

PART – VI: Mental Ability (MAT)

Single Correct Choice Type

Each question has four choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

Q.1 and 2. Directions:- In the following questions a specific group is given. From the given alternatives, find out the right term which matches the given group.

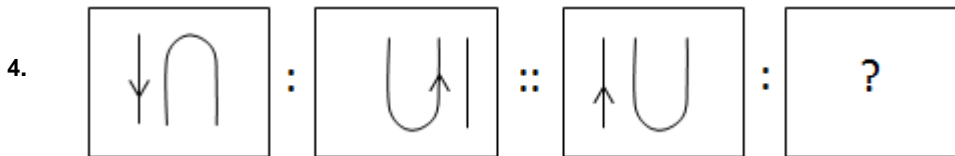
1. 37, 46, 28
 (1) 56 (3) 54
 (2) 54 (4) 83
 (3) 54
2. 22TB, M23K, QR35
 (1) H22K (2) N29O
 (3) 35YZ (4) Q47X
3. Alphabet series

X c w m v c x w m w m x c x w m x m

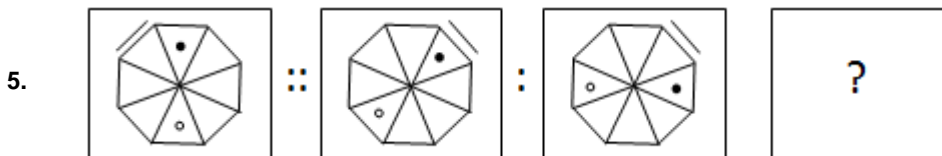
In the given alphabet series how many times m is succeeded by w and preceded by w?

- (1) 1 (2) 0
- (3) 2 (4) 3

Q. 4 and 5. Directions:- In the following questions there is a specific relationship between the first and second figure. The same relationship exists between the third and fourth figure which will replace the question mark. Select the correct term from the alternatives given.

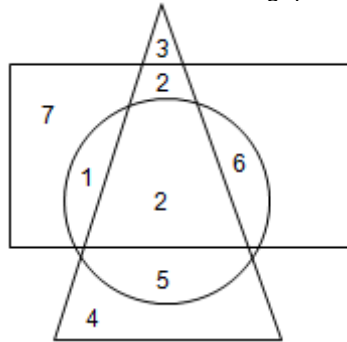


- (1)
- (2)
- (3)
- (4)



- (1)
- (2)
- (3)
- (4)

Q. 6 and 7. Directions :- In the following Venn diagram, rectangle represents no. of poets, triangle represents no. of novelists and circle represents no. of dramatists. Answer the following questions.



6. How many are novelists but not dramatists?
 (1) 7 (2) 9
 (3) 8 (4) 3
7. How many are dramatists but not poets?
 (1) 5 (2) 8
 (3) 13 (4) 22

Q. 8 and 9. Directions:- Write which number in sequence replaces the question mark.

8. $11\frac{1}{9}, 12\frac{1}{2}, 14\frac{2}{7}, 16\frac{2}{3}, ?$
 (1) $8\frac{1}{3}$ (2) $19\frac{1}{2}$
 (3) 20 (4) $22\frac{1}{3}$
9. 2, 9, 38, 155 ?
 (1) 314 (2) 193
 (3) 623 (4) 624

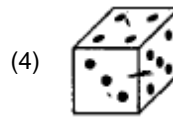
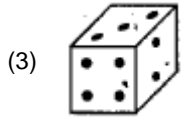
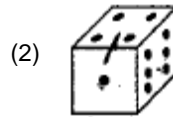
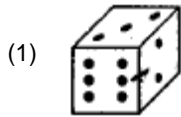
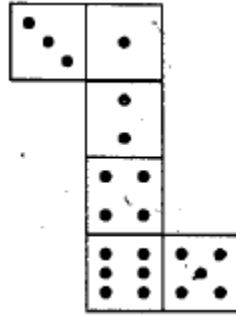
10. A square piece of paper is folded and cut at specific spot as shown in the figure. The paper when unfolded will look like as shown in one of the alternatives. Select the correct alternative.



- (1) (2) (3) (4)

11. Find the odd term.
 (1) B4J (2) L5V
 (3) H2D (3) L1H
12. In a row of girls Seema and Reema are ninth from right and tenth from left respectively. If they interchange their positions then Seema and Reema are seventeenth from right and eighteenth from left respectively. Find the total number of girls in the row.
 (1) 27 (2) 26
 (3) 25 (4) 20

13. The following figure is folded to form a cube. Observe the cube. Of the following cube figures find, the most appropriate figure.



Q. 14. and 15. Directions:- In each of the following questions there is a specific relationship between the first and second term. The same relationship exists between the third and fourth term which will replace the question mark. Select the correct term from the alternatives given.

14. BYXC, : MATZ : I:ISRI

- (1) FVSG
 (3) FUTG

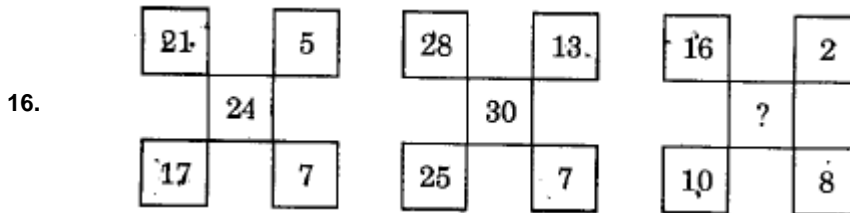
- (2) FTSG
 (4) FTUG

15. 2Y024 : 4WE22 :: 6UG20. : ?

- (1) 8SJ18
 (3) 8SI18

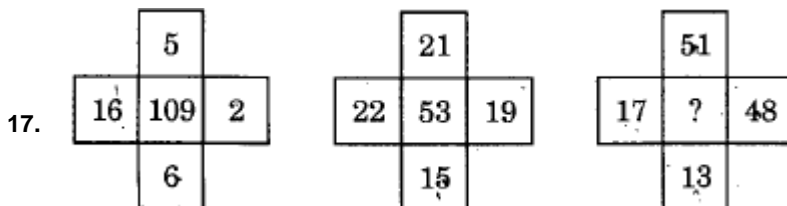
- (2) 8SK18
 (4) 8RJ18

Q. 16 and 17. Directions:- Find the correct alternative which will replace the question mark.



- (1) 24
 (3) 36

- (2) 30
 (4) 40



Q. 18 and 19. Directions:- In each of the following questions write which number in sequence replaces the question mark.

18. ADY, CFW, EHU, ?

- (1) GIH
 (3) GJR

- (2) FIT
 (4) GJS

19. Y, W, T, R, O, ?

- (1) L

- (2) P

(3) K

(4) M

Q. 20 and 21. Directions:- Using alphabet A to Z in sections of figure I and II a code has been created. First letter in every section is coded according to its shape and the second letter is coded using a dot





eg.- A is coded as  ; M is coded as  ;
 K is coded as  ; P is coded as  .

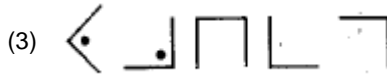
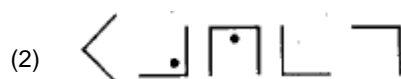
Figure I

AM	NF	LO
BU	TV	DG
EW	IZ	XY

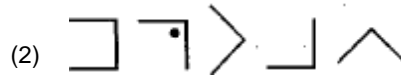
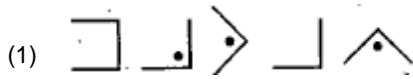
Figure II



20. What will be the code of SMILE?



21. What will be the code of EUKAR?



22. If CH = X , then BJ = ?

- (A) T
(C) V

- (B) R
(D) L

23. Kiran was born on 12th September this year. Soham is 12 days younger to Kiran.. In the same month Hindi day was celebrated on Friday. What is the birthday of Soham?

- (1) Wednesday
(3) Saturday

- (2) Sunday
(4) Monday

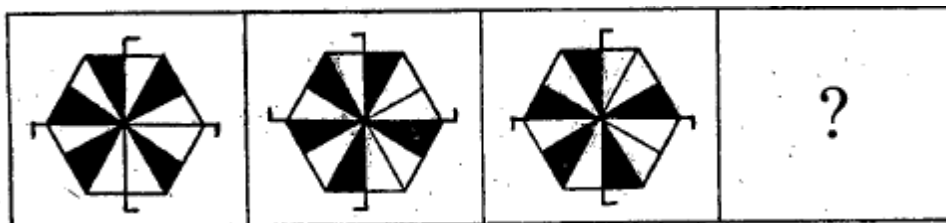
24. A farmer travels 20 m north from his house. He then turns east and walks 6 m, from there he again turns south and walks 12 m. How far is he from his original position?

