral -

(A) Parallelogram   (B) Square   (C) Rhombus   (D) Rectangle

Ans. (A)

Sol.

ΔABC PQ' || AC (mid point theorem)

ΔADC

RS || AC (mid point theorem)

$\therefore$ PQ || RS, similarly PS || RQ.

$\therefore$ PQRS is a Parallelogram

89. In a rhombus of side 10 cm, one of the diagonal is 12 cm long, the length of second diagonal will be-

(A) 4 cm   (B) 8 cm   (C) 12 cm   (D) 16 cm

Ans. (D)

Sol. $AB \perp DC$ (Diagonal of parallelogram bisects each other at 90°)

$\therefore AO = OC = 6\,cm$
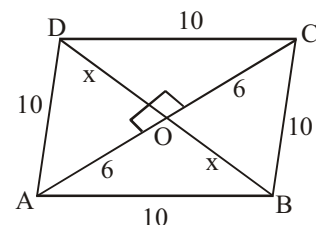
& OB = OD

In $\Delta COB \Rightarrow OD^2 + OC^2 = DC^2$

$CD^2 = 6^2 = 10^2$

$OD^2 = 64$

$OD = 8$

& OB = 8

$\therefore BD = 16\,cm$

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90. If the vertices of a triangle ABC are (0, 6), (-5, 3) and (3, 1) respectively. Then triangle is -

(A) Isosceles   (B) Equilateral   (C) Right angled   (D) None of these

Ans. (A OR C)

Sol. $AB = \sqrt{25+9} = \sqrt{34}$

$BC = \sqrt{64+4} = \sqrt{68}$
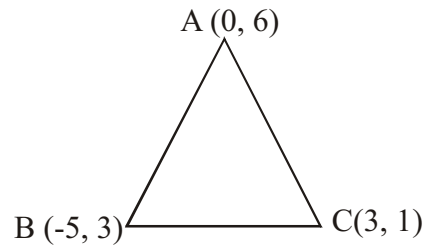
$AC = \sqrt{9+25} = \sqrt{34}$

$\therefore AB = AC$

Isosceles Δ

$m_1 = \dfrac{6-3}{0+5} = +\dfrac{3}{5}$

$m_2 = \dfrac{6-1}{0-3} = -\dfrac{5}{3}$

$\therefore m_1 m_2 = -1$

$\therefore$ right angle isosceles triangle

91. y-axis divides the line joining the points P(-4, 2) and Q(8, 3) in the ratio :

(A) 3 : 1   (B) 1 : 3   (C) 2 : 1   (D) 1 : 2

Ans. (D)

Sol.

$$\frac{8K-4}{K+1} = 0$$

$$K = \frac{1}{2} \therefore \ 1:2$$

92. $\cos^4 x - \sin^4 x =$

(A) $2\sin^2 x - 1$ (B) $1 - 2\cos^2 x$ (C) $\sin^2 x - \cos^2 x$ (D) None of these

Ans. (D)

Sol. $\cos^4 x - \sin^2 x = \left(\cos^2 x + \sin^2 x\right)\left(\cos^2 x - \sin^2 x\right)$

$= \cos^2 x - \sin^2 x$

93. $\sqrt{\dfrac{1+\sin\theta}{1-\sin\theta}} + \sqrt{\dfrac{1-\sin\theta}{1+\sin\theta}} =$

(A) $\dfrac{2}{\sin\theta}$ (B) $\dfrac{2}{\cos\theta}$ (C) $\dfrac{2}{\tan\theta}$ (D) $\dfrac{2}{\cot\theta}$

Ans. (B)

Sol. $\sqrt{\dfrac{1+\sin\theta}{1-\sin\theta}} + \sqrt{\dfrac{1-\sin\theta}{1+\sin\theta}} = \dfrac{1+\sin\theta}{\cos\theta} + \dfrac{1-\sin\theta}{\cos\theta}$

$= \dfrac{2}{\cos\theta}$

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      Courtesy : NTSE

94. If sin (A + B) = 1 and cos (A - B) = $\dfrac{\sqrt{3}}{2}$, then the values of A and B are :

(A) 45º, 45º   (B) 30º, 45º   (C) 60º, 30º   (D) 0º, 90º

Ans. (C)

Sol. sin (A + B) = 1 $\Rightarrow$ A + B = 90º

cos (A - B) = $\dfrac{\sqrt{3}}{2}$ $\Rightarrow$ A - B = 30º

$\Rightarrow$ A = 60º, B = 30º

95. The roots of the equation $3x^2 - 4\sqrt{3}x + 4 = 0$ are :

(A) Real and unequal   (B) Real and equal   (C) Imaginary   (D) Real and Imaginary both

Ans. (B)

Sol. $3x^2 - 4\sqrt{3}x + y = 0$

$\left(\sqrt{3}x - 2\right)^2 = 0$

Real and equal

96. The perimeter of a rectangular field is 82 meters and area is 400 meter^2 ? Then the breadth of the field is :

(A) 9 meter   (B) 12 meter   (C) 16 meter   (D) 25 meter

Ans. (C)

Sol. 2 (x + y) = 82, x + y = 41

xy = 400

x (41 - x) = 400

$\Rightarrow$ x = 16 or 25

$\therefore$ length = 25, breath = 16 m

97. The difference of the squares of two numbers is 180. The square of the smaller number is 8 times the larger number. The two numbers are

(A) 32, 4   (B) 24, 8   (C) 16, 2   (D) 18, 12

Ans. (D)

Sol. x^2 - y^2 = 180

y^2 = 8x

$\Rightarrow x^2 - 8x - 180 = 0$

(x - 18) (x + 10) = 0

x = 18 or - 10

$\therefore x = 18,\ y = 12$

98. The sum of squares of the two consecutive natural numbers is 421, the numbers are :

(A) 14, 15 (B) 21, 22 (C) 9, 10 (D) 17, 18

Ans. (A)

Sol. $x^2 + (x + 1)^2 = 421$

$2x^2 + 2x = 420$

$x^2 + x - 210 = 0$

$x^2 + 15x - 14x - 210 = 0$

$(n + 15)(n - 14) = 0$

$n = 14$

∴ Numbers are 14, 15

99. The system of equations -

$x + 2y = 6$, $3x + 6y = 18$

(A) is inconsistent (B) Has a unique solution

(C) Has an infinite numbers of solutions (D) None fo these

Ans. (C)

Sol. $x + 2y = 6$

$3x + 6y = 18$

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2} = \frac{1}{3}$$

∴ Infinite solution

100. If r is the radius of the base of a cylinder and h is the height of cylinder, then total surface area will be :

(A) $2\pi rh$ (B) $2\pi rh + 2\pi r^2$ (C) $\pi r^2 h$ (D) None of these

Ans. (B)

Sol. Total SA $= 2\pi rh + 2\pi r^2$

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