

Time : 1½ Hr. Max. Marks : 320

**2015-SAMPLE PAPER 2**

**Test ID :- LTSE-X**

**Please read the instructions carefully.**

1. This booklet is your question paper. Answers have to be marked on the provided OMR Sheet (Answer Sheet).
2. Before starting the paper, fill up the required details in the blank spaces provided on both sides of the OMR Sheet.
3. Blank papers, clip boards, log tables, slide rule, calculators, mobile phone or any other electronic gadgets in any form are not allowed in the examination hall. In case any of the above mentioned things are found with a student his/her paper will stand cancelled.
4. This paper contains 80 questions divided in two sections

Section-A	Mental Aptitude	40 questions	160 marks
Section-B	Scholastic Aptitude	40 questions	160 marks

**5. Section A :**

- (A) **This section contains basic questions designed to test Mental Ability, Logical Reasoning & Data Interpretation of the student.**
- (B) There are **40** questions in this section and **all the questions have single correct answer.**
- (C) This section contains different type of questions. Students are advised to read the instructions given along with the questions very carefully.

**6. Section B :**

- (A) **This section contains basic questions on school subjects i.e. Science & Mathematics.**
- (B) There are **40** questions in this section and **all the questions have single correct answer.**

**+4 marks for correct answer; -1 mark for incorrect answer**

7. Students are advised not to spend too much time on a particular question.

**Advice:** (A) It is recommended to select easy questions and optimize your score.

(B) It is recommended to keep your accuracy high by attempting those question which you really know.

8. No extra rough sheet will be provided for rough work. Students are advised to use the blank space given on every page of the question paper.
9. Students are strictly advised to use Pencil or ball point Pen (Black or Blue) for filling the OMR Sheet (Answer Sheet). Use of Gel Pens on the OMR Sheet will not be accepted.

Name of the Candidate

Enrolment No.

  
(For Regular Lakshya Students)

  
Signature of Student


**SECTION-A (MAT)**  
**MENTAL APTITUDE**

(Marking Scheme : Correct Answer +4 , Incorrect Answer –1)

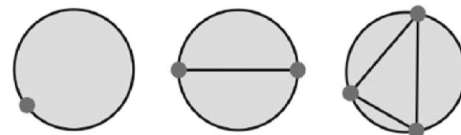
**Directions (Q. No. 1 to 3) :** A, B, C, D, E and F are members of a family. Amongst them there are lawyer, doctor, teacher, salesman, engineer and an accountant. There are two married couples in the family. 'D' who is a salesman is married to the lady teacher. Doctor is married to the lawyer. 'F' who is an accountant is son of 'B' and also brother of 'E'. 'C' who is lawyer is daughter-in-law of 'A'. 'E' is an unmarried engineer. 'A' is grand mother of 'F'.

1. What is the profession of B?  
(a) Salesman            (b) Doctor  
(c) Lawyer              (d) Teacher
2. What is the relation of D with F?  
(a) Husband            (b) Brother  
(c) Father                (d) Grandfather
3. Which of the following is a married couple?  
(a) C and D              (b) A and B  
(c) B and C              (d) D and B

4. In the horror movie “Cube”, the victims are trapped in a maze of rooms. The maths wiz of the group concludes that a room is booby-trapped if any of the three-digit numbers labeling the room is prime. Here are a few sets of these room numbers. Assuming the maths wiz is correct, determine (without a calculator!) which of the following room is safe:

(a) 737                      (b) 476  
(c) 373                      (d) 565

5. What will be the next number :



1                                  2                                  4



8                                  16                                  ?

- (a) 29                      (b) 30  
(c) 31                      (d) 32

Space for Rough Work

Page no. 1

6.

3	9	1	2	8	3
9	?	?	2	1	9
1	?	?	3	9	1
2	1	9	3	8	2
8	3	9	1	2	8
3	8	2	1	9	3

Which is the missing section ?