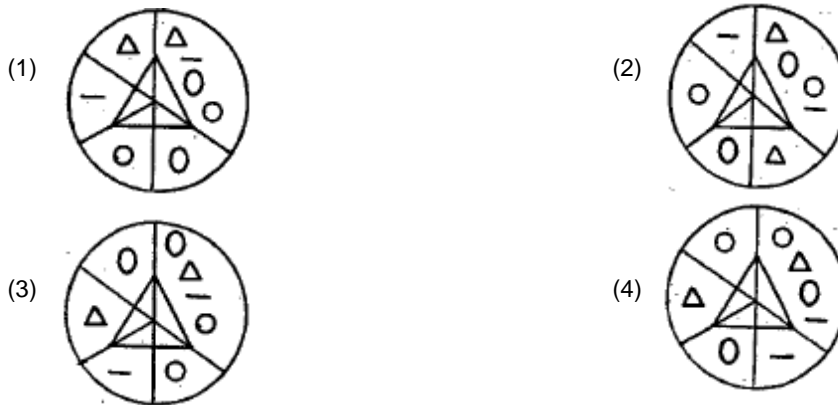
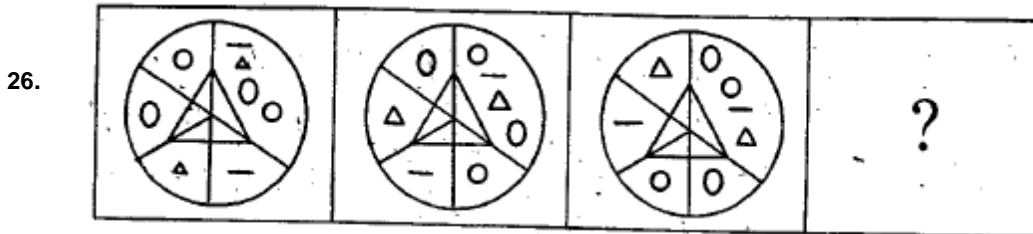
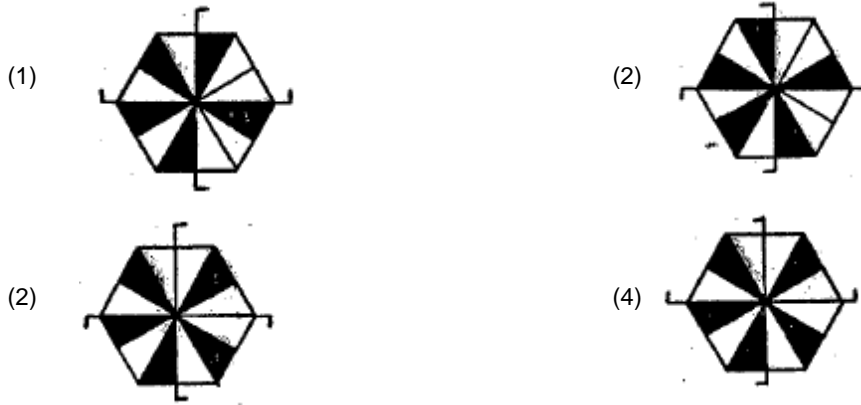
- (1) 6 meter
(3) 10 meter

- (2) 8 meter
(4) 14 meter

Q. 25 and 26. Directions:- In each of the following, question figures change in a particular order. Find out the correct figure from the alternatives which will replace the question mark?

25.





Q. 27. and 28. Directions In the following questions there is a specific relationship between the first and second term. The same relationship exists between the third and the fourth term. Finding the relationship select the correct term from the alternatives given.

27. $4 : 48 :: ? : 100$

- (1) 7
- (2) 5
- (3) 6
- (4) 10

28. $45 : 54 :: 46 : ?$

- (1) 83
- (2) 72
- (3) 68
- (4) 58

29. If a man facing east rotates in clockwise direction through 45° and later in anticlockwise direction through 270° , then which direction is he facing ?

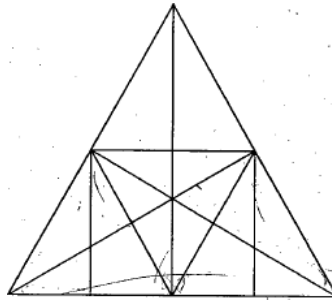
- (1) South-East
- (2) West
- (3) South-west
- (4) South

Q. 30 and 31. Directions: Find the odd term.

30. (1) 749 (2) 694
 (3) 568 (4) 487

31. (1) 4321 (2) 3212
 (3) 2116 (4) 6211

32. Directions: Observe the figure and the number of isosceles triangles which are not equilateral.

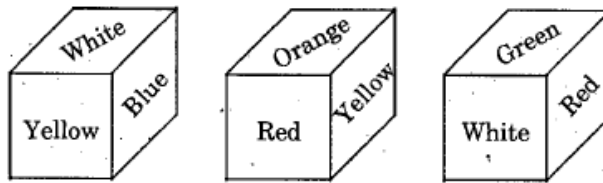


- (1) 6
- (2) 8
- (3) 10
- (4) 12

Q. 33 and 34 Directions: Answer the following questions based on the information given below : (1) Bhanudas, Gopal, Amar, Akhil and Chaitanya each practice one of the professions farming, Lawyer, Doctor, Teacher, • Photographer. (2) Akhil who is richer than Amar and Chaitanya is a lawyer. (3) Farmer is the richest of all. (4) Occupation of the poorest is photography. (5) Amar is a doctor and Gopal is a photographer. (6) Akhil is more richer than Amar but less richer than Bhanudas. Then:

33. What is the occupation of Chaitanya?
- (1) Lawyer
 - (2) Doctor
 - (3) Farmer
 - (4) Teacher
34. Who among the following is farmer ?
- (1) Alchil
 - (2) Bhanudas
 - (3) Gopal
 - (4) Chaitanya

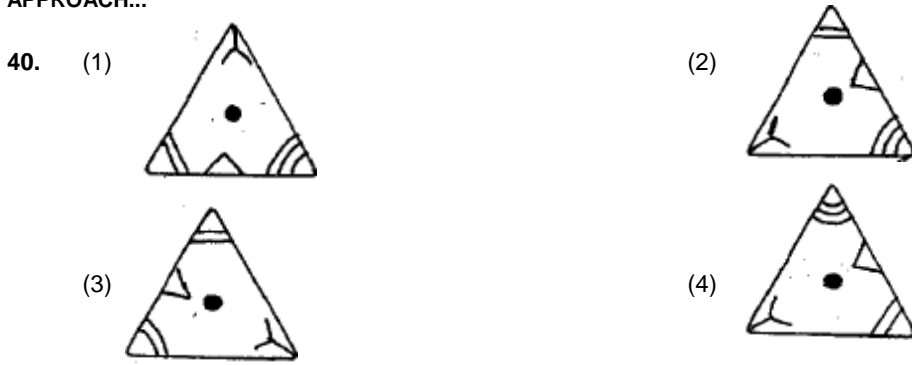
Q. 35 and 36 Directions:- Three positions of a cube are shown in figure. Observe the colours and answer the following questions.



