

A.M.U. PAPER : 2002-2003

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7

THE CONCEPTUM

(d) $x - 7y = 35$ and $x - 3y = -10$

A.

ΔPQR ; $\angle PQR = \angle ABC$ and side PQ = side AB

1. Consider the numbers:

I. $3/5$ II. $1.666\ldots$ and III. -2.3

Which of these is/are rational number?

- (a) I and III
- (b) I and II
- (c) I Only
- (d) I, II and III

2. Consider the following statements about irrational numbers:

A. The decimal expression in an irrational number is non-repeating and non-terminating

B. An irrational number cannot be represented by a point on the number line.

Which of these statement, is/are correct?

- (a) A Only
- (b) B Only
- (c) Both A and B
- (d) Neither A nor B

3. Which of the statement, is/are correct?

A. Every point on the number line represents a real number.

B. Every point on the number line represents a rational number.

- (a) A and B
- (b) Neither A nor B
- (c) A only
- (d) B only

4. Consider the following statements about \sqrt{a}

A. a is a positive integer.

B. a is a positive, rational number.

C. $a \neq b^2$; b being a rational number.

Which of these conditions need to be satisfied for \sqrt{a} to be a surd?

- (a) A and B
- (b) C Only
- (c) C Only
- (d) B Only

5. Identify the equation whose graph will be symmetrical about the x-axis:

- (a) $y = 3x^2 - 5$
- (b) $y^2 = 3x + 5$
- (c) $3y = 2x$
- (d) $y = x - 3$

6. Which of the following equations given below is NOT correct?

7. Which of the following statements given below is NOT correct?

8. Consider the statements given below about polynomials $g(x)$ and $f(x)$ of degrees n and m respectively:

A. Polynomial $g(x) \times f(x)$ has a degree $= n+m$

B. Polynomial $g(x)+f(x)$ has a degree $= n$ for $n > m$

Which of these statements is/are correct?

- (a) A and B
- (b) Neither A nor B
- (c) A only
- (d) B only

9. Which of the following equations/equation:

A. $(x - 2)^2 = x^2 - 3x$

B. $y + \frac{2}{y} = 3$

C. $(x - 2)(2x + 3) = 2x^2 - 5x + 2$

are/is NOT linear:

- (a) A and C
- (b) B Only
- (c) C Only
- (d) A, B and C

10. To calculate the ages of a man and his son today if the son was one-seventh his father's age five years ago and will be only one-third the father's age five years from now, you need to solve the equations:

- (a) $x + 7y = 30$ and $x - 3y = 10$
- (b) $x - 3y = 35$ and $x + 3y = -10$
- (c) $-x + 7y = 30$ and $x - 3y = 10$

11. A and B can do the some work together in 8 days, which A can do on his own in 12 days. How many days will B take to do the work alone

- (a) 12
- (b) 18
- (c) 20
- (d) 24

12. What is the value of logarithm of 3 to the base 9?

- (a) 3
- (b) 2
- (c) $\frac{1}{2}$
- (d) $\frac{1}{3}$

13. If $\log x = -2.1352$ and the number corresponding to 1352 is 1366, then x is:

- (a) 0.1366
- (b) 0.01366
- (c) 0.001366
- (d) 0.0001366

14. The area of a rectangular piece of land is 96m^2 and its sides are in the ratio 3:2. The perimeter of the land is:

- (a) 48 m
- (b) 40 m
- (c) 36 m
- (d) 24 m

15. Perpendicular distance between two parallel sides of a parallelogram is 8 cm. The perpendicular distance between the other two sides is 7 cm. If the sides that are 7 cm apart are 10 cm long each, the length of the other side is:

- (a) 11.42 cm
- (b) 10.00 cm
- (c) 8.75 cm
- (d) 7.5 cm

16. Consider the triangle shown and compare it with the triangle describe as:

- (a) A and B
- (b) B and C
- (c) C Only
- (d) B Only

17. In a cyclic quadrilateral ABCD, if $\angle A + \angle B = 185^\circ$ and $\angle B + \angle C = 165^\circ$, the angle D will be:

- (a) 75°
- (b) 85°
- (c) 90°
- (d) 95°

18. If the figure made by joining the mid-points of the side of a quadrilateral is a rhombus, the quadrilateral must be:

- (a) A rectangle
- (b) A trapezium
- (c) A square
- (d) A parallelogram

19. What is the length of the line connecting the points $(-2, 1)$ and $(2, -1)$ in a rectangular coordinate system:

- (a) $\sqrt{5}$
- (b) $2\sqrt{5}$
- (c) 5
- (d) $5\sqrt{2}$

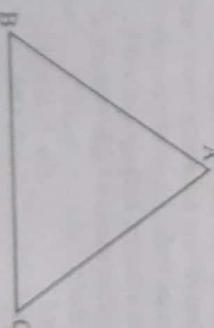
20. A line has a positive intercept on the x-axis and a negative intercept on the y-axis in a rectangular coordinate system. Which of the following points CANNOT lie on such a line?

- (a) $(2, 3)$
- (b) $(-2, 3)$
- (c) $(-2, -3)$
- (d) $(2, -3)$

21. Which of the following equations given below represent a line parallel to the line represented by the equation $2y = 5x - 3$:

- (a) $y = 2x - 3$
- (b) $3y = 7.5x + 8.5$
- (c) $y = 5x + 3$
- (d) $5y = 2x - 3$

22. Ahmed's salary is 25% more than Mukesh's

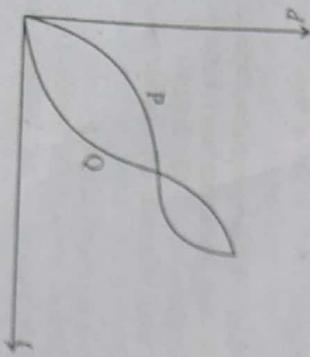


- salary. By what percentage is Mukesh's salary less than Alnud's salary?
- 10%
 - 12%
 - 20%
 - 25%
23. If the number of cubic centimeters in the volume of a sphere is equal to twice the number of square centimeter on its outer surface, the radius of the sphere is:
- 6 cm
 - 3 cm
 - $\frac{1}{3}$ cm
 - $\frac{1}{6}$ cm
24. 300 spherical ball bearings of radius 2 mm have to be made by melting a cylindrical brass wire of radius 4 mm. The length of the wire needed is:
- 10 cm
 - 18 cm
 - 20 cm
 - 24 cm
25. Which pair of trigonometric ratios of an angle θ increases as the angle increases from 0° to 90° ?
- $\sin \theta, \cos \theta$
 - $\sin \theta, \operatorname{cosec} \theta$
 - $\tan \theta, \sec \theta$
 - $\cot \theta, \sec \theta$
26. The locus of centers of circles touching a given line at the same point P is:
- A straight line parallel to the given line
 - A circle with its center at the point P
 - A straight line passing through P perpendicular to the original line
 - A circle that touches the line at point P
27. Consider the following equations:
- $\cot^2 \theta + \tan^2 \theta = 1$
 - Which of these are identities?
 - A Only
 - B Only
 - Both A and B
 - Neither A nor B - The mean of 30 values was calculated to be
 - A and C
 - A, B and C
 - B and C
 - C Only