(a) 

8	3
8	2

(b) 

3	8
2	8

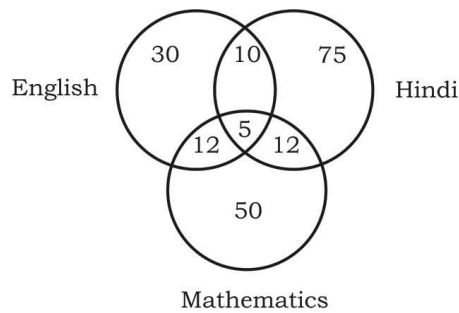
(c) 

8	2
8	3

(d) 

2	8
3	8

7. Consider the diagram given below :



Five hundred candidates appeared in the examination conducted for the tests in English, Hindi and Mathematics. The diagram gives the number of candidates who failed in different tests. What is the percentage of candidates who failed in at least two subjects

- (a) 0.078                      (b) 1.0  
 (c) 6.8                         (d) 7.8

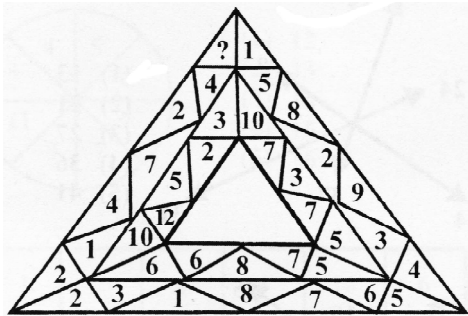
8.

20	14	12	24	33
3	10	16	15	18
17	7	4	8	6
5	1	9	30	36
39	21	13	2	11

What number is three places away from itself plus three, two places away from itself multiplied by two, two places away from itself less four and two places away from itself divided by three ?

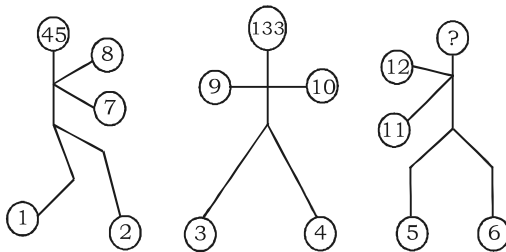
- (a) 9                              (b) 36  
 (c) 30                            (d) 2

9. **Directions :** In the following question find the missing term marked by ?



- (a) 10 (b) 12  
(c) 13 (d) 14

10.



- (a) 100 (b) 177  
(c) 253 (d) 335

11. The cost of manufacturing tractors in Korea is twenty percent less than the cost of manufacturing

tractors in Germany. Even after transportation fees and import taxes are added, it is still cheaper to import tractors from Korea to Germany than to produce tractors in Germany. Which of the following assertions is best supported by this information ?

- (a) Labor costs in Korea are twenty percent below those in Germany.  
(b) Importing tractors into Germany will eliminate twenty percent of the manufacturing jobs in Germany.  
(c) The costs of transporting a tractor from Korea to Germany is more than twenty percent of the cost of manufacturing the tractor in Korea.  
(d) The import taxes on a tractor imported from Korea to Germany is less than twenty percent of the cost of manufacturing the tractor in Germany.

12. There are two valves at the bottom of a water tank which allow the tank to be drained. If both valves are opened, how long will it take before the tank is empty ?

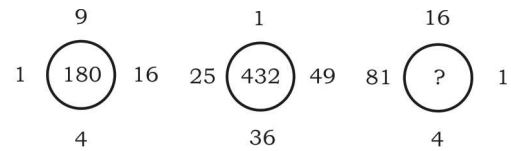
**Statement 1 :** If only valve 1 is opened, the tank will be empty in 10 minutes.

**Statement 2 :** If only valve 2 is opened, the tank will be empty in 20 minutes.

Which of the statements above, make it possible to answer the question.

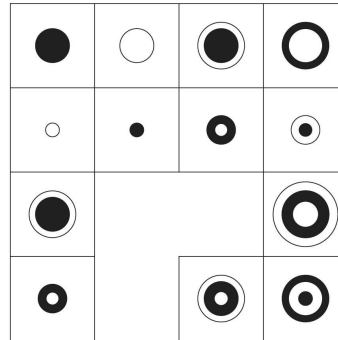
- (a) Statement 1 alone is sufficient, but statement 2 alone is not sufficient.
- (b) Statement 2 alone is sufficient, but statement 1 alone is not sufficient.
- (c) Both statements together are sufficient, but neither statement alone is sufficient.
- (d) Each statement alone is sufficient

13.



