



1. Which of the following is the largest?

- (A) $\frac{1}{3}$ (B) $\frac{1}{4}$ (C) $\frac{3}{8}$ (D) $\frac{5}{12}$

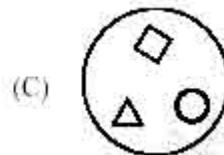
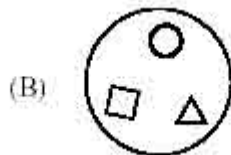
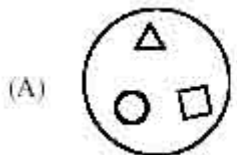
2. $\frac{1}{10} + \frac{2}{10} + \frac{3}{10} + \frac{4}{10} + \frac{5}{10} + \frac{6}{10} + \frac{7}{10} + \frac{8}{10} + \frac{9}{10} + \frac{55}{10} =$

- (A) $4\frac{1}{2}$ (B) 6.4 (C) 9 (D) 10

3. Each day Madhu must work 8 hours. This does not include the 45 minutes she takes for lunch. If she begins working at 7: 25 A.M. and takes her lunch break at noon, then her working day will end at

- (A) 3 : 40 P.M. (B) 3 : 55 P.M. (C) 4 : 10 P.M. (D) 4 : 25 P.M.

4. Which of the following represents the result when the figure shown at the right is rotated clockwise 120° about its center?



5. The unit's digit (one's digit) of the product of any six consecutive positive whole number is

- (A) 0 (B) 2 (C) 4 (D) 6

6. For how many three-digit whole numbers does the sum of the digits equal 25?

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

7. Last summer 100 students attended basketball camp. Of those attending, 52 were boys and 48 were girls. Also, 40 students were from ABC School and 60 were from XYZ Middle School. Twenty of the girls were from ABC Middle School. How many of the boys were from XYZ Middle School ?
- (A) 20 (B) 32 (C) 40 (D) 48

8. Each of the three large squares shown below is the same size. Segments the intersect the sides of the squares intersect at the midpoints of the sides. How do the shaded areas of these squares compare?

I

II

III

- (A) the shaded areas in all three are equal
 (B) only the shaded areas of I and II are equal
 (C) only the shaded areas of I and II are equal
 (D) only the shaded areas of III are equal

9. The number halfway between $\frac{1}{6}$ and $\frac{1}{4}$ is

- (A) $\frac{1}{10}$ (B) $\frac{1}{5}$ (C) $\frac{5}{24}$ (D) $\frac{7}{24}$

10. The perimeter of one square is 3 times the perimeter of another square. The area of the larger square is how many times the area of the smaller square ?
- (A) 2 (B) 3 (C) 4 (D) 9

11. Manu leaves home and drives slowly east through city traffic. When he reaches the highway he drives east more rapidly until he reaches the shopping mall where he stops. He shops at the mall for an hour. Manu return home by the same route as he came, driving west rapidly along the highway and then slowly through city traffic. Each graph shows the distance from home on the vertical axis versus the time elapsed since leaving home on the horizontal axis. Which graph is the best representation of Manu’s trip ?

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

12. Around the outside of a 4 by 4 square, construct four semicircles (as shown in the figure) with the four side of the square as their diameters. Another square, ABCD, has its sides parallel to the corresponding sides of the original square, and each side of ABCD is tangent to one of the semicircles. The area of the square ABCD is

- (A) 16 (B) 32 (C) 48 (D) 64

13. Let W,X,Y and Z be four different digits selected from the set {1,2,3,4,5,6,7,8,9}. If the sum $\underline{W} + \underline{Y}$ is to be as small as possible, then $\underline{W} + \underline{Y}$ must equal.

- X Z**
- (A) $\frac{25}{72}$ (B) $\frac{3}{17}$ (C) $\frac{17}{72}$ (D) $\frac{2}{17}$