- 150, on checking it was discovered a value of 138 was entered as 123 and another value of 189, was entered as 159. The correct mean will be:
- 152.5
 - 152.0
 - 151.5
 - 151.0
29. Consider the following sets of data:
- 5, 5, 5, 5, 5, 10, 10, 10, 10
 - 2, 2, 2, 5, 5, 8, 8, 10, 10, 18
 - 6, 6, 6, 6, 5, 7, 7, 5, 7, 5, 8, 9
- For which of these sets is the arithmetic mean a good measure of the central tendency?
- A, B and C
 - B and C
 - C Only
 - None of these
30. The marks obtained out of 50, by 100 students on a test are given in the frequency table:
- | Marks | Frequency |
|-------|-----------|
| 10 | 7 |
| 15 | 04 |
| 20 | 08 |
| 22 | 11 |
| 24 | 20 |
| 25 | 23 |
| 30 | 17 |
| 33 | 13 |
| 38 | 3 |
| 45 | 1 |
- Number of students who obtained up to 50% marks is:
- 23
 - 34
 - 66
 - 83
31. Consider the facts given below:
- One molecule of water will always contain two atoms of hydrogen and one atom of oxygen.
 - Graphite and charcoal are composed of carbon atoms and yet have different physical properties.
 - Oxygen and hydrogen combine in two ways to produce water and hydrogen peroxide.
- Which of these can be explained with Dalton's atomic theory?
- A and C
 - A, B and C
 - B and C
 - C Only
32. Which of the following is NOT deflected by electric fields?
- X-Rays
 - Cathode-Rays
 - Beta-Rays
 - Alpha Particles
33. According to our understanding today, an atom is bigger than the nucleus by a factor of:
- 1,000
 - 10,000
 - 1,00,000
 - 10,00,000
34. Which of the following statements about sodium and sodium ions is correct?
- Both have the same number of electrons
 - Both have the same number of positive charges
 - Both form covalent bonds
 - Both have the same chemical properties
35. Which of the following statements about a neutral atom is correct?
- Number of Neutrons = Number of Protons
 - Number of Electrons = Number of Protons
 - Number of Neutrons \neq Number of Electrons
 - Number of Neutrons = Number of Protons = Number of Electrons
36. Elements that have 7 electrons in the outermost shell are called:
- Halogens
 - Alkaline earth-family
 - Alkaline earth-family
 - Metals
41. Which of the following are the constituents of the alloy German Silver:
- Iron, Copper and Zinc
 - Iron and Carbon
 - Copper, Nickel and Zinc
 - Copper and Tin
40. Which of the following statements about metals is NOT correct?
- They combine with oxygen to form oxides
 - their oxide are alkaline in nature
 - They form ions by losing electrons
 - They are the least reactive of elements
37. Which of the following elements forms ONLY covalent bonds?
- Fluorine
 - Helium
 - Magnesium
 - Carbon
42. Consider the following statements about graphite and diamond:
- Their electronic configurations are difficult
 - They have identical chemical properties
 - Their atoms are bounded to each other differently
- Which of these statements is/are correct?
- A and C
 - B only
 - B and C
 - A, B and C
43. Which of the following is produced when sodium acetate mixed with soda lime is heated?
- Methane
 - Butane
 - Carbon monoxide
 - Carbon dioxide
44. What is the chemical term for spirit?
- Ethanol
 - Methanol
 - Ethanoic acid
 - Methanoic acid
45. Which of the following is NOT a petroleum product?
- Kerosene
 - Methyl alcohol
 - Diesel oil
 - Vaseline
46. Which of the following statements about

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- decomposition reaction?
- $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2$
 - $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$
 - $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$
 - $\text{NH}_4\text{NCO} \rightarrow \text{H}_4\text{NCO}$
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 - Diesel oil
 - Vaseline
46. Which of the following statements about

- polymers is NOT correct?
- Cellulose is a naturally occurring polymer
 - Nylon is produced by polymerization of natural, small molecules
 - Rubber can also be produced synthetically
 - Rayon is made from cellulose
47. Which of the following is the most abundant element on the earth?
- Carbon
 - Oxygen
 - Silicon
 - Aluminium
48. The average speed of a car on a journey is v . Which of the following statements about the journey is correct?
- At some time, the car must have been traveling at speed v
 - Most of the time, speed of the car must have been close to v
 - For half the time speed of the car must have been less than v
 - None of the above need to be correct
49. Consider the distance (d) versus time (t) graph for the motion of two objects P and Q , and decide which of the statements that follow is correct?



- B.
50. Consider the two statements given about an object on which an external force is applied:
- The object must move if a force acts on it
 - The object must move in the direction of applied force
- Which of the following statement is/are correct?
- A Only
 - B only
 - Both A and B
 - Neither A nor B
51. A tennis ball of mass 0.25 kg strikes the racket at the speed of 20 m/s. The player returns the ball which goes back in the opposite direction after it is hit. If the ball remains in contact with the racket for 0.1 s. What is the force that acts on the ball?
- 400 N
 - 200 N
 - 100 N
 - 50 N
52. Consider the statements about a horse pulling a cart on the road
- The horse pushes the earth back and the cart pulls the horse back
 - The cart and the horse pull each other in opposite direction
- Which of these statements are/is correct?
- A Only
 - B Only
 - Both A and B
 - Neither A nor B
53. Masses of 1 kg and 4 kg are tied to the two ends of a string and dropped from a height. Which of the following statements about these is correct:
- at any time the masses have the same speed
 - 4 kg mass is ahead of 1 kg mass as they fall
 - the string is stretched as the masses fall
 - net force on the system of masses is zero
54. If g were the acceleration due to gravity on the surface of a planet, what would be its value on another planet that has three times the mass of the first planet and has twice its radius
- 1.5 g
 - 0.75 g
 - 0.5 g
 - 0.25 g
55. A ball is bouncing up and down from a

- frictionless surface in vacuum. Which of the physical quantities do not change?
- Acceleration of the ball
 - Total energy of the ball
 - Momentum of the ball
 - A and B
56. Which of the quantity associated with a wave does not depend on the property of the medium in which the wave travels?
- Frequency
 - Wavelength
 - Amplitude
 - Speed
57. Consider the following situations
- A man standing still with a heavy load on his head
 - The moon going round the earth
 - A ball rolling on a flat, smooth surface
 - In which of these work is being done
58. Body A is at a higher temperature than body B are brought in contact. Heat will flow from:
- A to B
 - The body that has higher heat content
 - A, but only if it also has higher heat content
 - The body that has a higher specific heat
59. An object is placed between the focus and the optic center of a convex lens. The image will be:
- virtual, diminished and erect
 - virtual, enlarged and inverted
 - real, diminished and inverted
 - virtual, enlarged and erect
60. What colour would be produced if red light overlaps with green light:
- Magenta
 - Cyan
 - Yellow
 - Brown
61. A 1000 W heating coil is cut into two equal parts. If the two parts are used separately as heaters,
- what will be their combined wattage?
- 500 W
 - 1000 W
 - 2000 W
 - 4000 W
62. Which combination of 4 equal resistances will offer minimum resistance to current
- $\square \text{----} \square \text{----} \square \text{----}$
 - $\square \text{----} \square \text{---} \square \text{----}$
 - $\square \text{----} \square \text{---} \square \text{---} \square \text{----}$
 - $\square \text{----} \square \text{---} \square \text{---} \square \text{---}$
63. From your point of view, the magnetic field at a place points upwards from the ground. A horizontal copper wire is kept perpendicular to the magnetic field in the east-west direction. If a current flows in the wire from right to left. It will experience force in a direction:
- away from you
 - towards you
 - downwards
 - right to left
64. Joule/Volt is a measure of:
- electric power
 - electric potential
 - electrical current
 - electric charge
65. Which of the following constitute the same species
- All human beings
 - All birds
 - All mammals
 - All fishes
66. Which of the following is NOT an example of adaptation:
- Shrinking of leaves by a tree when it is very hot
 - Narrowing of eye pupils as one goes outdoors
 - Strengthening of muscles with exercise
 - Increase in activity by cold blooded animals in summer
67. In addition to the physical components of environment, the habitat of an organism involves
- The plants as well as other animals
 - Only the plants
 - The other animals only
 - Nothing else