- (a) 642
- (b) 482
- (c) 466
- (d) 640

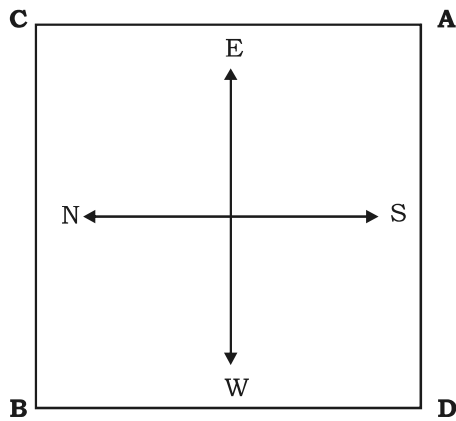
14.



What is the missing section ?

- (a)
- (b)
- (c)
- (d)

**Directions (Questions 15 to 17) :** The following questions are based on the diagram given below showing four persons stationed at the four corners of a square piece of plot as shown.



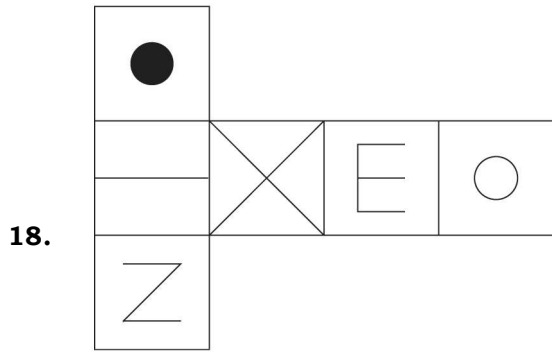
- 15.** **A** starts crossing the field diagonally. After walking half the distance, he turns right, walks some distance and turns left. Which direction is **A** facing now ?
- (a) North-east                      (b) North-west  
(c) North                                (d) South-east

- 16.** From the original position given in the above figure, **A** and **B** move one arm length clockwise and then cross over to the corner diagonally opposite ; **C** and **D** move one arm length anti-clockwise and cross over the corner diagonally opposite. The original configuration **ADBC** has now changed to

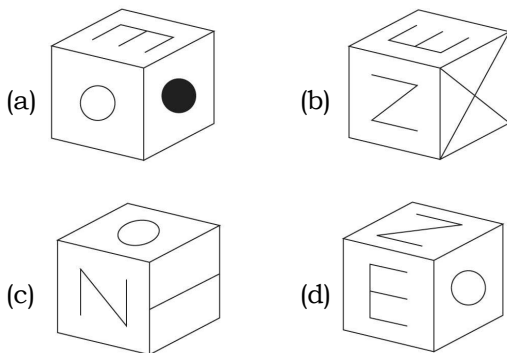
- (a) CBDA                                (b) BDAC  
(c) DACB                                (d) ACBD

- 17.** From the original position, **B** and **D** move one and a half length of sides clockwise and anticlockwise respectively. Which one of the following statements is true ?

- (a) **B** and **D** are both at the midpoint between **A** and **C**.  
(b) **D** is at the midpoint between **A** and **C**, and **B** at the corner originally occupied by **C**.  
(c) **B** is at the midpoint between **A** and **C**, and **D** at the corner originally occupied by **A**.  
(d) **B** and **D** are both at the midpoint between **A** and **D**.

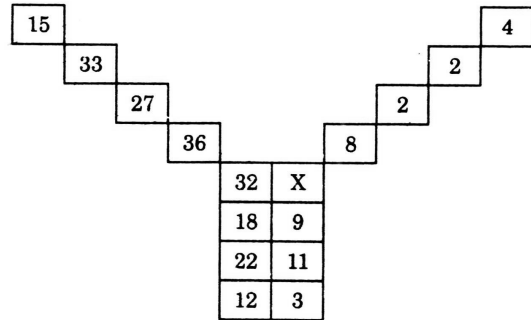


When the above is folded to form a cube, which is the only one of the following that can be produced ?