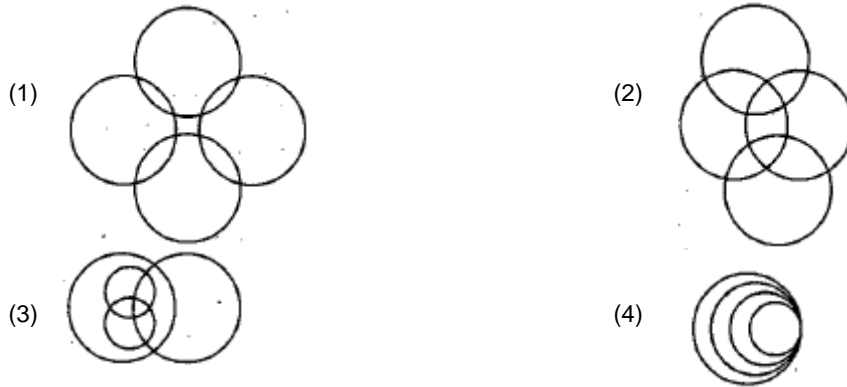
35. Which coloured surface is opposite to red coloured surface?
- (1) Blue
 - (2) Orange
 - (3) Yellow
 - (4) White
36. Which coloured surface is opposite to yellow coloured surface?
- (1) White
 - (2) Red
 - (3) Orange
 - (4) Green
37. Meghana travels 10 km towards south, then turns left and travels 35 km, again turns left and travels 40 km, then she turns right and travels 5 km and reaches her workplace to the bank. What is the distance between Meghana's house and bank ?
- (A) 50 km
 - (B) 39 km
 - (C) 40 km
 - (D) 30 km
38. A rhythmic arrangement of alphabets is given. The missing letter alphabets appear in the same order as in one of the alternative answers. Find the correct alternative.
- bcdbc—deabd—bcdbc—dc—b

Q. 39 and 40 Directions: Find the odd figure.

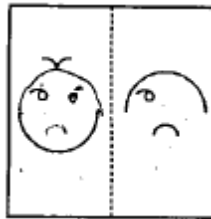
- 39.
- (1)
 - (2)
 - (3)
 - (4)



41. Some students of a village school stay in the village itself. Some students come from neighbouring villages. Some students study in English medium, while some study in Marathi medium. Of the following figures which figure represents the above information?

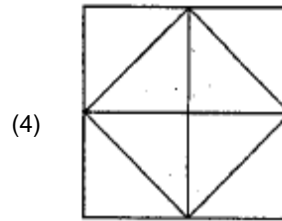
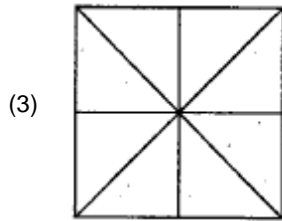
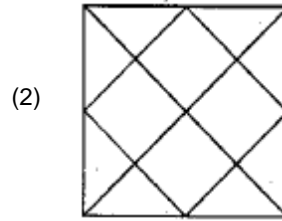
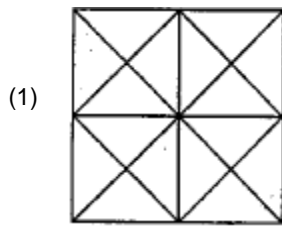


42. Directions In the figure given below, a transparent square shaped paper is folded along the dotted lines. What figure is obtained ? Find the figure from the alternative figures given.



43. A folded piece of square paper is shown as question figure. The paper is Unfolded. How will it look is shown in the alternatives. Select the correct alternative.





44. In the following question, there is a specific relationship between the numbers inside the bracket and outside the bracket in each row. Find the relation and select the correct alternative to replace the question mark

3(45)6

7(70)4

5(?)8

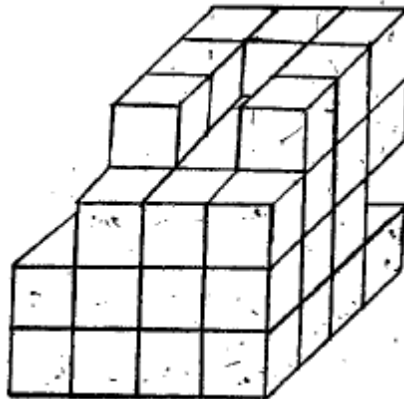
(1) 84

(2) 78

(C) 94

(D) 100

Q. 45 and 46 Directions: In the following figure small cubes are arranged in a particular manner as shown. Observe the arrangement and answer the following questions.



45. What is the total number of small cubes ?

(1) 52

(2) 49

(3) 47

(4) 45

46. What is the total number of blocks whose three surfaces are seen ?

(1) 12

(2) 13

(3) 14

(4) 15

Q. 47 and 48 Directions: Two tables are given below in which two groups of alphabets are written. In table I the rows and columns are numbered 0-4 and in table II the rows and columns are numbered 5-9. The alphabets in the tables are represented first by their row number and then by their column number.
Eg. — R is represented as R = 10, 42.

Table I

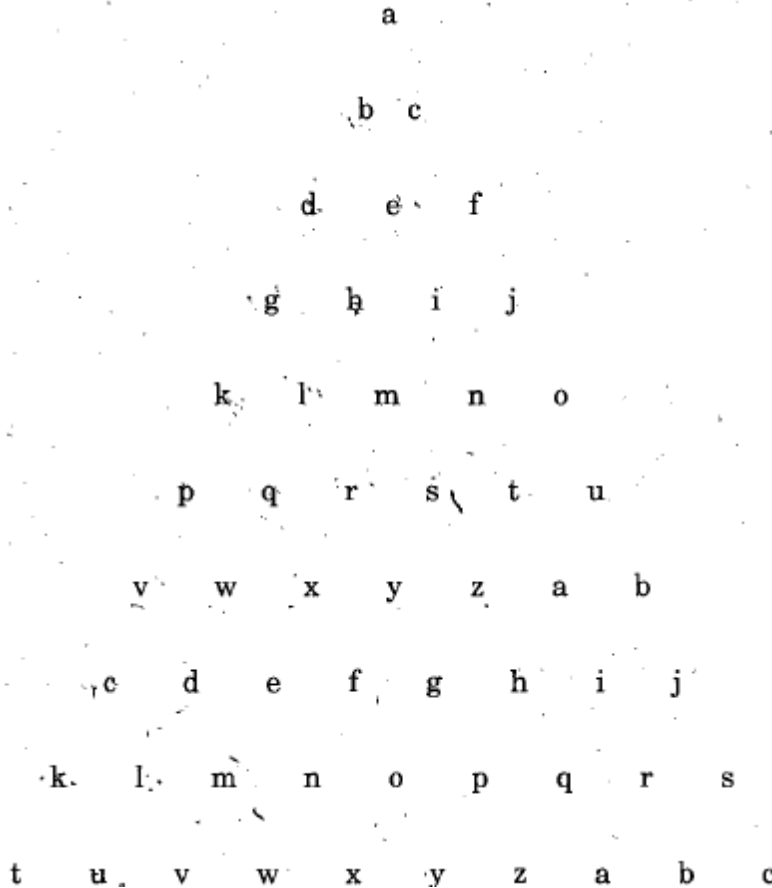
	0	1	2	3	4
0	A	R	V	N	D
1	R	N	D	V	A
2	D	V	N	A	R
3	N	D	A	R	V
4	V	A	R	D	N

Table II

	5	6	7	8	9
5	K	I	L	E	T
6	E	T	K	I	L
7	L	K	E	T	I
8	T	L	I	K	E
9	I	E	T	L	K

47. Which group of numbers represents LEAD ?
 (1) 57, 65, 00, 12
 (2) 75, 96, 31, 43
 (3) 98, 69, 23, 14
 (4) 86, 77, 41, 40
48. Which group of numbers represents RINK?
 (1) 42, 79, 30, 78
 (2) 10, 68, 43, 55
 (3) 24, 87, 11, 89
 (4) 01, 95, 22, 67

Q. 49 and 50: Directions observe the pyramid of alphabets. Answer the following questions.



49. dheb, kqlg, cluk, ?
 (1) gihd
 (2) kqwp
 (3) pwdv
 (4) vdic
50. bhr : cis :: rxem : ?
 (1) jnsy
 (2) szhq
 (3) dhms
 (4) giry

LANGUAGE TESTING – ENGLISH

Directions (Q. Nos. 1-5) :

Read the passage and Answer the questions based on it :

In towns and cities of north and west India, kite flying is a craze. People fly their kites mostly from the roofs of their houses. At some places kites are flown from open grounds. Being a fun sports all times, kites are flown throughout the year. However there are some special occasions, on which every enthusiast involves himself in *Patang Baazi*. These occasions include Makar Sankranti, Basant Panchami, Raksha Bandhan, and Independence Day.

Basant Panchami is one of the biggest festivals of North India. It heralds both the approach of the harvest and the end of winter. This spring festival is celebrated by flying kites, mainly of yellow colour, which represents the ripening mustard in the fields. From the morning onwards, the roofs of almost every house become full of young and old keeping their kites afloat. By early afternoon, the sky becomes peppered with kites of different colours and sizes. The fun of Basant Panchami does not preclude the intense competition that is a unique north Indian phenomenon-cutting each other's kite lines. Each time a kite's lifeline is severed, a cheer, "Bo- kata: (loosely translated as "kite cut off"), is sent up by the victor.