68. Which of the following characteristics of living organisms is common to machines?
 (a) Self-perpetuation
 (b) Growth
 (c) Adaptation
 (d) Energy requirement for functioning
69. The next higher level in the hierarchy of organization after organism is:
 (a) Organ system (b) Community
 (c) Population (d) Organs
70. Consider the following components of a wheat field:
 A. Weeds growing in the field
 B. Birds and insects flying around the field
 C. The fence around the field
 Which of these are included in the ecosystem of the wheat field?
 (a) A Only
 (b) A and B
 (c) B Only
 (d) A, B and C
71. The part of the cell containing information for the functioning of a cell is:
 (a) Cytoplasm (b) Plasma
 (c) Chromosomes (d) Rbosomes
72. Which of the following is not a characteristic of mitosis
 (a) Chromosome material is not exchanged
 (b) Occurs only in sex cells
 (c) Process involves five stages
 (d) There is no genetic variation between generation
73. Part of the cell that releases energy for use by the cell is called:
 (a) Golgi apparatus (b) Mitochondria
 (c) Vacuole (d) Cilia
74. Which of the following is an example of sexual reproduction of organism:
 (a) Fission (b) Spore formation
 (c) Cambial activity (d) None of these

75. Daily energy requirement in kilo-joules of an adult is about:
 (a) 6,000 (b) 10,000
 (c) 15,000 (d) 18,000
76. Which of the following foods is a good source of both proteins and fats?
 (a) Eggs (b) Fish
 (c) Sugar (d) Butter
77. Which of the following diseases is not caused by virus:
 (a) ChickenPox (b) Polio
 (c) Measles (d) Tetanus
78. To which trophic level do herbivores belong?
 (a) IV (b) III
 (c) II (d) I
79. Consider the following processes:
 A. Photosynthesis
 B. Respiration
 C. Decomposition
 Which of these is/are a part of the carbon-cycle?
 (a) A and B (b) B and C
 (c) A Only (d) A, B and C
80. The main pollutant in the atmosphere is:
 (a) Hydrocarbons (b) Carbon dioxide
 (c) Carbon monoxide (d) Oxides of sulphur and nitrogen
81. The Ninth Five Year Plan ends/ended in the year
 (a) 200 (b) 2001
 (c) 2002 (d) 2003
82. Which of the following number is written as 111 in the binary system?
 (a) 3 (b) 5
 (c) 7 (d) 9
83. Which of the following quantities is measured on the Richter scale?
 (a) Intensity of an earth-quake
 (b) Speed of a glacier

84. The United Nations officially came into existence in the year:
 (a) 1941 (b) 1943
 (c) 1944 (d) 1945
85. The term "cloning" belongs to the field of:
 (a) Sports (b) Biology
 (c) Politics (d) Computers
86. The term "Naroda Patia" has been in the news lately in connection with:
 (a) Anti Narmada dam demonstrations
 (b) Gujarat Riots
 (c) Famine in Orissa
 (d) Acts of terrorism in Jammu & Kashmir
87. Who wrote the lyrics of "Lagaan".
 (a) Anand Bakshi (b) Majrooh Sultanpuri
 (c) Javed Akhtar (d) Sameer
88. The next Cricket World Cup will be held at:
 (a) Australia (b) England
 (c) South Africa (d) West Indies
89. In which year was the state of Chhattisgarh created:
 (a) 1997 (b) 1999
 (c) 2000 (d) 2001
90. The tomb of the famous Urdu poet Mirza Ghulam is situated at:
 (a) Agra (b) Delhi
 (c) Hyderabad (d) Lucknow
91. Which Muslim ruler used to earn money by writing copies of Quran:
 (a) Akbar (b) Bahadur Shah Zafar
 (c) Allauddin Khilji (d) Aurangzeb
92. The name Amjad Ali Khan is associated with:
 (a) Classical Indian Music
 (b) Sports
93. The book, "India Wins Freedom" is written by:
 (a) Jawahar Lal Nehru
 (b) Dr. Zakir Hussain
 (c) Maulana Abul Kalam Azad
 (d) Bal Gangadhar Tilak
94. In which city is the Dargah of Hazrat Nizamuddin situated:
 (a) Lucknow (b) Barabanki
 (c) Delhi (d) Ajmer
95. The khilafat movement in India started in the year:
 (a) 1858 (b) 1906
 (c) 1919 (d) 1942
96. Which amongst Abul Kalam Azad-I, Dr. Zakir Hussain-II and Prem Chand - III have been awarded the Bharat Ratna award?
 (a) I and II (b) II Only
 (c) I and III (d) I, II and III
97. Which Urdu poet is famous for his elegies?
 (a) Mir Taqi Mir (b) Mir Anees
 (c) Hali (d) Allama Iqbal
98. According to Christian calendar the next Islamic year will begin in:
 (a) September 2002 (b) December 2002
 (c) January 2003 (d) March 2003
99. The journal "Tahzibul Aklaq" was started by:
 (a) Maulana Shibli
 (b) Mohd Ali
 (c) Sir Syed Ahmad Khan
 (d) Maulana Abdur Kalam Azad
100. Sir Syed Ahmad Khan was born in:
 (a) Mid Eighteenth Century
 (b) Late Eighteenth Century
 (c) Early Nineteenth Century
 (d) Mid Nineteenth Century

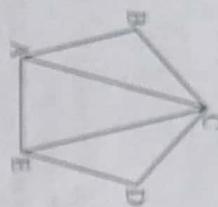
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1. Which of the following statement is true for fundamental operation on Natural numbers?
- Addition only
 - Addition and Subtraction
 - Addition, subtraction and multiplication
 - Addition and multiplication
2. Consider the following statements:
- All whole numbers are rational numbers.
 - Ratio of any two whole numbers p/q ($q \neq 0$) irrational. Which of the statements [is/are] true?
- Only I
 - Only II
 - I and II
 - Neither I nor II
3. A rectangle of length 4 cm greater than its breadth. Perimeter is 11 cm more than breadth. Find the Area of rectangle.
- 12 cm^2
 - 10 cm^2
 - 8 cm^2
 - 5 cm^2
4. Which of the following equation cannot be solved by middle factorization:
- $0.5x^2 - 3x + 4 = 0$
 - $\sqrt{3}x^2 + 11x + 6\sqrt{3} = 0$
 - $3x^2 + 2x - 8 = 0$
 - $6x^2 + 17x + 12 = 0$
5. Which of the following equation represent a straight line perpendicular to the line given by $y = x + 3$:
- $y = x - 3$
 - $y = -2x + 2$
 - $y = 5 - x$
 - $y = x - 2$
6. Consider the following statements about quadratic equations
- The two roots must be unequal
 - One root must be positive
 - The roots cannot be zero
7. Which of these conditions must be true for a quadratic equations?
- I and III
 - II and III
 - Only
 - None of these
8. To find the number which when added to its reciprocal is $\frac{17}{4}$, you will need to solve the equation:
- $x^2 - 17x - 4 = 0$
 - $4x^2 + 17x - 1 = 0$
 - $4x^2 - 17x + 4 = 0$
 - $7x^2 - 4x + 17 = 0$
9. The sum of two digit number and the number obtained by reversing the order of digits is 121, and the two digits differ by 3. Which of the following sets of equations will you have to solve to find the number:
- $11(x+y) = 121; x-y=3$
 - $10(x-y) = 121; x+y=3$
 - $11(x-y) = 121; x+y=3$
 - $10(x+y) = 121; x+y=3$
10. Which of the following statement is not correct
- $= x+3;$
- $\log_{10}5 < \log_{10}10$
 - $\log_5 5 > \log_{10}5$
 - $\log_{10}10 > \log_5 5$
 - $\log_{10}5 < \log_5 10$
11. If $\log X - \log Y = \log Z$, then:
- $X - Y = Z$
 - $X^Y = Z$
 - $XY = Z$
 - $X/Y = Z$
12. If $\log x = 2.3411$ and $\log y = 3.3411$ and analog
- $(3411) = 2194$ then $\frac{x}{y}$ is equal to
- 2.194×10^6
 - 10^6
 - 2.194
 - 10^5
13. Angle subtended by a 5 m high pillar at point A is 45° . At point B on the line joining the base of the pillar and A, the angle subtended is 30° . The distance between A and B is:
- More than 5 m
 - Between 2.5 and 5 m
 - Between 1.5 and 2.5 m
 - Less than 1.5 m
14. Which of the following statement is correct?
- $\operatorname{cosec} 30^\circ < \operatorname{cosec} 45^\circ$
 - $\tan 60^\circ > \tan 45^\circ$
 - $\sec 45^\circ < \sec 30^\circ$
 - $\sin 30^\circ > \sin 60^\circ$
15. $\frac{\tan 60^\circ - \tan 30^\circ}{1 + \tan 60^\circ \tan 30^\circ}$ is equal to
- $\tan 30^\circ$
 - $\cot 30^\circ$
 - $\tan 60^\circ$
 - $\cot 60^\circ$
16. Of the equations,
- $\cot^2 \theta + 1 = \cos \theta \cot^2 \theta$
 - $\cos^2 \theta + 2 \cos \theta + 1 = 0$
- Which will be true for all values of θ ?
- Both I and II
 - I Only
 - II Only
 - Neither I nor II
17. For what value of θ will the $\sin \theta - \cos \theta$ be maximum?
- 30°
 - 45°
 - 60°
 - 90°
18. Which of the following statements about a triangle will be true if only one of its sides is doubled:
- The angle opposite to the side will increase by a factor 2
19. In a triangle ABC, $\angle C = 100^\circ$. If $\angle A$ and $\angle B$ are both halved, the new value of $\angle C$ will become
- 110°
 - 120°
 - 130°
 - None of these
20. Figure produced by joining the midpoints of the sides of a trapezium is:
- Trapezium
 - Rhombus
 - Rectangle
 - Parallelogram
21. The diagonals of a rhombus measure $6\sqrt{3}$ and 6 units. Its side is:
- $6\sqrt{3}$ units
 - 6 units
 - $4\sqrt{3}$ units
 - 4 units
22. In the diagram P is the intersection of the bisectors of $\angle B$ and $\angle C$ of quadrilateral ABCD. PM, PN and PL are perpendiculars on the sides AB, DC and BC respectively.
-
23. The area of a square is A. If a circle is drawn that passes from all corners of the square, its area will be:
- The area of the triangle will be doubled
 - The angle opposite to the side and the area of triangle will be doubled
 - None of these