19. In an examination, 42% students failed in Hindi and 52% failed in English. If 17% failed in both the subjects, the percentage of those who passed in both the subjects, is:
- (a) 23%                      (b) 27%  
 (c) 34%                      (d) 40%

20. Find the value of X in the following figure :



- (a) 3                              (b) 4  
 (c) 8                              (d) 12

21.

1	2	3	2	10	12
2	5	12	10	16	13
1	2	1	?	10	24

- (a) 5                              (b) 11  
 (c) 13                             (d) 8

22. Given the following subtraction problem, find out which of the following numbers does not stand for CART.

$$\begin{array}{r} \text{CAR} \\ - \text{ART} \\ \hline 222 \end{array}$$

- (a) 6 4 2 0                      (b) 7 5 3 1  
 (c) 8 4 2 0                      (d) 9 7 5 3

23. Take the two given statements to be true and decide which one of the inferences can be definitely drawn from these statements.

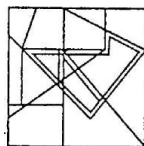
**Statement 1 :** All the students passed examination.

**Statement 2 :** Some of the students are girls. Select the correct alternatives.

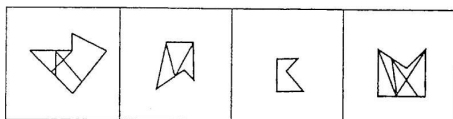
- (a) Some of the boys passed the examination.
- (b) All the girls students failed in the examination.
- (c) None of the boys passed the examination.
- (d) No girls student failed in the examination.

24. From the given answer figures, select the one which is hidden/embedded, in the Question Figure.

Question Figure :



Answer Figures :

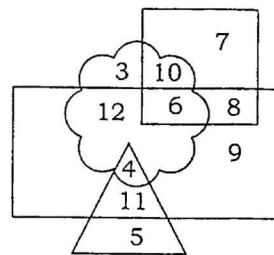


- (a)
- (b)
- (c)
- (d)

25. Find out the pair of numbers that does not belong to the group for lack of common property.

- (a) 34-43
- (b) 62-71
- (c) 55-62
- (d) 83-92

26. In the following diagram, find who are educated males but who do not live in urban area ?



- Urban people
- Civil staff
- Male
- Educated

- (a) 4
- (b) 11
- (c) 5
- (d) 9

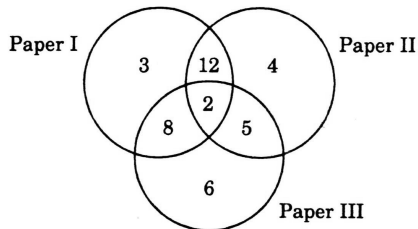
27. In the following list of letters, how many O's are followed by Q's but not preceded by D's?

DOQODQODODQDOQQDSDQP  
OQDSSSDOQOQDOQDDDOQ

- (a) 0
- (b) 1
- (c) 2
- (d) 3



- 28.** From a number of apples, a man sells half the number of existing apples plus 1 to the first customer, sells  $\frac{1}{3}$ rd of the remaining apples plus 1 to the second customer and  $\frac{1}{5}$ th of the remaining apples plus 1 to the third customer. He then finds that he has 3 apples left. How many apples did he have originally ?  
 (a) 15 (b) 18  
 (c) 20 (d) 25
- 29.** Consider the Venn diagram given below:



The number in the Venn diagram indicates the number of persons reading the newspapers. The diagram is drawn after surveying 50 persons. In a population of 10,000, how many can be expected to read at least two newspapers ?

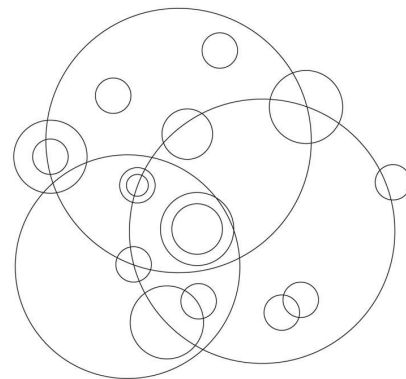
- (a) 5000 (b) 5400  
 (c) 6000 (d) 6250

- 30.** Rohit took a test that had 60 questions numbered from 1 to 60. How many questions did he answer correctly in the second half of the test ?