- 14. The bar graph shows the grades in a mathematics class for the last grading period. If A, B, C and D are satisfactory grades, what fraction of the grades shown in the graph are satisfactory ?**
- (A) $\frac{1}{2}$ (B) $\frac{2}{3}$ (C) $\frac{3}{4}$ (D) $\frac{4}{5}$
- 15. A ream of paper containing 500 sheets is 5 cm thick. Approximately how many sheets of this type of paper would there be in a stack 7.5 cm high ?**
- (A) 250 (B) 550 (C) 667 (D) 750
- 16. A square and a triangle have equal perimeters. The lengths of the three sides of the triangle are 6.2 cm, 8.3 cm and 9.5 cm. The area of the square is**
- (A) 24 cm^2 (B) 36 cm^2 (C) 48 cm^2 (D) 64 cm^2
- 17. If you walk for 45 minutes at a rate of 4 mph and then run for 30 minutes at a rate of 10 mph, how many miles have gone at the end of one hour and 15 minutes ?**
- (A) 3.5 miles (B) 8 miles (C) 9 miles (D) $25 \frac{1}{3}$ miles
- 18. The ratio of boys to girls in Mr. Bose's math class is 2: 3. If there are 30 students in the class, how many more girls than boys are in the class ?**
- (A) 1 (B) 6 (C) 5 (D) 3
- 19. If your average score on your first six mathematics tests was 84 and your average score on your first seven mathematics tests was 85, then your score on the seventh test was**
- (A) 86 (B) 88 (C) 90 (D) 91
- 20. If the length and width of a rectangle are each increased by 10% then the perimeter of the rectangle is increased by**
- (A) 1% (B) 10% (C) 20% (D) 21%
- 21. Mr. Goyal receives a 10% raise every year. His salary after four such raises has gone up by what percent ?**
- (A) less than 10% (B) 40% (C) 44% (D) more than 45%
- 22. In a magic triangle, each of the six whole number 10-15 is placed in one of the circles so that the sum, S, or three numbers on each side of the triangle is the same. The largest possible value for S is**
- (A) 39 (B) 37 (C) 38 (D) 36

23. What would be the missing number in the third triangle ?
 (A) 8 (B) 14 (C) 10 (D) 6
24. Which one of the figures when placed at the sign of interrogation shall complete the matrix ?
 (A) (B) (C) (D)
25. In a class, 21 study Physics, 24 study Maths, 24 study Chemistry, 11 study Maths and Physics, 13 Maths and Chemistry, 12 Physics and Chemistry and 5 study all the three. What is the strength of the class ?
 (A) 37 (B) 38 (C) 40 (D) 42
26. A car traveling in a straight line moves with a uniform velocity v_1 over a distance x and then with a uniform velocity v_2 over a further distance y . If $x=y$, then the average v is given by
 (A) $\frac{v_1+v_2}{2}$ (B) $\frac{2}{v} = \frac{1}{v_1} + \frac{1}{v_2}$ (C) $\sqrt{v_1 v_2}$ (D) $\frac{1}{v} = \frac{1}{v_1} + \frac{1}{v_2}$
27. Consider the following statements :
 I. Ohm's law is applicable to all conductor.
 II. The resistance of a pure metallic wire increases with increasing temperature
 III. The equivalent resistance of a set of resistors joined in parallel is less than the value of the smallest resistor in the set.
 Of these statements :
 (A) I and II are correct
 (B) I and III are correct
 (C) I, II and III are correct
 (D) II and III are correct.
28. One Astronomical Unit is the average distance between
 (A) Earth and the Sun
 (B) Earth and the Moon
 (C) Jupiter and the Sun
 (D) Pluto and the Sun
29. The tendency of liquid drop to contract and occupy minimum area is due to
 (A) viscosity (B) surface tension (C) density (D) vapour pressure
30. If speed of rotation of the earth increases, weight of the body
 (A) increases (B) remains unchanged
 (C) decreases (D) may decrease or increase
31. The mass of the moon is about 1.2% of the mass of the earth. Compared to the gravitational force the earth exerts on the moon, the gravitational force the moon exerts on earth

- (A) is the same (B) is smaller (C) is greater (D) varies with its phase
- 32. Which of the following remains the same when monochromatic light travels from one medium to another ?**
(A) velocity (B) wavelength (C) frequency (D) none of these
- 33. In the case of a converging lens, image distance is equal to the object distance when the object is at a distance of**
(A) four times the focal length
(B) twice the focal length
(C) the focal length
(D) half the focal length
- 34. Magnification is given by**
(A) distance of image \div height of object
(B) height of image \div distance of object
(C) distance of image \div distance of object
(D) none of the above
- 35. The dispersive power of the material of a prism is maximum for the pair of colours**
(A) violet and green
(B) violet and red
(C) red and green
(D) blue and red
- 36. Which of the following statements is incorrect? Coulomb's law refers to force between**
(A) two charge (B) two magnetic poles (C) two masses (D) both A and B
- 37. No electric charge flows between two charged bodies when connected, if they have the same**
(A) charge (B) capacity (C) potential (D) size
- 38. Gravitational constant is equal to the force between**
(A) two units masses
(B) two masses unit distance apart
(C) two unit masses unit distance apart
(D) none of these
- 39. In which of the following situations is the friction exerted by the road disadvantageous ?**
(A) When a child walks on the road
(B) When a bus driver stops his bus