1. What does the yellow colour kite represent ?

(1) End of winter	(2) Ripening of mustard
(3) Harvest season	(4) All of these

2. Pick out the antonyms for 'Victor' :

(1) Winner	(2) Loser
(3) Rivals	(4) Master

3. Which festivals are mentioned in the passage ?

(1) Basant Panchami	(2) Makar Sankranti
(3) Both (1) and (2)	(4) None of these

4. In which season is Basant Panchami celebrated ?

(1) Summer	(2) Winter
(3) Autumn	(4) Spring

5. Which of these pairs is the odd man out ?

(1) Flying kites	(2) Biggest festival
(3) Yellow colour	(4) Paper lamps

SPACE FOR ROUGH

Directions (Q. Nos. 6-10) :

Read the following passage and answer the questions based on it :

It could be a scene straight out of a horror film. Only it was reality in suburban Mumbai. Rain lashed on the ground. A hundred children wailed in terror in a cramped, dark hall. Water gushed in from all sides and inched up. The inmates of Additional Bal Griha of the Children's Aid Society mostly terrified children, sang their daily prayer : "Itni shakti humme dena data". Asma, however, was the odd one out. She started calculating how soon the children will start drowning. "I could only think of one thing. That I couldn't bear to see the smaller ones drown. I am their didi." She picked up two of the smaller kids and jumped into the water nearly five feet of dirty, black liquid. "I don't know how to swim. So, slowly. I moved across the slippery ground, keeping my head up to keep the water from getting into my mouth and nose." She made over a dozen such trips, carrying nearly 40 kids on her shoulders to safety. Wasn't she scared ? "Nothing scares me." she says. Why didn't any of the other inmates join her ? "Oh, well, I'm the tallest!" The girl doesn't know who or where her parents are ("Kya pata" she says). Nor does she care to know about her life history from the orphanage files. But Asma certainly knows more about parenting than most. She loves to watch TV serials.

6. The natural calamity that the passage mentions is :
- | | |
|-------------------------|-----------------|
| (1) Floods | (2) Heavy rains |
| (3) Electricity failure | (4) Waterfall |
7. The most courageous act of Asma was :
- | |
|--|
| (1) Rescuing the children. |
| (2) Taking care of small kids |
| (3) Plunging in water to save kids though she could not swim |
| (4) Being of help to others |
8. The incident happened in :
- | | |
|---------------|------------------|
| (1) A hallway | (2) An orphanage |
| (3) A school | (4) A TV serial |
9. In what sense was Asma the 'odd one' out ?
- | |
|--|
| (1) She could not swim |
| (2) She did not know who her parents were |
| (3) She was not scared |
| (4) She ventured in the water to save younger kids while others just watched |
10. Which word in the passage means 'cried in a low pitch' ?
- | | |
|------------|-------------|
| (1) Wailed | (2) Cramped |
| (3) Terror | (4) Inmates |

Directions (Q. Nos. 11-15) :

Read the passage and answer the following questions :

In 1933-34 I got my first chance to play in Test cricket in India. The M.C.C. team under Douglas Jardine was in our country to play three Test matches. Fortunately I was able to do sufficiently well to retain my place in all the three Tests. During the Test matches my younger sister, Laxmi, had given me an autograph book to get the autographs of the visiting players. I had carefully put down M.C.C. Touring Team — 1933-34 on one of the pages. Under this heading I took the autographs of all the 16 players who visited India. Two months later I had an occasion to approach Gandhiji for his autograph which my sister was very keen to have. There were quite a few people present when I made my request. Gandhiji smiled and leafed through the pages of the autograph book and then underneath the names of the M.C.C. players wrote. '17 — M.K. Gandhi'. I immediately understood the greatness of the man and what had prompted him. By that unforgettable signature as the seventeenth man of the M.C.C. team he showed that although he was prepared to fight the British Government tooth and nail for the independence of India, he had nothing against the common man of England and was prepared to put himself down as the seventeenth man of an English Cricket Team.

11. Which nations' teams played three test matches ?
- | | |
|----------------------------|-------------------------|
| (1) West' Indies and India | (2) England and India |
| (3) Australia and India | (4) S. Africa and India |
12. With whom was Mahatma Gandhi fighting for freedom ?
- | | |
|------------------------|----------------------|
| (1) British people | (2) British Governor |
| (3) British Government | (4) All of these |
13. The phrase 'to put down' means:
- | | |
|--------------|-----------|
| (1) wear | (2) write |
| (2) get down | (4) keep |
14. Why did Mahatma Gandhi put himself down in the English team ? Because :
- (1) he had nothing against the British
 - (2) he had nothing against the British government
 - (3) he had nothing against the British common people
 - (4) none of the above
15. Author's younger sister Laxmi had given him the autograph book for :
- (1) writing down scores
 - (2) listing down the team members
 - (3) getting autographs of visiting players
 - (4) getting autograph of Mahatma Gandhi

Directions (Q. Nos. 16 and 17) :

The following five sentences come from a single paragraph. The first and the last sentences are given. Choose the right order in which the sentences (**P, Q, R**) should appear to complete the paragraph :

16. **S1** : One day I decided to make my favourite sandwich.
S2 :
S3 :
S4 :
S5 : I then sprinkled pepper and ate my sandwich with relish.
P : Then I toasted the bread and put some mayo, tomatoes and lettuce on it.
Q : First I washed the tomatoes and the lettuce and chopped them.
R : So I went to the kitchen and gathered all the things needed on the counter.
Options :
(1) PQR (2) PRQ
(3) RQP (4) RPQ

17. **S1** : The alarm goes off and I hit snooze and go back to bed
S2 :
S3 :
S4 :
S5 : When I finally get ready, I realise I have no time for breakfast and have to leave without it.
P : Then it goes off again and I snooze it again and go to bed.
Q : Finally I realise I have very less time to get up and get ready.
R : It goes off the third time and once more snooze it.
Options :
(1) PRQ (2) RQP
(3) QPR (4) RPQ

Directions (Q. Nos. 18 and 19) :

The following questions have the second sentence missing. Choose the appropriate sentence from the given options to complete it. The second sentence should link the first and last sentences.

18. **A** : My greatest strength is my exceptional teachers.
B :
C : It was due to this that I am able to think creatively.
(1) I read a lot of books.
(2) They have given me the liberty to think individually and learn by experimentation.
(3) I have always liked to go to school and enjoyed learning.
(4) I have successfully cleared many competitive exams.
19. **A** : On a hot summer afternoon, two friends walked a few miles.
B :
C : They wanted to stop and get some water.
(1) They became thirsty after walking in the hot sun.
(2) They had to reach on time to catch a bus.
(3) They had their school bags in their hands.
(4) They saw some big, shady trees on the way.

Directions (Q. Nos. 20 to 29) :

Fill in the blanks with the most appropriate options from the given alternatives :

20. I don't expect him to change his mind because I know he is very
- (1) patient (2) hardworking
(3) abstinate (4) obstinate
21. Our teacher is a person. She easily captivates the attention of the students.
- (1) lethargic (2) dynamic
(3) iconic (4) uninteresting
22. My father gets very angry with us whenever we make a mistake. He has no for mistakes.
- (1) tolerance (2) impatience
(3) solution (4) tolerate
23. Teachers like students who never break rules.
- (1) mischievous (2) studious
(3) stubborn (4) obedient
24. We couldn't see the meteor shower due to weather conditions.
- (1) hot (2) cold
(3) unfavourable (4) favourable
25. He is wet He of the sea.
- (1) has just comes out (2) just comes out
(3) had just come out (4) was just coming out
26. Raman can speak, Telugu Marathi and English.
- (1) besides (2) with
(3) beside (4) alongside
27. People will catch the thief, ?
- (1) will not they (2) will they
(3) won't they (4) don't they
28. If it snows this weekend, we skiing.
- (1) go (2) will go
(3) could going (4) are going
29. you like buy jewellery or a dress ?
- (1) Can (2) Could
(3) Will (4) Would

Directions (Q. Nos. 30 to 35) :

Select the correct meaning of the underlined phrases or idioms :