**Statements**

- I. The number of questions he answered correctly in the second half of test was 7 less than the number of the test.  
 II. He answered  $\frac{5}{6}$  of the odd numbered questions correctly and  $\frac{4}{5}$  of the even numbered correctly.  
 (a) Statement I alone is sufficient to answer the problem.  
 (b) Statement II alone is sufficient to answer the problem.  
 (c) Statement I and II both are needed.  
 (d) Statement I and II both are not sufficient.

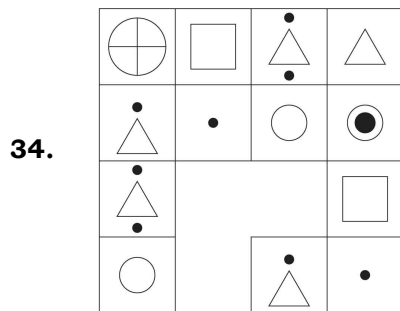
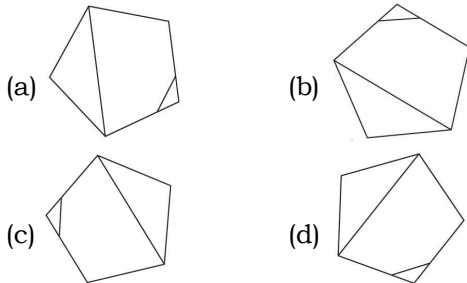
- 31.** How many different sized circles appear below ?



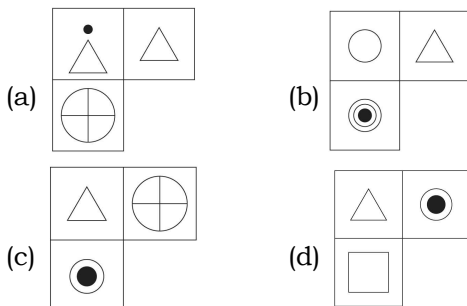
- (a) 19 (b) 6  
 (c) 13 (d) 8

32. If POLAND = 784352  
 POL = 895  
 LAND = 6574  
 then AND = ?  
 (a) 685 (b) 352  
 (c) 435 (d) 843

33. Which is the odd one out ?



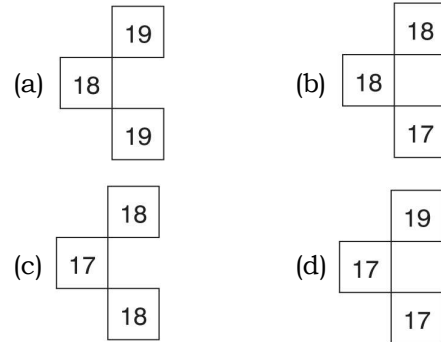
Which is the missing section ?



- 35.

20	22	19	21
17	19	16	?
19	21	?	20
16	18	15	?

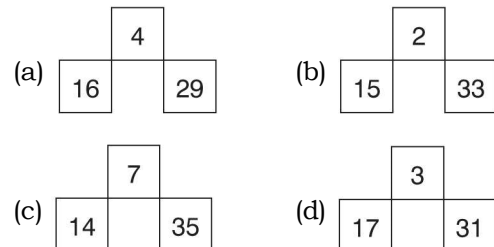
Which is the missing section



- 36.

5	2	3	10
6	4	1	11
1	9	?	12
12	?	6	?

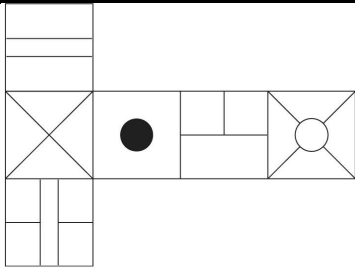
Which is the missing section ?