- (a) πd
(b) $2A$
(c) $\frac{\pi d}{2}$
(d) $\frac{d}{2}$

24. The diagram shows a regular pentagon. $\angle ACE$ is
is



- (a) 27°
(b) 30°
(c) 36°
(d) 45°

25. The centres of two circles of radii 3cm and 2cm respectively are 1cm apart. The number of common tangents that can be drawn is/are:

- (a) None
(b) 1
(c) 2
(d) 4

26. If a circle passes through all the three corners of a triangle then the centre is the point of concurrency of the:

- (a) angle bisectors of the triangle
(b) perpendicular bisectors of the sides of the triangle
(c) three altitudes of the triangle
(d) the three medians of the triangle

27. For the values 30, 5, 21, 42, 13, 10, 27, 33, 17, 8 of a variable, the median is:

- (a) 17
(b) 18
(c) 19
(d) 21

28. The mean of 30 values is calculated to be 150. On rechecking it was discovered that one value 180 was entered wrongly as 135. The corrected mean will be:

- (a) 150
(b) 150.5
(c) 151
(d) 151.5

29. Consider the following statements about the Gini coefficient of living index:

- I. It is calculated in rupees
II. It is dependent on the year that is taken as reference point
III. It treats the entire population as one group

- Which of these is/are correct?

- (a) I only
(b) I and II
(c) II and III
(d) None of these

30. Arithmetic mean of the following data is calculated:

- I. Height of children in a given class

- II. Age of all members of a family

- III. Income of the teachers and the parents of the students

- Which of these is/are a good measure of central tendency?

- (a) I and II
(b) I only
(c) II and III
(d) I, II and III

31. Light beams of which three colours taken together will produce white light:

- (a) Blue, Green and Magenta
(b) Red, Blue and Green
(c) Red, Yellow and Blue
(d) Magenta, Yellow and Blue

32. When we see a picture through a magnifying lens of focal length F, the object lies

- (a) Between F and 2F
(b) Between F and the optical centre of the lens
(c) At F
(d) Beyond 2F

33. An object is placed at a distance D from the optic centre of a concave lens of focal length F. Under which of the following conditions will the image be enlarged?

- (a) $D > F$
(b) $D < F$
(c) $F < D < 2F$
(d) Never

34. Quantities of heat that two objects A and B have are H_A and H_B . Their temperatures are T_A and

T_B respectively. Under which of the following conditions heat will not flow if the two objects are joined together:

- (a) $H_A < H_B$, $T_A > T_B$
(b) $H_A = H_B$, $T_A > T_B$
(c) $H_A < H_B$, $T_A = T_B$
(d) $H_A = H_B$, $T_A < T_B$

35. Consider the following facts:
A. When heated, liquids expand more than solids
B. Particles of liquid move faster when heated
C. Liquids rise in thin capillaries due to forces between the liquid and the walls

Which of these are used in the design of a mercury thermometer?

A. A Only
B. A and B
C. B Only
D. A, B and C

36. Consider the following statements:
A. When we rub our hands together, their temperature rises slightly
B. When iron is heated its colour changes
C. Particles of water rise to its surface when heated

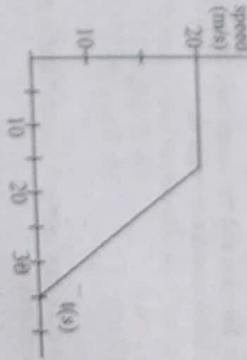
Which of these statements show/shows that heat is a form of energy?

A. A Only
B. A and C
C. A, B and C
D. None of these

37. Which of the quantities in the relation, $V = v\lambda$ depend/depends on the properties of the medium in which the wave travels:

(a) V only
(b) V and λ
(c) v and λ
(d) V , v and λ

38. Study the displacement versus time graph for a particle describing simple harmonic motion and answer the question given below:



The total distance traveled by the object in the journey shown is

- (a) 850 m
(b) 650 m
(c) 450 m
(d) 350 m

(e) Points B and D are moving in the same direction.

- (d) Time taken for the particle to go from A to F is half of the time period

39. Consider the following statements about the force of gravitation between two bodies:

- A. It does not depend on the medium between the two bodies
B. It is unaffected if a third body is brought near the two bodies
C. It depends on the shape of the bodies

Which of these statements is/are correct?

A. A and B
B. B and C
C. C and A
D. A, B and C

40. On a certain planet whose mass is M , an object of mass m is dropped from a height h measured from the surface of the planet. The acceleration of the object will depend on:

(a) M , m and h
(b) M and h
(c) m and h
(d) M Only

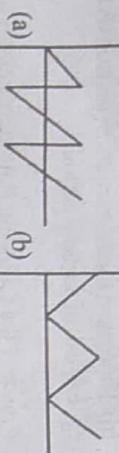
41. The graph shows the speed variation of an object with time. Study the graph and then answer the question that follows:

- (a) M , m and h
(b) M and h
(c) m and h
(d) M Only

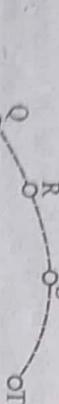
42. A ball bounces up and down on a hard floor without losing energy. Which of the following graphs correctly describes the variation of its

velocity v with time t .