- 30.** The sailor found himself between the devil and deep sea.
(1) lost in the deep ocean
(2) facing two challenges
(3) facing two equally bad alternatives
(4) confronting two opportunities
- 31.** Our school is within a stone's throw of the railway station.
(1) within a certain radius
(2) at a short distance
(3) within a definite circumference
(4) very far off
- 32.** He did me a good turn by recommending me for the post of Vice-Principal.
(1) became suddenly good
(2) improved my prospects
(3) did an act of kindness
(4) returned my kindness
- 33.** One should not indulge in tall talks.
(1) flattery
(2) boasting
(3) ideal talk
(4) irrelevant talk
- 34.** He is always picking holes in all the projects.
(1) asking irrelevant questions
(2) suggesting improvements
(3) finding faults
(4) creating problems
- 35.** He does not like to be friendly with Sarita, he always gives her a cold shoulder.
(1) tries to be unfriendly by not taking notice of her
(2) argues with her
(3) insults her
(4) creates trouble for her

SPACE FOR ROUGH

Directions (Q. Nos. 36 to 43) :

In the following passage there are some numbered blanks. Fill in the blanks by selecting the most appropriate word for each blank from the given options :

The earth is one of the known planets that circles the sun. In (36) times, the men who studied the (37) noticed that while certain heavenly (38) seemed fixed in the sky, others seemed to (39) about. The latter they named planets or wanderers. (40) astronomers have discovered that the four planets Jupiter, Saturn, Uranus and Neptune are surrounded by poisonous gases and are so (41) that any living thing attempting to (42) on them would instantly be frozen. Of the five remaining planets, Venus closely (43) the earth in size.

36. (1) past (2) antique
(3) ancient (4) modern
37. (1) light (2) stars
(3) earth (4) sun
38. (1) bodies (2) objects
(3) things (4) entities
39. (1) jump (2) roam
(3) run (4) move
40. (1) upstart (2) future
(3) modern (4) new
41. (1) cold (2) lukewarm
(3) dull (4) frigid
42. (1) squat (2) land
(3) walk (4) stay
43. (1) imitates (2) negates
(3) resembles (4) identify

SPACE FOR ROUGH

Directions (Q. Nos. 44 to 47) :

Select the most appropriate option to fill in the blanks from the given options:

44. When will you hand your assignment ?
(1) into (2) back
(3) down (4) in
45. The were arrested for illegally hunting the bears.
(1) poachers (2) rangers
(3) soldiers (4) roachers
46. My sister upset the kettle of boiling water and her right hand badly.
(1) scorched (2) scalded
(3) sizzled (4) wounded
47. She made her stepson her to a large fortune.
(1) hare (2) heir
(3) hair (4) here

Directions (Q. Nos. 48 to 50) :

Choose the antonym of the underlined word from the four alternatives given:

- 48: Knowledge is the elixir of life.
(1) ignorance (2) cleverness
(3) intelligence (4) illiteracy
49. A deficit budget is harmful for the nation's economy.
(1) profit (2) bonus
(3) benefit (4) surplus
50. The adventurous young man enjoyed bungee jumping.
(1) fearless (2) fearful
(3) dangerous (4) careless

SPACE FOR ROUGH

NATIONAL TALENT SEARCH EXAMINATION, 2016-17

STATE LEVEL EXAMINATION – QUESTION BOOKLET

SCHOLASTIC APTITUDE TEST

CENTRE CODE											
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SEAT. NO.											
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CLASS X

MEDIUM : - ENGLISH

DATE : 6 NOVEMBER 2016, DAY : SUNDAY

[TIME : 14.15 P.M. TO 15.45 P.M.]

MAXIMUM MARKS : 100

Time : 90 Minutes

Total Pages : 40

1. The work done in moving 10 lithium nuclei (Atomic number of Li = 3) through a potential difference of 10 V is :
 Charge on an electron is 1.6×10^{-19} C
- (1) 4.8×10^{-16} J (2) 4.8×10^{-19} J
 (3) 4.8×10^{-18} J (4) 4.8×10^{-17} J

2. Choose the correct alternative which matches second and third column with first column :

Column I	Column II	Column III
(I) Magnetic field is produced near current carrying conductor	(A) Right hand thumb rule	(a) Michael Faraday
(II) Electric current is generated in a conductor moving in a magnetic field	(B) Fleming's right hand rule	(b) Hans Oersted

- (1) (I) – (B) – (a), (II) – (B) – (b) (2) (I) – (A) – (b), (II) – (B) – (b)
 (3) (I) – (B) – (b), (II) – (A) – (a) (4) (I) – (A) – (b), (II) – (B) – (a)

3. M.R.I. is based on
- (1) Magnetic effect of electric current (2) Heating effect of electric current
 (3) Chemical effect of electric current (4) Conduction of electric current

4. For refraction of light from air to rock salt, water and diamond if :

V – Velocity of light in air
 V_1 – Velocity of light in rock salt
 V_2 – Velocity of light in water
 V_3 – Velocity of light in diamond, then

Choose the correct alternative :

- (1) $V_3 > V_1 > V_2 > V$ (2) $V > V_2 > V_1 > V_3$
 (3) $V > V_1 > V_2 > V_3$ (4) $V_1 > V > V_3 > V_2$

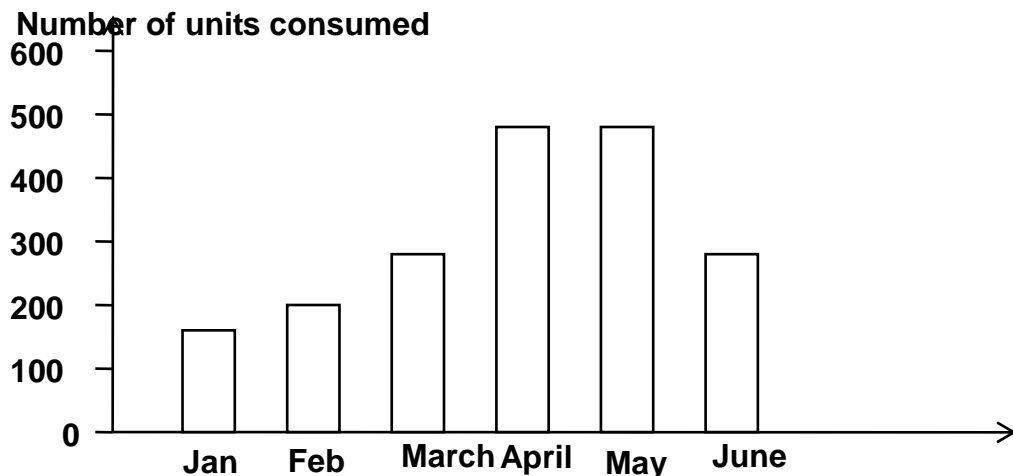
5. When white light is passed through an upside down (inverted) prism then

- (1) White light is obtained
 (2) Spectrum is obtained with violet colour undergoing maximum deviation and red colour undergoing minimum deviation
 (3) Spectrum is obtained with red colour undergoing maximum deviation and violet colour undergoing minimum deviation
 (4) light gets blocked

6. Select the correct sequence of light entering the different parts of human eye :

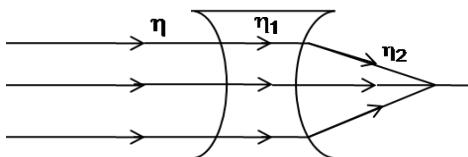
- (1) cornea, lens, iris, pupil, retina (2) pupil, cornea, iris, lens, retina
 (3) cornea, pupil, iris, lens, retina (4) cornea, iris, pupil, lens, retina

7. Graph shows the number of units consumed by a family for six months. Find the cost of energy for four months from March to June if M.S.E.B. increased its unit rate from ₹ 3.50 to ₹ 4.50 for April and May and again decreased by ₹ 2 for June :

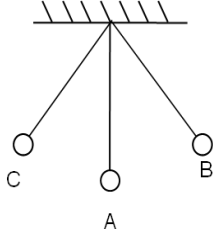


- (1) ₹ 6,000 (2) ₹ 6,030
 (3) ₹ 6,300 (4) ₹ 6,200

8. Object placed _____ of lens or mirror give infinite magnification.
 (1) at focus (2) at infinite distance
 (3) between F_1 and $2F_1$ (4) at $2F_1$
9. If a 3 cm tall object placed perpendicular to principal axis of a convex lens of focal length 156 cm produces a real inverted image of height 15 cm, then its object distance (u) is and image distance (v) is
 (1) $u = -18 \text{ m}, v = +90 \text{ m}$ (2) $u = +18 \text{ cm}, v = -90 \text{ cm}$
 (3) $u = -18 \text{ cm}, v = +90 \text{ cm}$ (4) $u = +18 \text{ cm}, v = +90 \text{ cm}$
10. If the path of parallel light through a concave lens is as shown in the figure, where η , η_1 and η_2 are refractive indices, then