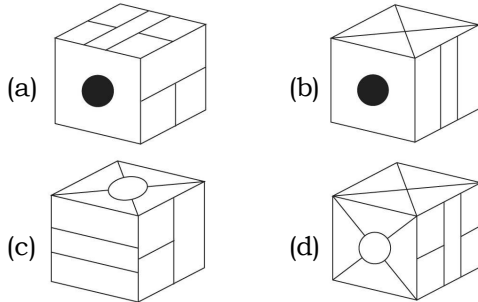
Space for Rough Work

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37.



When the above is folded to form a cube, which is the only one of the following that can be produced



38. A boy has 45 watermelons in the desert. He needs to get them across to the Oasis fair, 15 miles away. He can only carry 15 watermelons at a time, and he eats 1 watermelon every mile he walks. He can also leave watermelons at any complete mile he has walked, but no fractions of a mile. With how many maximum watermelons can he possibly reach the fair?
- (a) 1
  - (b) 15
  - (c) 8
  - (d) not possible to take any watermelon

**Passage :** A painter is given a task to paint a cubical box with six different colours for different faces of the cube. The detailed account of it was given as :

- (i) Red face should lie between Yellow and Brown faces.
  - (ii) Green face should be adjacent to the Silver face.
  - (iii) Pink face should lie adjacent to the Green face.
  - (iv) Yellow face should lie opposite to the Brown one.
  - (v) Brown face should face down.
  - (vi) Silver and Pink faces should lie opposite to each other.
39. The face opposite to Red is
- (a) Yellow
  - (b) Green
  - (c) Pink
  - (d) Silver
40. The faces adjacent to Green are
- (a) Yellow, Pink, Red, Silver
  - (b) Brown, Pink, Red, Silver
  - (c) Red, Silver, Yellow, Brown
  - (d) Pink, Silver, Yellow, Brown

**SECTION-B (SAT)**  
**SCHOLASTIC APTITUDE TEST**

(Marking Scheme : Correct Answer +4 , Incorrect Answer –1)

- 41.** A point moves with uniform acceleration and  $v_1, v_2$  and  $v_3$  represent the average velocities in three successive intervals of time  $t_1, t_2$  and  $t_3$  respectively, then
- (a)  $\frac{v_1 + v_2}{v_2 + v_3} = \frac{t_1 - t_2}{t_2 - t_3}$  (b)  $\frac{v_1 - v_2}{v_2 - v_3} = \frac{t_1 + t_2}{t_2 + t_3}$
- (c)  $\frac{v_1 - v_2}{v_2 - v_3} = \frac{t_1 - t_2}{t_2 - t_3}$  (d)  $\frac{v_1 + v_2}{v_2 + v_3} = \frac{t_1 + t_2}{t_2 + t_3}$
- 42.** A lift of mass 1000 kg, which is moving with an acceleration of  $1 \text{ m/s}^2$  in upward direction has tension developed in its string equal to
- (a) 9800 N (b) 10800 N  
(c) 11000 N (d) 10000 N
- 43.** A man drops a ball downside from the roof of a tower of height 400 meters. At the same time another ball is thrown upside with a velocity 50 meter/sec. from the surface of the tower, then they will meet at which height from the surface of the tower
- (a) 100 meters (b) 320 meters  
(c) 80 meters (d) 240 meters
- 44.** A body falls from rest in the gravitational field of the earth. The distance travelled in the fifth second of its motion is ( $g = 10 \text{ m/s}^2$ )
- (a) 25 m (b) 45 m  
(c) 90 m (d) 125 m
- 45.** Of the following situations, which one is impossible ?
- (a) A body is having zero velocity and non-zero acceleration  
(b) A body is having constant acceleration and variable velocity  
(c) A body is having constant speed and variable acceleration  
(d) A body is having constant velocity and variable acceleration
- 46.** A wooden cube floating in water supports a mass  $m = 0.2 \text{ kg}$  on its top. When the mass is removed the cube rises by 2 cm. The side of the cube is – (density of water  $10^3 \text{ kg/m}^3$ )
- (a) 6 cm (b) 12 cm  
(c) 8 cm (d) 10 cm