- (a) 1Ω (b) 2Ω
(c) 2.5Ω (d) 3.5Ω



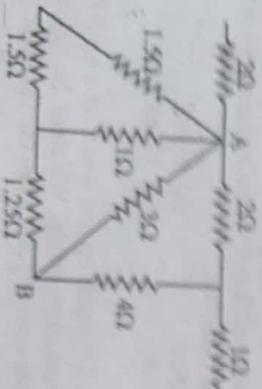
43. The diagram shows different positions of a fireball as it comes out of a canon.



Consider the following statements:

- I. The angle between the force on the ball and its velocity is zero at P.
II. The angle between the force on the ball and its velocity is maximum at R.
III. The direction and the magnitude of force on the ball is constant throughout
Which of these statements is/are correct?
(a) I and II (b) III only
(c) II only (d) II and III

44. The resistance between points A and B in the given figure is:



45. Consider the following statements:
I. An object moving with speed v hits a wall and comes to rest immediately. If all its energy is converted to heat energy H , then H is proportional to:

- (a) v^2 (b) $v^{3/2}$
(c) v (d) $v^{1/2}$

46. Consider the following statements:
I. It is sun's energy that keep the planets moving around it.
II. The farther a planet is from the sun the slower it moves.
Which of the these is/are correct?

- (a) I only (b) II only
(c) I and II (d) Neither I nor II

47. The unit of energy is
(a) Joule (b) Joule-Hour
(c) Watt (d) Watt per hour

48. Consider the following meanings of the term adaptation:
I. Immediate response of an organism to sudden change in environment
II. A deliberate decision taken by the organism to cope with the change in environment
III. Permanent change in organism through hereditary means to cope with change in environment
Which of these is/are correct?
(a) I and II (b) III only
(c) II only (d) II and III

49. Consider the following statements:
I. Organisms that live in an environments belong to the same species
II. Organism from different species cannot interbreed.
Which of these is/are correct?
(a) I Only (b) II Only
(c) I and II (d) Neither I nor II

50. Consider the following statements:
I. An organism grows in size with age, number of chromosomes in each cell change
B. The female egg cell contains half the number of chromosomes that an ordinary cell of the species has
Which of these is/are true?
(a) A only (b) B only
(c) A and B (d) Neither A nor B

52. Consider the following statements:
A. As an organism grows in size with age, number of chromosomes in each cell change
B. The female egg cell contains half the number of chromosomes that an ordinary cell of the species has
Which of these is/are correct?

- (a) A only (b) B only
(c) A and B (d) Neither A nor B

53. Which of the following have identical genes as the parent?
(a) All children (b) Identical twins
(c) Clones (d) None of these

54. Which mode of nutrition is particular only to plants:
(a) Autotrophic (b) Heterotrophic
(c) Saprophytic (d) Holozoic

55. Which of the following are essential for photosynthesis:
(a) Water, carbon dioxide and oxygen
(b) Light and carbon dioxide
(c) Carbon dioxide, water and light
(d) Oxygen, carbon dioxide, light and water

56. Consider the following statement about breathing and respiration:
I. Both are chemical processes
II. Respiration takes place in all organisms
Which of these is/are correct?
(a) I Only (b) II Only
(c) Both I and II (d) Neither I nor II

57. Consider the following statements about a

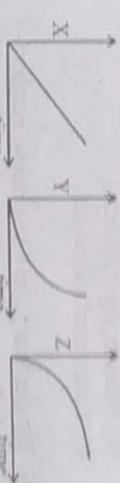
'biome':

- A. The same biotic community is found in different parts of a biome
B. A biome consists of all different ecosystems of a geographical area
Which of these is/are correct?

- (a) A Only (b) B Only
(c) Both A and B (d) None of these

58. Consider the following statements about the Food-chain:
A. Only plants belong to the first trophic level
B. Only carnivores belong to the highest trophic level
C. Only herbivores belong to the second trophic level
Which of these is/are correct?
(a) A and B (b) B and C
(c) A only (d) A, B and C

59. Study the graphs given below and then answer the question that follows:



- Which of the following statements is correct?
(a) X represents the population growth, Y represents the food growth
(b) Z represents the food growth, Y represents the population growth
(c) Y represents both population and food growths
(d) X represents the food growth, Y represents the population growth.

60. Malfunctioning of which gland may result in stunted physical growth of a child:

- I. Pituitary (a) Thyroid
II. Pancreas (b) Adrenal
(c) Both I and II (d) Neither I nor II

61. Deep freezing preserves food by:
(a) Draining out water from the food, hence

inhibiting bacterial growth
(b) Forming a layer of ice on the surface to prevent bacteria to enter

(c) Freezing all bacteria thus preventing them from acting
(d) Killing the eggs of all bacteria thus preventing their growth

62. Which of the following is not a disease caused by virus?
(a) Hepatitis (b) Tetanus
(c) Dengue Fever (d) Chickenpox

63. Which of the following substances is not used in the process of digestion:
(a) Starch (b) Cellulose
(c) Sugar (d) Fat

64. Which of the following groups of food is energy giving:
(a) Eggs, milk and cheese
(b) Fruits, vegetable and fish
(c) Potatoes, sugar and bread
(d) Butter, meat and peanuts

65. The elements X and Y have atomic numbers 11 and 17 respectively. Element 'X' reacts with element "Y" to form compound with molecular formula:

(a) XY (b) X_2Y
(c) XY_2 (d) X_2Y_3

66. Which of the following is an example of displacement reaction?

(a) $CaCO_3 + 2HCl \rightarrow CO_2 + H_2O + CaCl_2$
(b) $Ca(OH)_2 + H_2SO_4 \rightarrow H_2O + CaSO_4$
(c) $2FeSO_4 + Cu \rightarrow Fe_2(SO_4)_3 + SO_2 + SO_3$
(d) $Zn + CuSO_4 \rightarrow Cu + ZnSO_4$

67. Which of the following molecules has covalent bond?
(a) Hydrogen chloride
(b) Sodium chloride

(c) Magnesium chloride
(d) Calcium chloride

68. The properties of elements are periodic function of their:
(a) Atomic mass (b) Atomic number
(c) Atomic weight (d) Atomic radius

69. The elements W, X, Y and Z have atomic numbers of 9, 12, 16, 18 respectively. Which of these elements is a noble gas?
(a) W (b) X
(c) Y (d) Z

70. Which of the following statements about $^{14}_6C$ is correct?
(a) $^{14}_6C$ has seven electrons and seven neutrons
(b) $^{14}_6C$ has chemical properties similar to $^{12}_6C$
(c) It has seven protons and seven neutrons
(d) It is more stable compared to $^{12}_6C$

71. The shape of PCl_3 molecule is
(a) Tetrahedral
(b) Planar
(c) Octahedral
(d) Trigonal bipyramidal

72. Which of the following molecules has octahedral shape?
(a) CCl_4 (b) SF_6
(c) CO_2 (d) C_2H_4

73. Which of the following metals is most reactive?
(a) Copper (b) Iron
(c) Zinc (d) Magnesium

74. Which of the following metals can displace copper from copper sulphate solution?
(a) Gold (b) Magnesium
(c) Mercury (d) Silver

75. Which of the following statements is incorrect?
 $\text{CH}_3 - \text{C}(\text{CH}_3)_2 - \text{CH}_2 - \text{CH}_3$

(a) Coal gas is a secondary fuel
(b) Coal-gas is a mixture of hydrogen, methane and carbon monoxide

(c) Coal, when heated in absence of air, gives coke
(d) Petroleum gas is a mixture of methane and butane

76. Which of the following fuel has highest calorific value:
(a) Ethanol (b) Butane
(c) Hydrogen (d) Methane

77. In electrolytic cell for refining of copper, the anode is made up of:
(a) Pure copper (b) Impure copper
(c) Graphite (d) Pure Iron

78. Stainless steel is an alloy of:
(a) Copper, Nickel and Zinc
(b) Copper and Tin
(c) Copper and Zinc
(d) Iron, Nickel and Chromium