- (1) $\eta > \eta_1 = \eta_2$ (2) $\eta = \eta_1 < \eta_2$
 (3) $\eta = \eta_1 > \eta_2$ (4) $\eta < \eta_1 = \eta_2$
11. Distance covered by an object thrown upwards in the last second
- (1) depends on initial velocity (2) depends on mass
 (3) depends on air velocity (4) is always same
12. In motion of a simple pendulum acceleration and kinetic energy are maximum at



- (1) C, B, A (2) A, B, C
 (3) A only (4) B, C only
13. A washing machine rated 300 W is operated one and half an hour/day. If the cost of unit ₹ 3.50, find the cost of energy to cooperate a washing machine for the month of September :
 (1) ₹ 27.90 (2) ₹ 35.25
 (3) ₹ 47.25 (4) ₹ 55.90
14. Elements A, B, C, D have atomic numbers as 35, 19, 17, 9 respectively. Choose the odd element.
 (1) A (2) B
 (3) C (4) D
15. The elements P, Q, R, S belong to group number 14, 15, 16, 17 respectively. Select the elements in increasing order of their electronegativity :
 (1) $P < Q < R < S$ (2) $P > Q > R > S$
 (3) $R < Q < P < S$ (4) $Q < P < S < R$
16. For the following reaction which statement is true?
 $2\text{H}_2\text{S}(\text{g}) + \text{SO}_2(\text{g}) \rightarrow 3\text{S}(\text{s}) + 2\text{H}_2\text{O}(\text{l})$
 (a) H_2S is reduced (b) SO_2 is oxidised
 (c) H_2S is reducing agent (d) SO_2 is oxidizing agent
 (1) (a) and (c) (2) (b) and (d)
 (3) (a) and (b) (4) (c) and (d)
17. A science teacher wrote 3 statements about rancidity :
 (i) When fats and oils are reduced, they become rancid
 (ii) In chips packet, rancidity is prevented by oxygen

(iii) Rancidity is prevented by adding antioxidants

Select the correct option :

- (1) (i) (2) (ii) and (iii)
(3) (iii) (4) (i), (ii) and (iii)

18. The gas evolved during the reaction of CuCl_2 and conc. H_2SO_4 is

- (1) Natural (2) Basic
(3) Highly basic (4) Acidic

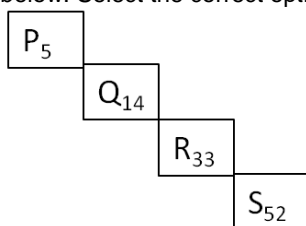
19. Which of the following substances has the lowest pH-value?

- (1) Tomato juice (2) Vinegar
(3) Washing soda (4) Human blood

20. Which of the following is most reactive metal?

- (1) Fe (2) Zn
(3) Ca (4) Al

21. In the given square P, Q, R, S with atomic number is written are metalloids. About this the 4 statements are given below. Select the correct option of the true statements :



- (a) Element after square P is a non-metal (b) Square R represents metalloid
(c) Element just before square R is a metalloid (d) Element just before square S is a non-metal
(1) (a), (b) and (c) (2) (a), (b) and (d)
(3) (b) and (c) (4) (a), (b), (c) and (d)

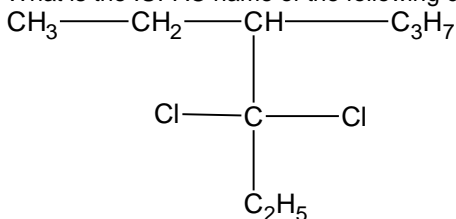
22. In the following structural formulae one IUPAC name is incorrect. Identify it :

- (1) $\text{CH}_3\text{-CH}_2\text{-}\overset{\text{O}}{\parallel}{\text{C}}\text{-CH}_3$ -Butanone (2) $\text{CH}_3\text{-CH}_2\text{-}\overset{\text{H}}{\underset{\text{O}}{\text{C}}}\text{=O}$ -Propana
(3) $\text{CH}_3\text{-CH}_2\text{-}\overset{\text{O}}{\parallel}{\text{C}}\text{-OH}$ -Ethanoic acid (4) $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_2\text{-OH}$ -Butanol

23. Select a compound which gives effervescence with NaHCO_3 solution :

- (1) $\text{C}_2\text{H}_6\text{O}$ (2) $\text{C}_2\text{H}_4\text{O}_2$
(3) $\text{C}_2\text{H}_4\text{O}$ (4) $\text{C}_3\text{H}_8\text{O}_2$

24. What is the IUPAC name of the following compounds?



- (1) 4-Ethyl-3, 3-dichloro heptanes (2) 4-Ethyl-3, 3-dichloro hexane
(3) 4-Ethyl-3-chlorohexaneq (4) 3, 3-dichloro-4-butyl heptanes

25. X and Y are the two atomic species

	X	Y
Number of Proton	8	8
Number of Neutron	8	10

Select the correct statement about X and Y :

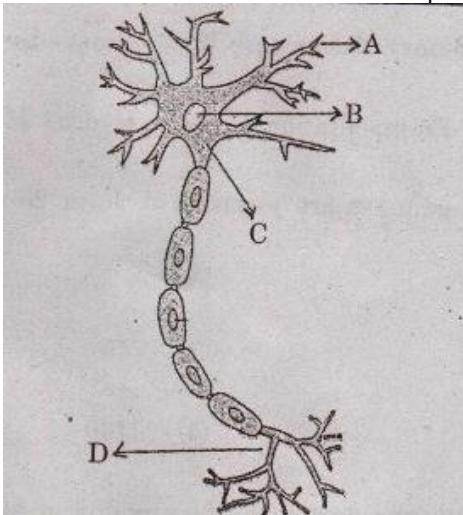
- (1) X and Y are isotopes (2) X and Y have different chemical properties
(3) X and Y have different physical properties (4) X and Y are the atoms of different elements

26. How many electrons are present in M-shell of an element with Atomic number 20?
 (1) 8 (2) 6
 (3) 18 (4) 2
27. Which of the following harmful products is not produced in the biochemical reactions of the cell of living organisms?
 (1) Urea (2) Uric acid
 (3) Ammonia (4) Lymph
28. Match the following components of Column 'A' with the components of Column 'B' :

Column-I	Column-II
(1) Venus flytrap	(A) A trap which looks and smells like a flower to catch the insects
(2) Balsam	(B) Flower opens in the morning
(3) Drosera	(C) Fruit bursts open to scatter the seeds
(4) Lotus	(D) Tentacles on the leaves to trap the insects
(1) (1) – (A), (2) – (C), (3) – (D), (4) – (B)	(2) (1) – (A), (2) – (C), (3) – (B), (4) – (D)
(3) (1) – (D), (2) – (C), (3) – (A), (4) – (B)	(4) (1) – (D), (2) – (B), (3) – (A), (4) – (C)

29. Select the correct sequence of the steps of human nutrition :
 (1) Ingestion → Digestion → Absorption → Assimilation → Egestion
 (2) Ingestion → Digestion → Assimilation → Absorption → Egestion
 (3) Ingestion → Assimilation → Digestion → Absorption → Egestion
 (4) Ingestion → Absorption → Digestion → Assimilation → Egestion

30. Where the environmental information is picked in the neuron?



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

31. Which plant hormone is found in greater concentration in fruits and seeds?
 (1) Auxins (2) Gibberellins
 (3) Cytokinins (4) Abscisic acid
32. Identify the wrong pair from the following :
 (1) Euglena – Binary fission (2) Yeast – Budding
 (3) Spirogyra – Fragmentation (4) Hydra – Multiple fission
33. How many male gametes are essential to form 25 seeds in Angiospermi plants?
 (1) 25 (2) 50
 (3) 75 (4) 100
34. A basic process in reproduction is the creation of a Copy.

- (1) RNA
(3) Nucleus
- (2) DNA
(4) Mitochondria

35. Identify a fish who breathes air through its lungs :

- (1) Lungfish
(3) Dogfish
- (2) Rohu
(4) Sting Ray

36. A pea plant with yellow and round seeds (YYRR) is crossed with a pea plant having green and wrinkled (yyrr) seeds then in F₂ generation of this dihybrid cross 320 plants are produced. Out of which 180 plants have same phenotypic characters. Identify this phenotype.