Space for Rough Work

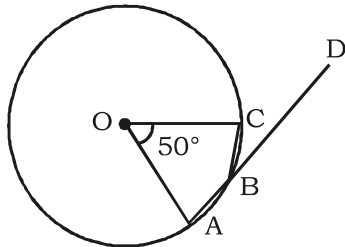
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47. Three resistors each of  $2\ \text{ohm}$  are connected together in a triangular shape. The resistance between any two vertices will be  
(a)  $4/3\ \text{ohm}$  (b)  $3/4\ \text{ohm}$   
(c)  $3\ \text{ohm}$  (d)  $6\ \text{ohm}$
48. The distance between two point charges is increased by 10%. The force of interaction  
(a) increases by 10%  
(b) decreases by 10%  
(c) decreases by 17%  
(d) decreases by 21%
49. The evaporation of water increases under the following conditions :  
(a) Increase in temperature, decrease in surface area  
(b) Increase in surface area, decrease in temperature  
(c) Increase in surface area, rise in temperature  
(d) Increase in temperature, increase in surface area, addition common salt
50. Pure copper sulphate can be obtained from an impure sample of copper sulphate by the process :  
(a) evaporation  
(b) fractional distillation  
(c) crystallisation  
(d) chromatography
51. The total number of electrons in one molecule of carbon dioxide is  
(a) 22 (b) 44  
(c) 66 (d) 88
52. The number of atoms in 0.1 mol of a gas (atomicity of the gas is 3) is  
(a)  $1.8 \times 10^{22}$  (b)  $6.022 \times 10^{22}$   
(c)  $1.8 \times 10^{23}$  (d)  $3.6 \times 10^{23}$
53. If  $10^{21}$  molecules are removed from 200 mg of  $\text{CO}_2$ , then the number of moles of  $\text{CO}_2$  left are  
(a)  $2.88 \times 10^{-3}$  (b)  $1.66 \times 10^{-3}$   
(c)  $4.54 \times 10^{-3}$  (d) none of these
54. If  $1/6^{\text{th}}$  (in place of  $1/12^{\text{th}}$ ) mass of an atom of C-12 isotope is taken to be relative atomic mass unit, the mass of one mole of a substance will  
(a) Increase two fold  
(b) Decrease twice  
(c) Be a function of molecular mass of the substance  
(d) Remains unchanged
55. 8g of  $\text{O}_2$  has the same number of molecules as  
(a) 7g CO (b) 11g  $\text{CO}_2$   
(c) 16g  $\text{SO}_2$  (d) all of these

56. If the atomic mass unit (u) were defined to be one fourth of the mass of an atom of C-12 isotope, what would be the atomic weight of Mg in u ?  
(a) 32 (b) 96  
(c) 8 (d) Remains unchanged
57. if  $a = b^x$ ,  $b = c^y$ ,  $c = a^z$ , then  $xyz$  is  
(a) -1 (b) 0  
(c) 1 (d) abc
58. Ten pipes of the same type can fill up a tank in 16 minutes. If two pipes go out of order, how long will the remaining pipes take to fill the tank ?  
(a) 18 mins (b) 20 mins  
(c) 22 mins (d) 24 mins
59. If  $n$  is a whole number greater than 1, then  $n^2 (n^2 - 1)$  is always divisible by  
(a) 12 (b) 12 and 24  
(c) 24 (d) 36
60. ABC is an isosceles triangle with  $AB = AC = 5$  and  $BC = 6$ . If G is the centroid of  $\triangle ABC$ , then AG is equal to  
(a)  $\frac{1}{3}$  (b)  $\frac{2}{3}$   
(c)  $\frac{4}{3}$  (d)  $\frac{8}{3}$
61. A cylindrical rod, whose height is 8 times its radius, is melted and cast into spherical balls of the same radius. The total number of spherical balls, so formed, is  
(a) 3 (b) 4  
(c) 6 (d) 8
62. Rational number  $\frac{-18}{5}$  lies between consecutive integers  
(a) -2 and -3 (b) -3 and -4  
(c) -4 and -5 (d) -5 and -6
63. The ratio between the rates of walking of A and B is 2 : 3. If the time taken by B to cover a distance is 24 minutes, find the time taken by A to cover the same distance.  
(a) 12 minutes (b) 24 minutes  
(c) 36 minutes (d) 48 minutes
64. If  $\log (x + 1) + \log (x - 1) = \log 3$ , then value of  $x$  is  
(a) 3 (b) 2  
(c) 1 (d) none of these
65. Two chords of lengths 16 cm and 17 cm are drawn perpendicular to each other in a circle of radius 10 cm. The distance of their point of intersection from the centre is approximately