79. Which of the following statements is incorrect?
(a) Metals are malleable and ductile
(b) Metal form acidic and neutral oxides
(c) Metals replace hydrogen from acids and form their salts
(d) Metals are good conductor of heat and electricity

80. Which of the following compound is an isomer of n -butane?
(a) $CH_3 - CH - CH_2 - CH_3$
(b) $CH_3 - CH_2 - CH - CH_3$

81. The area of Earth's surface covered by deserts is approximately:
(a) 10% (b) 20%
(c) 30% (d) 40%

82. Lake Mansarovar is situated in:
(a) India (b) China
(c) Tibet (d) Burma

83. In which year did man set foot on the moon for the first time:
(a) 1967 (b) 1968
(c) 1969 (d) 1970

84. Most of the present day volcanic activity occurs along:
(a) Mountain belts
(b) Continental shelves
(c) Mid-oceanic ridges
(d) Continental margins

85. The instrument used for measuring pressure difference of gases is called:
(a) Densimeter (b) Barometer
(c) Manometer (d) Hydrometer

86. Which is the world's longest river?
(a) Mississippi (b) Nile
(c) Ganga (d) Brahmaputra

87. The agency of the United Nations that is responsible for promoting education, science and the arts is:
(a) UNESCO (b) UNDP
(c) UNICEF (d) UNHCR

88. NATO is an international organization created in 1949 by the North Atlantic Treaty for purposes of:
(a) Mutual development
(b) Scientific Research

- (c) Space exploration
(d) Collective security

89. The 2nd highest mountain peak in the world, situated in the Karakoram Range in northern

Kashmir is:

- (a) Karakoram (b) Nandadevi
(c) K-2 (d) Kanchampanga

90. The Mughal king Akbar was born in 1542 at:

- (a) Sikar (b) Fatehpur
(c) Sikarot (d) Amer

91. The Shrine of Sufi Saint Suleim Chisti is located in:

- (a) Agra (b) Delhi
(c) Ajmer (d) Fatehpur Sikri

92. "Sare jahan se achha Hindustan hamara" was written by:

- (a) Mirza Ghalib (b) Mir Taqi Mir
(c) Allama Iqbal (d) Makhna Azad

93. The third Caliph after Prophet Mohammad SAW was:

- (a) Hazrat Ali (b) Hazrat Abu Bakr
(c) Hazrat Usman Farooq (d) Hazrat Usman Ghani

94. The festival celebrated immediately after the month of Ramzan is:

- (a) 1850 (b) 1875
(c) 1880 (d) 1900.

- (a) Id-al-Zhu (b) Id-ul-Fitr
(c) Id-Milad-un-Nabi (d) Moharram

95. Raja Ram Mohan Roy founded the Brahmo Samaj in:

- (a) 1820 (b) 1825
(c) 1828 (d) 1830

96. The holiest shrine of the Muslims is situated in:

- (a) Mecca (b) Medina
(c) Karbala (d) Baghdad

97. In which language did the poet Raghibi Sabayi Firaq Gorakhpuri write:

- (a) Persian (b) Hindi
(c) Urdu (d) Kashmiri

98. Amir Khuro, the famous poet was the disciple of:

- (a) Hazrat Nizamuddin Auliya (b) Khwaja Moinuddin Chisti
(c) Baba Farid (d) Sheikh Nuruddin Rishi

99. The name of Bismillah Khan is associated with:

- (a) Literature (b) Painting

- (c) Sculpture (d) Music

4. If $\sec \theta + \tan \theta = m$ and $\sec \theta - \tan \theta = n$ then mn is equal to:

- (a) 1 (b) -1
(c) 2 (d) $\frac{1}{2}$

- (a) $7\frac{1}{2}^\circ$ (b) 0°
(c) 15° (d) 5°

5. Mean proportional between 2.25 and 0.64 is:

- (a) $2\cos^2 \theta + \sin \theta = 2$ then θ is:

- (a) 0° or 15° (b) 0° or 30°
(c) 0° or 45° (d) 0° or 60°

100. Sir Syed Ahmad Khan established the Mohammedan Anglo-Oriental College in:

- (a) 1850 (b) 1875
(c) 1880 (d) 1900.

6. If $x^2 - 3x + 2$ divides $x^3 + ax^2 + bx - 6$, then a and b are:

- (a) 2 and 5 (b) 1 and 6
(c) -6 and 11 (d) 6 and -11

7. If the heights and radii of a sphere, cone and cylinder are same; then their curved surface areas are in the ratio:

- (a) $4 : \sqrt{5} : 4$ (b) $\sqrt{5} : 1 : 3$
(c) $\sqrt{2} : 1 : 1$ (d) $\sqrt{5} : \sqrt{5} : \sqrt{2}$

(10+2) XITH SCIENCE

1. If $\log_{10} 2 = 0.3010$, then $\log_{10} 5$ is:

- (a) $0.3010 \times \frac{5}{2}$ (b) 0.6990
(c) 0.6031 (d) Can't be determined

2. If the coordinates of the vertices of a quadrilateral are $(-1, 0)$, $(-1, 3)$, $(3, 3)$ and $(4, 0)$ respectively. Then the area of the quadrilateral is:

- (a) 12.5 (b) 14.5
(c) 12.5 (d) 10

10. $\frac{x+1}{x^2-x-2} + \frac{2x+1}{2x^2-x-1} + \frac{3-2x}{x^2-3x+2}$ is equal to

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

11. The angle between minute and hour hands at 3 : 15 is:

- (a) $7\frac{1}{2}^\circ$ (b) 0°
(c) 15° (d) 5°

12. Mean proportional between 2.25 and 0.64 is:

- (a) 1.02 (b) 1.20
(c) 0.12 (d) 2.30

13. The sum of the length, breadth and height of a cuboid is 19 cm and its diagonal is 15 cm. The surface area of the cuboid is:

- (a) 68 cm^2 (b) 136 cm^2
(c) 372 cm^2 (d) 204 cm^2

14. The largest area of a square inscribed in a semi circle of radius a is:

- (a) $\frac{4}{5}a^2$ (b) $2a^2$
(c) $\frac{2}{5}a^2$ (d) $\frac{3}{5}a^2$

15. Two equal circles in the same plane cannot have the following number of common tangents:

(a) 1
(b) 2
(c) 3
(d) 4

16. If $x^{x^x} = 3$, then the value of x is:

(a) $\sqrt{3}$
(b) $\sqrt[3]{3}$
(c) 3
(d) $\sqrt{2}$

17. If the radius r of a sphere is reduced to $r/3$, then the ratio of the volumes of new sphere and old sphere is:

(a) 1 : 3
(b) 1 : 9
(c) 1 : 27
(d) 1 : 81

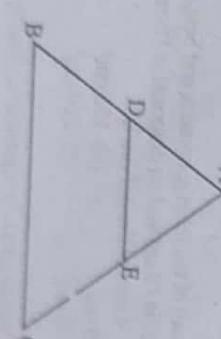
18. If the roots of the equation $ax^2 + bx + c = 0$ are α and β then the equation with roots $(\alpha - 1)$ and $(\beta - 1)$ is:

(a) $ax^2 + (b + 2a)x + a + b + c = 0$
(b) $ax^2 + (b - 2a)x + a + b + c = 0$
(c) $ax^2 + (b + 2a)x + a - b + c = 0$
(d) $ax^2 + (b - 2a)x + a - b + c = 0$

19. If in a $\triangle ABC$, $DE \parallel BC$ such that area $ADE =$ area $BDEC$, then $\frac{AD}{AB}$ is:

(a) 30°
(b) 45°
(c) 60°
(d) 37°

22. If in the given figure, O is the centre of the circle, $\angle ABO = 26^\circ$ and $\angle ACO = 34^\circ$, then $\angle BOC$ is:



(a) $\frac{1}{3}$
(b) $\frac{1}{2}$
(c) $\frac{1}{4}$
(d) $\frac{1}{5}$

20. Value of x from given figure is:

(a) 100°
(b) 110°
(c) 120°
(d) 130°

23. If $x = \frac{4ab}{a+b}$, then $\frac{x+2a}{x-2a} + \frac{x+2b}{x-2b}$ is

(a) 1
(b) 2
(c) 4
(d) 6

24. If the distance between the tops of two trees 21 m and 29 m high is 17 m. The horizontal distance between them is:

(a) 15 m
(b) 11 m
(c) 25 m
(d) 9 m

25. Average weight of 10 students is 45 kg. If one student weighing 46 kg is replaced by another student, then the new average is 45.5 kg. The weight of the new student is:

(a) 45.5 kg
(b) 51 kg
(c) 50 kg
(d) 41 kg

26. If the sides of a triangle are 5 cm, 6 cm and 9 cm long, then the radius of the incircle of the triangle is:

(a) $\sqrt{6}$ cm
(b) $\sqrt{5}$ cm
(c) $\sqrt{2}$ cm
(d) 1 cm

27. The angles of a quadrilateral are in the ratio 1 : 2 : 3 : 4. The greatest angle is:

(a) 36°
(b) 108°
(c) 144°
(d) 156°

28. The least square number which is divisible by 6, 8 and 15 is:

(a) 2500
(b) 3600
(c) 4900
(d) 4800

37. In photosynthesis, the production of one mole of glucose requires

(a) Six water molecules
(b) Twelve water molecules
(c) Ten water molecules
(d) Eight water molecules

- n th term is given by $a_n = 3 + \frac{2}{3}n$ is

(a) 111
(b) 222
(c) 333
(d) 444

31. In an organism, cells are assigned specific function which relate to their

(a) Number only
(b) Shape only
(c) Size only
(d) Shape and size

32. In plants, the wall that lies outside the plasmamembrane is mainly composed of

(a) Sucrose
(b) Cellulose
(c) Lipids
(d) Proteins

33. The constituents of food that are required for body functions and whose absence results in "deficiency diseases" are classified under

(a) Vitamins
(b) Proteins
(c) Minerals
(d) Vitamins and Minerals

34. Scurvy disease in human beings is caused by the deficiency of

(a) Ascorbic acid.
(b) Iodine
(c) Iron
(d) Pyridoxine

35. The renewable natural resources include

(a) Soil
(b) Water
(c) Air
(d) Solar radiation

36. Under autotrophic nutrition, the organism

(a) Organic material only
(b) Inorganic material only
(c) Organic and Inorganic material
(d) None of these

37. In photosynthesis, the production of one mole

of glucose requires

- (a) Six water molecules
(b) Twelve water molecules
(c) Ten water molecules
(d) Eight water molecules

38. There are four major types of chlorophyll molecules in plants however, the dominants/ are

- (a) Chlorophyll -*a*
- (b) Chlorophyll -*c* and *d*
- (c) Chlorophyll -*a* and *b*
- (d) Chlorophyll -*a* and *c*

39. One complete oxidation of one mole of hexose to CO₂ and H₂O the released energy is equivalent to

- (a) 2872 kJ
- (b) 2072 kJ
- (c) 2802 kJ
- (d) 2070 kJ

40. In animals, blood circulation carries with it

- (a) Hormones and enzymes
- (b) Nutrients and wastes
- (c) Thermoregulator and gases
- (d) All of these

41. Out of the various factors in blood clotting, the role is assigned to

- (a) Thrombin
- (b) Fibrin
- (c) Platelets
- (d) Prothrombin

42. The fluid containing lymphocytes flows from

- (a) Tissue to heart
- (b) Heart to tissue
- (c) Tissue to tissue
- (d) Tissue to the organs

43. The pigment, phytochrome, is involved in the regulation of

- (a) Phototropism
- (b) Geotropism
- (c) photoperiodism.
- (d) Chemotropism

44. The neurons, in human nervous system, pass information in the form of

- (a) Chemical signals
- (b) Electrical signals
- (c) Chemical and Electrical signals
- (d) Chemical and thermal signals

45. During asexual reproduction, *Plasmodium*, undergoes

- (a) Binary fission
- (b) Multiple fission
- (c) Budding
- (d) All of these

46. What we call today as "genes" were originally named by Mendel as

- (a) Units
- (b) Factors
- (c) Characters
- (d) Bodies

47. DNA molecules is characterized with

- (a) Two groups of nitrogenous bases
- (b) Four groups of nitrogenous bases
- (c) One group of nitrogenous bases
- (d) Six groups of nitrogenous bases

48. Which of the following statement is incorrect?

- (a) The number of protons present in the nucleus of an atom is known as its atomic number
- (b) The total number of protons and neutrons in the nucleus of an atom is known as its mass number
- (c) Isotopes have different electrical charge on their nucleus
- (d) The electrons in the outermost shell of an atom are known as valence electrons

49. The element X and Y have atomic number 13 and 8 respectively. Element "X" reacts with element "Y" to form compound with molecular formula

- (a) XY
- (b) XY₂
- (c) XY₃
- (d) X₂Y₃

50. The atomic radius (pm) of Li, Be, B and C varies in the order:

- (a) Li > Be > B > C
- (b) C > B > Be > Li
- (c) C > Be > B > Li
- (d) Li > Be > B > C

51. The first ionization energy in elements Li, Be, B and C varies in the order:

- (a) C > Be > B > Li
- (b) C > B > Be > Li
- (c) C > Li > B > Be
- (d) Li > Be > B > C

52. Which of the following reaction is an example of double displacement reaction?

- (a) Pb(s) + CuSO₄(aq) → PbSO₄(aq) + Cu(s)
- (b) BaCl₂(aq)+Na₂SO₄(aq) →
- (c) BaSO₄(s)+2NaCl(aq)

53. The pH of the acidic solution formed when 0.02 mol of HCl is added to enough water to make the fine volume 2.0 L, shall be:

- (a) 1
- (b) 2
- (c) 4
- (d) 2.02

54. A mixture of sand, lime, borax and alkali carbonates are fused to make:

- (a) Hard glass
- (b) Optical glass
- (c) Pyrex glass
- (d) Photochromic glass

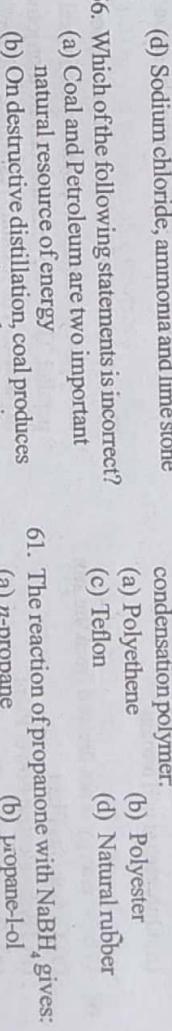
55. The raw materials used in the manufacture of sodium carbonate by Solvay process are:

- (a) Sodium and CO₂
- (b) Sodium and CaCO₃
- (c) Sodium chloride and lime stone
- (d) Sodium chloride, ammonia and lime stone

56. Which of the following statements is incorrect?

- (a) Coal and Petroleum are two important natural resource of energy
- (b) On destructive distillation, coal produces coaltar, coal gas, coke and ammonia
- (c) Petroleum is separated into different fractions by fractional distillation
- (d) Coal gas is a mixture of saturated and unsaturated hydrocarbons

57. Which of the following compounds is an isomer of *n*-pentane:



58. Methane is prepared by heating a mixture of:

- (a) Sodium methanoate and soda lime
- (b) Sodium methoxide and calcium oxide
- (c) Sodium ethoxide and calcium oxide
- (d) Sodium ethoxide and calcium oxide