- (1) Yellow and wrinkled seeds
(3) Green and round seeds
- (2) Yellow and round seeds
(4) Green and wrinkled seeds

37. Which gas emits on burning of rice straw?

- (1) SO₂
(3) O₃
- (2) NH₃
(4) H₂S

38. If biomedical waste not handled properly, then which disease is a potent source in human being?

- (1) Cancer
(3) AIDS
- (2) Heart diseases
(4) Leprosy

39. Which category lies in between the genus and order in the classification of plants?

- (1) Species
(3) Family
- (2) Class
(4) Kingdom

40. 'Earthworm, a friend of farmer belongs to phylum.

- (1) Arthropoda
(3) Mollusca
- (2) Echinodermata
(4) Annelida

41. Identify incorrect sentence related to Asian continent :

- (1) This continent is the biggest of all from the perspectives of area and population
(2) The continent got the name from the word 'Aasu'
(3) The renaissance era was started from this continent
(4) The emergence of old religion and culture from this continent

42. Which one of the following atomic reactors is not present in 'Atomic Reserch City' at Mumbai?

- (1) Apsara
(3) Zarlina
- (2) Narora
(4) Purnima

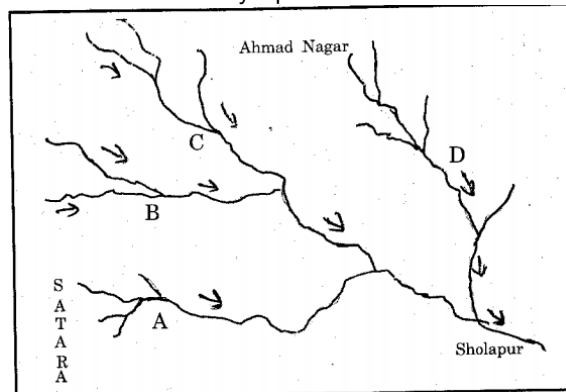
43. Who was the painter of this famous immortal picture?



- (1) Michelangelo
(3) Raphael
- (2) Leonardo-da-Vinci
(4) Donato

44. Who one of the following was not navigator?
 (1) John Cabot (2) John Key
 (3) Amerigo Vespucci (4) Christopher Columbus
45. Arrange the following events in chronological sequence :
 (I) Hitler adopted 4th year plan (II) Hitler adopted 4th year plan
 (III) Hitler brought out an agreement with Italy and Japan
 (IV) Hitler captured the Rhineland
 (1) (II), (I), (IV), (III) (2) (III), (IV), (II), (I)
 (3) (I), (III), (II), (IV) (4) (IV), (II), (I), (III)
46. Choose the inappropriate pair :
 (1) Business concessions took from king - Vasco-da-Gama
 (2) Request to the Japanese Government - Commodore Perry for business concession
 (3) The book written by him which was created among the European people a kind of attraction towards Africa – Bartholomew Dias
 (4) Motivated the navigators – King Henry
47. Which one of the following is not computer's input device?
 (1) Keyboard (2) Scanner
 (3) Mouse (4) Printer
48. is the first archaic scripture of the Aryans.
 (1) Yajurveda (2) Samveda
 (3) Atharvaveda (4) Rigveda
49. The communist thinker Karl Marx belong to _____ country.
 (A) Russia (B) France
 (C) Germany (D) Turkistan
50. 'UNO' was found in _____
 (A) New York (B) Washington
 (C) San Francisco (D) The Hague
51. Due to which action of Japan, the Asian Continent was engulfed into the international conflict?
 (1) The battle between China and Japan (2) Japan forced its army into the Indo- China Region
 (3) Japan attacked on Pearl Harbour (4) The rise of Militarism in Japan
52. Tipu Sultan was defeated due to collaboration with which rulers?
 (1) British – Maratha - Nizam (2) Nizam – Nawab of Karnataka - British
 (3) Maratha – British – Karnataka Nawab (4) King of Travancore – Maratha - British
53. Who has written the book 'Rights of Man'?
 (1) Thomas Jefferson (2) Thomas Penn
 (3) George Washington (4) Rousseau
54. Atomic energy plant has not been erected at ____
 (1) Talcher (2) Jadugad
 (3) Tuticorin (4) Nangal
55. Which nation is not included in the Committee an executive body of the League of Nations?
 (1) France (2) Italy
 (3) Soviet Russia (4) Germany
56. Hari -ke – Pattan National Wetland is situated in ____ state.
 (1) West Bengal (2) Assam
 (3) Punjab (4) Haryana
57. The correct order of Central Highlands of the peninsular Plateau Region from East to West is :
 (1) Chota Nagpur → Baghelkhand → Bundelkhand → Malwa Plateau
 (2) Baghelkhand → Bundelkhand → Malwa Plateau → Chota Nagpur
 (3) Bundelkhand → Malwa Plateau → Chota Nagpur → Baghelkhand
 (4) Malwa Plateau → Chota Nagpur → Baghelkhand → Bundelkhand

58. From the Physiography point of view which of the following region is situated to the east to Western Ghats known as "MuktaMaidan"?
- (1) Palkonda Hills (2) Biligiri Hills
(3) Nallamalla Hills (4) Velikonda Hills
59. Which of the following is not included in the Deccan Plateau?
- (1) Satpuda – MahadeoMaikal Range (2) Karnataka – Telangana Plateau
(3) Malwa Plateau (4) Maharashtra Plateau
60. Vegetal cover is thin in Rajasthan Plain region due to :
- (1) Winds blow with high velocity (2) Very high temperatures
(3) Dry Climate (4) Scanty rainfall
61. Along the shore of the Dal lake in Kashmir _____ is cultivated
- (1) Apple (2) Cherry
(3) Pears (4) Grapes
62. In the figure given below, which river is indicated by alphabet 'A'?



- (1) Man river (2) Bhima River
(3) Sina River (4) Nira River
63. Find the wrong pair having place and industry.
- (1) Durgapur – Iron and steel industry (2) Kanpur – Ship building industry
(3) Varanasi – Silk Sari (4) Barauni – Oil Refinery
64. If the countries sharing land border with India are arranged in ascending order of percentage, which country will be in the middle?
- Pakistan, China, Bhutan, Afghanistan, Nepal
- (1) Bhutan (2) Nepal
(3) Pakistan (4) Afghanistan
65. The eastern districts of Maharashtra _____ districts have more number of tanks and lakes.
- (1) Bhandara and Gondia (2) Wardha and Nagpur
(3) Chadrapur and Gadchiroli (4) Bhandara and Chandrapur
66. Which of the following regions is described as "Cold Desert"?
- (1) Sikkim Himalaya (2) Karakoram Ranges
(3) Ladakh Range (4) Kailas Range
67. Which of the following is known as "Canebrakes"?
- (1) Thick stands of tall grass (2) Forests with thick and tall trees
(3) Region affected by tropical cyclones (4) Region affected by floods
68. 'Shilong' belongs to which subdivision of the Himalaya?
- (1) The central Himalaya (2) The Kailas Range
(3) The Ladakh Range (4) The Eastern Himalaya
69. The region of older alluvium of the Ganga plain is known as _____
- (1) Khadar (2) Bhabar
(3) Bangar (4) Tarai