- (C) When a car intends to slow down its speed
- (D) When a car intends to increase its speed

40. Cavendish is known for discovering

- (A) hydrogen and argon
- (B) hydrogen and oxygen
- (C) hydrogen and the constituents of nitric acid
- (D) argon and the constituent of inflammable air

41. The rate of reaction does not depend upon

- (A) the nature of the reactants
- (B) temperature
- (C) molecularity of the reaction
- (D) the presence of a catalyst.

42. The catalyst used in the manufacture of nitric acid by Ostwald's process is

- (A) nickel gauze
- (B) iron gauze
- (C) platinum rhodium gauze
- (D) vanadium pentoxide

43. In a long form of the periodic table the elements are divided into....blocks

- (A) 3
- (B) 4
- (C) 8
- (D) 7

44. Which of the following four gases is in the maximum proportion in the air ?

- (A) O₂
- (B) N₂
- (C) CO₂
- (D) SO₂

45. Which statement about catalyst is universally correct:

- (A) A catalyst does not take part in reaction
- (B) A catalyst remains unchanged physically and chemically
- (C) A catalyst lowers the energy of activation
- (D) A catalyst is highly specific in action

46. The electrons used in bonding atoms.

- (A) belong to outermost shell
- (B) belong to penultimate shell
- (C) belong to outer most shell and sometimes to penultimate shell
- (D) belong to penultimate shell and some times to outer most shell

47. Which is the weakest among the following types of bonds ?

- (A) ionic bond
- (B) covalent bond
- (C) metallic
- (D) hydrogen bond

48. Le-Chatelier's principle is applicable only to:

- (A) systems in equilibrium
- (B) systems not in equilibrium

- (C) homogeneous irreversible reactions
- (D) heterogeneous irreversible reactions

49. Each species prefers a different kind of habitat and a different way of making a living. This is known as

- (A) individualism
- (B) ecology
- (C) ecological niche
- (D) none of the above

50. When a bird's newly-hatched chick immediately opens its eyes, can walk and soon begins to feed itself. Such birds are referred to as

- (A) Nidicolous
- (B) Nidifugous
- (C) Nidophile
- (D) None of the above

51. Salim Ali is a famous

- (A) ornithologist
- (B) pediatric surgeon
- (C) botanist
- (D) none of the above

52. The smallest living organism known to man is

- (A) PPLO
- (B) Staphylococcus
- (C) Amoeba
- (D) none of the above

53. Name the structure marked in the above figure

- (A) mitochondria
- (B) vacuole
- (C) nucleolus
- (D) chloroplast

54. The organism which constantly changes its shape is

- (A) plasmodium
- (B) typhoid bacilli
- (C) amoeba
- (D) paramecium

55.gave the term Mitosis which means.....

- (A) Linnaeus, division
- (B) Flemming, thread formation
- (C) Du Val, swollen tubes
- (D) None of the above

56. The stage in photosynthesis when no net carbon dioxide uptake takes place is known as

- (A) saturation point
- (B) compensation point
- (C) carbon limit
- (D) none of the above