- (a) 6.5 cm                      (b) 7.2 cm  
 (c) 7.6 cm                      (d) 8 cm

**66.** In the diagram, O is the centre of the circle. The angles CBD is equal to



- (a)  $25^\circ$                       (b)  $50^\circ$   
 (c)  $40^\circ$                       (d)  $130^\circ$

**67.** The least number which when divided by 2, 3, 4, 5 and 6 leaves the remainder 1 in each case. If the same number is divided by 7 it leaves no remainder. The number is

- (a) 231                          (b) 301  
 (c) 371                          (d) 441

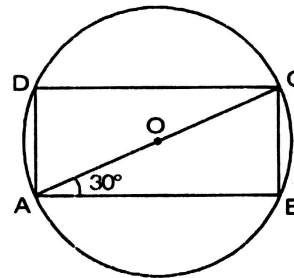
**68.** If G.C.D. of  $x^3 - x^2 - 4x - 6$  and  $x^2 - 2x - 3$  is

- (a)  $3x + 2$                       (b)  $x - 3$   
 (c)  $-x - 3$                       (d)  $-2x - 3$

**69.** If  $2x^3 + 4x^2 + 2ax + b$  is exactly divisible by  $x^2 - 1$ , then the value of a and b respectively will be

- (a) 1, 2                          (b) -1, 4  
 (c) 1, -2                          (d) -1, -4

**70.** A rectangle ABCD is inscribed in a circle with centre O. If AC is the diagonal and  $\angle BAC = 30^\circ$ , then radius of the circle will be equal to



- (a)  $\frac{\sqrt{3}}{2} BC$                       (B) BC  
 (c)  $\sqrt{3} BC$                       (d) 2 BC

**71.** The equation whose roots are 4 and 5 is

- (a)  $x^2 + 9x + 20 = 0$   
 (b)  $x^2 - 9x - 20 = 0$   
 (c)  $x^2 - 9x + 20 = 0$   
 (d)  $x^3 + 9x + 20 = 0$

- 72.** If the ratio of men to women in an office is 7 to 5. Which of the following could not be the number of employees in the office ?  
(a) 24 (b) 30  
(c) 36 (d) 48
- 73.** Reduction of ammonium compounds, nitrites and nitrates to molecular nitrogen is:  
(a) Nitrification  
(b) Ammonification  
(c) Denitrification  
(d) None of these
- 74.** Which of the following is a mismatch?  
(a) Leprosy - viral infection  
(b) AIDS - Viral infection  
(c) Malaria - Protozoan infection  
(d) Elephantiasis - Nematode infection
- 75.** One amongst these is a free living Nitrogen fixer:  
(a) Rhizobium  
(b) Azospirillum  
(c) Streptomyces  
(d) Corynebacterium
- 76.** Reductional division is:  
(a) Mitosis  
(b) Binary fission  
(c) Meiosis  
(d) Both a and b
- 77.** Ribosomes are the site for:  
(a) Photosynthesis  
(b) Protein synthesis  
(c) Respiration  
(d) Fat synthesis
- 78.** The jelly-like substance present in the body of Cnidarians is:  
(a) Mesohyl (b) Mesoglea  
(c) Spongocoel (d) Haemocoel
- 79.** Parenchyma cells involved in the storage of excretory substances is:  
(a) Chloroplast (b) Leucoplast  
(c) Idioblast (d) Aerenchyma
- 80.** Unit of muscle contraction is:  
(a) Sarcomere (b) Neuron  
(c) Actin (d) Sarcoplasm

*Dream on !!*