70. 'Bundelkhand' is situated in which direction in relation to Malwa Plateau?
 (1) South - East (2) South
 (3) West (4) North - East
71. Identify the correct pair of the following
 (i) Indian National Congress (A) Established in 1980
 (ii) Bharatiya Janata Party (B) Established in 1885
 (iii) Communist Party of India (C) Established in 1999
 (iv) Nationalist Congress party (D) Established in 1964
 (1) (i) – (D), (ii) – (C), (iii) – (B), (iv) - A (2) (i) – (C), (ii) – (B), (iii) – (A), (iv) – (D)
 (3) (i) – (D), (ii) – (A), (iii) – (C), (iv) – (B) (4) (i) – (B), (ii) – (A), (iii) – (D), (iv) – (C)
72. Which one of the following is not applicable for the parliamentary Democracy?
 (1) Two chief executives
 (2) Power vested in the parliament
 (3) Executive chiefs cannot be removed before the end of his tenure
 (4) In England and India, Parliamentary democracy is in existence
73. Who worked as the Chairperson of the Advisory Committee on fundamental rights of the Constituent Assembly?
 (1) Vallabhbaipatel (2) Pandit Jawaharlal Nehru
 (3) Dr.Rajendra Prasad (4) Dr.BabasahebAmbedkar
74. Who has written book called 'Stree – PurushTulana' Published in 1882?
 (1) Mahatma Phule (2) ShahuMaharaj
 (3) TarabaiShinde (4) SavitribaiPhule
75. People tend to migrate to more developed regions is an example of which inequality?
 (1) Political (2) Regional
 (3) Social (4) Linguistic
76. _____ refers to various activities related to the production, distribution and consumption of goods and services in a certain Geographical region.
 (1) Political Sovereignty (2) Sectoral distribution
 (3) An Economy (4) Natural Resources
77. Which day of the following is celebrated as World Consumer Day?
 (1) 15th March (2) 24th December
 (3) 10th December (4) 8th April
78. 'Economics is a science to study human well – being/welfare.' Who has defined it?
 (1) Prof. Adam Smith (2) Leonnel Robins
 (3) Prof. Kemmerer (4) Prof. Alfred Marshall
79. On Which factor of the following the decision regarding "How much to produce" does not depend upon?
 (1) Population growth (2) Level of Production
 (3) Size of Market (4) Availability of resources
80. Which is not a fiscal measure of the following to control inflation?
 (1) Increase in Taxation (2) Public Borrowings
 (3) Overvaluation (4) Increase in Bank Rate
81. In an A.P the sum of 'n' terms is $5n^2 - 5n$. Find the 10th term of the A.P
 (1) 80 (2) 90
 (3) 100 (4) 110
82. If $\frac{a}{x+y} = \frac{b}{y+z} = \frac{c}{z-x}$, then which of the following equations is true?
 (1) $a = b + c$ (2) $c = a + b$
 (3) $b = a \times c$ (4) $b = a + c$
83. The difference between the two roots of a quadratic equation is 2 and the difference between the cubes of the roots is 98, then which of the following is that quadratic equation?
 (1) $x^2 - 8x + 15 = 0$ (2) $x^2 + 8x - 15 = 0$

(3) $x^2 + 5x + 15 = 0$

(4) $x^2 - 5x - 15 = 0$

84. From a pack of 52 playing cards, face club cards are removed. The remaining cards are well shuffled and a card is drawn at random. Find the probability that the card drawn is a heart card.

(1) $\frac{1}{4}$

(2) $\frac{13}{49}$

(3) $\frac{3}{52}$

(4) $\frac{49}{52}$

85. A boat takes 7 hours to travel 30 km upstream and 28 km downstream. It takes 5 hours to travel 21 km upstream and to return back. Find the speed of the boat in still water

(1) 10 km/hr

(2) 20 km/hr

(3) 14 km/hr

(4) 6 km/hr

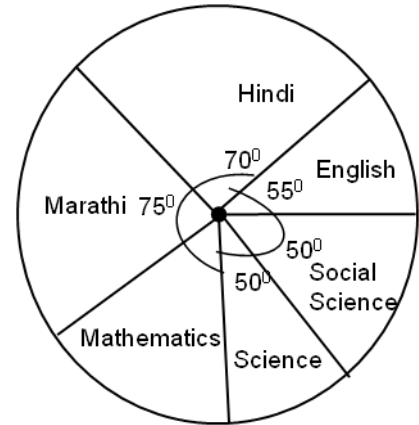
86. The marks scored by a student in an examination of 600 marks is shown in the following pie diagram. If he scored 60 marks in Mathematics, then find the percentage of marks that he secured in the examination.

(1) 60%

(2) 50%

(3) 75%

(4) 5%



87. $\sqrt{m^4 n^4} \times \sqrt[6]{m^2 n^2} \times \sqrt[3]{m^2 n^2} = (m,n)^k$, then find the value of k.

(1) 6

(2) 3

(3) 2

(4) 1

88. The cost of 20 guavas and 5 apples is same as that of 12 guavas and 7 apples then how many times the cost of an apple is to that of a guava?

(1) Two times

(2) half times

(3) four times

(4) five times

89. In a group of students, 10% students scored marks less than 20, 20% students scored marks between 20 to 40, 35% students scored marks between 40 to 60 and 20% students scored marks between 60 to 80. Remaining 30 students scored marks between 80 to 100. Find the mode of marks.

(1) 30

(2) 50

(3) 60

(4) 70

90. One of the root of a quadratic equation is $(3 - \sqrt{2})$, then which of the following is that equation

(1) $(x^2 - 6x - 7) = 0$

(2) $(x^2 + 6x - 7) = 0$

(3) $(x^2 + 6x + 7) = 0$.

(4) $(x^2 - 6x + 7) = 0$

91. In $\triangle ABC$, $m \angle B = 90^\circ$, $AB = 4\sqrt{5}$. $BD \perp AC$, $AD = 4$, then $A(\triangle ABC) = ?$

(1) 96 sq. units

(2) 80 sq.units

(3) 120 sq.units

(4) 160 sq.units

92. Side of a cube is increased by 50%, then what percent increase will be in the area of the vertical faces of the cube?

(1) 125%

(2) 150%

(3) 100%

(4) 50%

93. $\sin x = \frac{6 \sin 30^\circ - 8 \cos 60^\circ + 2 \tan 45^\circ}{2(\sin^2 30^\circ + \cos^2 60^\circ)}$, then x = how much?

(1) 30°

(2) 45°

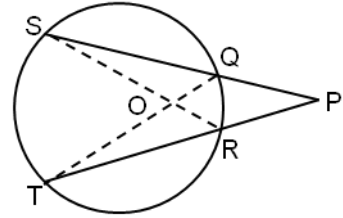
(3) 60°

(4) 90°

94. $P \equiv (1, -9)$, $Q \equiv (2, 5)$ and $R \equiv (6, 7)$ are the co-ordinates of the vertices of $\triangle PQR$, then find the co-ordinates of the centroid from the following alternative given:

- (1) $\left(\frac{10}{3}, \frac{-17}{3}\right)$ (2) (1,3)
 (3) (3,1) (4) (-3,1)

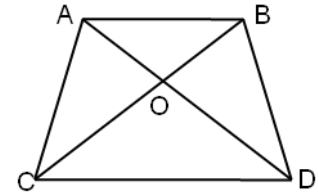
95. In the following figure secants QS and TR intersect each other at point P, which is outside the circle. O is the point of intersection of Chords SR and TQ. If OS = 5 cm, OT = 10 cm, TR = 12 cm, PR = 8 cm, then find l(PQ).



- (1) 6 cm (2) 10 cm
 (3) 12 cm (4) 16 cm

96. In the following figure, seg AB || seg CD. Diagonals AC and BD intersect at point O.

If $AO : OC = 1 : 3$, then $\frac{A(\Delta AOB)}{A(\Delta ABD)} = ?$



- (1) $\frac{1}{4}$ (2) $\frac{1}{9}$
 (3) 16 (4) 116

97. In ΔABC points P and Q trisect side AB. Points T and U trisect side AC and points R and S trisect side BC. Then perimeter of hexagon PQRSTU is how many times of the perimeter of ΔABC ?

- (1) $\frac{1}{3}$ times (2) $\frac{2}{3}$ times
 (3) $\frac{1}{6}$ times (4) $\frac{1}{2}$ times

98. $\frac{\sin^4 \theta - \cos^4 \theta}{1 - \sin^2 \theta} =$ how much

- (1) $1 - \cot^2 \theta$ (2) $1 - \tan^2 \theta$
 (3) $\tan^2 \theta - 1$ (4) $\cot^2 \theta - 1$

99. The radius of a cylindrical vessel is 7 cm and its height is 12 cm. $\frac{2}{3}$ of the vessel is filled with water. A sphere having radius 6 cm is dropped into the water. Find the volume of the water that will come out of the vessel.

- (1) $196 \pi \text{ cm}^3$ (2) $92 \pi \text{ cm}^3$
 (3) $288 \pi \text{ cm}^3$ (4) $588 \pi \text{ cm}^3$

100. Radius of circle with centre 'O' is $4\sqrt{5}$ cm 'AB' is the diameter of the circle. $AE \parallel BC$, $BC = 8$ cm. Line EC is tangent at point D. Find the length of DE.

- (1) $4\sqrt{5}$ cm (2) $6\sqrt{5}$ cm
 (3) 8 cm (4) 10 cm