- 57. A plant was exposed to radioactive carbon dioxide ($^{14}\text{CO}_2$) environment. This carbon dioxide was used during photosynthesis. What happens when the phloem is blocked by heating.**
- (A) the radio active products continue traveling in the same direction
 (B) the radio active products now travel in the opposite direction
 (C) the radioactive product first travel in the same pathway, then switches over to opposite pathway.
 (D) None of the above
- 58. The basic unit of kidney is**
- (A) nephron (B) glomeruli (C) renal artery (D) medulla
- 59. The following procedure is life saving in chronic renal failure**
- (A) blood transfusion
 (B) antibiotics
 (C) dialysis
 (D) none of the above
- 60. What is X and Y in the following reflex pathway**
Stimulus \rightarrow X \rightarrow sensory nerve \rightarrow Y \rightarrow muscle action
- (A) finger, brain
 (B) receptor organ, spinal cord
 (C) spinal cord, receptor organ
 (D) brain, finger
- 61. If $\angle A = 60^\circ$, $\angle E = 40^\circ$ and $\angle C = 30^\circ$, then $\angle BDC =$**
 (A) 40° (B) 50° (C) 60° (D) 70°
- 62. For how many positive integer values of N ($N > 0$) is the expression $\frac{36}{N+2}$ an integer?**
- (A) 7 (B) 8 (C) 9 (D) 10
- 63. Two children at a time can play pairball. For 90 minutes, with only two children playing at one time, five children take turns so that each one plays the same amount of time. The number of minutes each child plays is**
- (A) 9 (B) 10 (C) 36 (D) 18
- 64. A piece of paper containing six joined squares labeled as shown in the diagram is folded along the edges of the squares to form a cube. The label of the face opposite the face labeled X is**
- (A) Z (B) U (C) V (D) Y
- 65. In a certain year, January had exactly four Tuesdays and four Saturdays, On what day did January 1 fall that year?**
- (A) Monday (B) Tuesday (C) Wednesday (D) Friday

66. A ball is dropped from the top of a high building with a constant acceleration of 9.8m/s^2 . What will be its velocity after 3 seconds?

- (A) 9.8 m/s. (B) 19.6 m/s. (C) 29.4 m/s (D) 39.2 m/s.

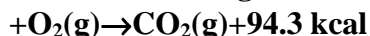
67. When light enters a closed room through a small hole in the door, image of an outside building appears as inverted on the opposite wall because

- (A) the hole acts as a convex lens
(B) light takes a curved path
(C) light takes a straight path
(D) the hole acts as a concave lens.

68. Zoom lens is a lens

- (A) having fixed focal length
(B) having variable focal length
(C) used in radio telescope
(D) none of these

69. Which of the given statement (s) is/are true of the reaction ? C(s)



I. One mole of CO_2 is produced for every two moles of oxygen consumed

II. The reaction is endothermic

III. The reaction is exothermic

Select the correct answer using the codes given below: Codes:

- (A) I and II (B) II alone (C) III alone (D) I and III

70. Glowing of white phosphorus is due to

- (A) combination of phosphorus with nitrogen of the air
(B) slow combustion of phosphorus and oxidation
(C) conversion of white phosphorus to more stable allotropic forms
(D) presence of impurities which burn spontaneously in air

71. When the pH change from 4 to 2, the hydrogen ion concentration will increase by a factor:

- (A) 2 (B) $\frac{1}{2}$ (C) 10^2 (D) $10^{0.5}$

72. In modern process phosphorus is manufactured by

- (A) heating a mixture of phosphorite mineral with sand and coke in a electric furnace
(B) heating calcium phosphate with coke
(C) heating bone ash with coke
(D) heating phosphate mineral with sand.

73. The normal hemoglobin level in an adult man is

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

74. Spirogyra reproduces through

- (A) sponge formation
- (B) fragmentation
- (C) vegetative propagation
- (D) budding

75. The function of thyroxine is to regulate

- (A) sugar metabolism
- (B) rate of growth and metabolism
- (C) water reabsorption by kidney
- (D) none of the above



Answer Sheet

1. (D) 2. (D) 3. (C) 4. (B) 5. (A) 6. (B) 7. (C) 8. (D) 9. (B)
10. (A) 11. (C) 12. (D) 13. (B) 14. (B) 15. (B) 16. (B) 17. (D)
18. (A) 19. (C) 20. (A) 21. (B) 22. (D) 23. (A) 24. (B) 25.
(C) 26. (B) 27. (C) 28. (C) 29. (B) 30. (D) 31. (C) 32. (D) 33.
(A) 34. (C) 35. (B) 36. (B) 37. (C) 38. (C) 39. (D) 40. (A) 41.
(B) 42. (A) 43. (C) 44. (C) 45. (B) 46. (B) 47. (B) 48. (A) 49.
(B) 50. (A) 51. (C) 52. (D) 53. (C) 54. (C) 55. (C) 56. (B) 57.
(C) 58. (C) 59. (A) 60. (B) 61. (C) 62. (A) 63. (D) 64. (D)
65. (B) 66. (B) 67. (C) 68. (C) 69. (C) 70. (A) 71. (C) 72. (B)
73. (B) 74. (C) 75. (B)