59. Which of the following metals cannot displace copper from copper sulphate solution

- (a) Potassium
- (b) Calcium
- (c) Zinc
- (d) Mercury

60. Which of the following is an example of condensation polymer:

- (a) Polyethene
- (b) Polyester
- (c) Teflon
- (d) Natural rubber

61. The reaction of propanone with NaBH₄ gives:

- (a) *n*-propane
- (b) propane-1-ol
- (c) propane-2-ol
- (d) propane

62. The compound formed by the reaction of ethanol with ethanoic acid in the presence of concentrated sulphuric acid is:

- (a) CH₃COOC₂H₅
- (b) CH₃CH₂COOCH₃
- (c) CH₃COOCH₃
- (d) CH₃CH₂COOC₂H₅

63. Which of the following alloys does not constitute copper?

- (a) Brass
- (b) Bronze
- (c) Stainless steel
- (d) Duralumin

64. The Acceleration of a simple pendulum is maximum:

- (a) at each of the extreme positions

- (b) between the mean position and the right extreme position
 (c) between the mean position and the left extreme position
 (d) at the mean position
65. Speed of sound will be maximum in:
 (a) air (b) water
 (c) copper (d) glass
66. Coefficient of linear expansion will be maximum for:
 (a) aluminium (b) copper
 (c) gold (d) glass
67. 1kg of ice (0°C) and 1kg of steam (100°C) are mixed for sufficiently long time. At the end.
 (a) Water and steam will remain
 (b) Water and ice will remain
 (c) Only water will remain
 (d) Only steam will remain
68. Whose energy is not derived from the sun?
 (a) Gobar Gas Plant
 (b) Hydroelectric Power Plant
 (c) Thermal Power Plant
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69. At how many places will your weight be zero between the centres of the earth and the moon
 (a) 1 (b) 2
 (c) 3 (d) 4
70. A physical quantity is represented by the slope of a graph A (graph not shown) as well as the area under a graph B. If graph A is distance-time graph then graph B could be:
 (a) velocity-time graph
 (b) acceleration-time graph
 (c) momentum-time graph
 (d) force-time graph

71. A concave mirror forms a virtual and erect image when the object is kept:
 (a) beyond the centre of curvature
 (b) between the pole and the centre of curvature
 (c) at the centre of curvature
 (d) at the focus
72. Which is a primary colour of light but not a pigment?
 (a) red (b) yellow
 (c) green (d) blue
73. Cylindrical lens is used to correct
 (a) near sightedness (b) far sightedness
 (c) colour blindness (d) astigmatism
74. Length of a wire is doubled and its cross section area is halved. Its resistivity will:
 (a) become four times (b) be doubled
 (c) be halved (d) remain the same
75. Two resistances of 1 ohm each are joined in series and two similar resistances are joined in parallel. These two combinations are then joined in parallel. The resultant resistance will be:
 (a) $1.0\ \Omega$ (b) $0.5\ \Omega$
 (c) $0.4\ \Omega$ (d) $4.0\ \Omega$
76. First evidence of the connection between electricity and magnetism was established by:
 (a) Faraday (b) Ampere
 (c) Oersted (d) Flaming
77. Value of solar constant is:
 (a) 1.4 kW/m^2 (b) 4.18 kW/m^2
 (c) 3.14 kW/m^2 (d) 2.7 kW/m^2
78. Who was not involved in the proposition of liquid drop model of the nucleus:
 (a) Frenkel (b) Bohr
 (c) Wheeler (d) Curie

79. Percentage of ^{235}U in natural uranium is:
 (a) 90% (b) 7%
 (c) 0.7% (d) 0.09%
80. Infrared content of sunlight is:
 (a) $1/2$ (b) $1/3$
 (c) $1/4$ (d) $1/5$
81. The preachings of Guru Nanak were focused on:
 (a) Sikhism as a religion
 (b) Brotherhood of mankind
 (c) Militant Movement of Sikhs
 (d) Unity of Sikhs
82. Which of the following archaeological sites is not located in India?
 (a) Dholavira (b) Kalibagan
 (c) Mohenjo-Daro (d) Ropar
83. Who was the most able Peshawa ruler among the Marathas?
 (a) Shivaji (b) Baji Rao I
 (c) Balaji Bajirao (d) Madhov Rao
84. Which of the following agencies of U.N. works for the welfare of children:
 (a) UNESCO (b) UNICEF
 (c) UNDP (d) WHO
85. The Minister of Sports and Youth Affairs is:
 (a) Dharmendra (b) Vinod Khanna
 (c) Sunil Dutt (d) Navjot Singh Sidhu
86. The name of Agra city during Mughal period was:
 (a) Shahjahanabad (b) Akbarabad
 (c) Jalalabad (d) Tughlaqabad
87. Which of the following is correct regarding AIDS:
 (a) It spreads through air
 (b) It spreads through drinking water
 (c) It spreads through touch (contagious)
 (d) None of these
88. Abul Kalam Azad edited the journal:
 (a) Qaumi Awaz (b) Al-Hilal
 (c) Al-Sadaf (d) Al-Jamat
89. Mahatma Gandhi was associated with:
 (a) Quit India Movement
 (b) Civil Disobedience Movement
 (c) Khilafat Movement
 (d) All of these
90. Kalibangan and Lothal are associated with:
 (a) Vedic culture
 (b) Indo-Greek culture
 (c) Indo-Iranian culture
 (d) Harappan culture
91. Which of the first Rajput state acknowledge Mughal Monarchy:
 (a) Chittor (b) Marwar
 (c) Amber (d) Kannauj
92. Tolerance and social equality of which religion permitted slaves to become kings in India:
 (a) Jainism (b) Buddhism
 (c) Hinduism (d) Islam
93. Famous poet Amir Khusru was the disciple of:
 (a) Nizamuddin Oalia (b) Moinuddin Chisti
 (c) Quli Qutab Shah (d) Bakhtiar Kaki
94. The Bhakti and Sufi movement in India started in:
 (a) 11th century (b) 12th century
 (c) 13th century (d) 15th century
95. Mir Taqi Mir was a

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- (c) 13th century
- (d) 15th century

95. Mir Taqi Mir was a

96 Which architecture do all the Mughal buildings follow?
 (a) King
 (b) Famous Urdu Poet
 (c) Painter
 (d) Famous General

98. A great warrior, administrator and poet who built the Emperor Akbar's House of Lords, was:
 (a) Faizi
 (b) Raja Todar Mal
 (c) Tansen
 (d) Abdur Rahim

96. Which architecture do all the Mughal buildings represent:

 - (a) Greco-Persian architecture
 - (b) Islamic architecture
 - (c) Indo-Islamic architecture
 - (d) Mongoloid architecture

97. In Islamic calendar, new year begins with the:

 - (a) Month of Eid
 - (b) Month of Moharram
 - (c) Month of which Hajj is done
 - (d) None of the above months

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 - (a) Faizi
 - (b) Raja Todar Mal
 - (c) Tansen
 - (d) Abdur Rahim

99. In which language/languages Munshi Prem Chand's stories were published:

 - (a) Only in Urdu
 - (b) Only in Hindi
 - (c) Only in English
 - (d) In Hindi and Urdu

100. Who established M.A.O. College?

 - (a) Abul Kalam Azad
 - (b) Sir Syed Ahmad Khan
 - (c) Shibli Nomani
 - (d) Jawahar Lal Nehru

(10+2) XITH SCIENCE

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1. If 72 is divided into three parts proportional to 1, 2 and 3, then the smallest part is:

 - 6
 - 8
 - 12
 - 16

2. The largest number by which the expression $r^3 - n^3$ is divisible by all integral values of n is:

 - 2
 - 3
 - 4
 - 6

3. If $\left(a + \frac{1}{a}\right)^2 = 3$, then $a^3 + \frac{1}{a^3}$ equals:

 - $3\sqrt{3}$
 - 0
 - $7\sqrt{7}$
 - $6\sqrt{3}$

4. The fraction $\frac{5x-11}{2x^2+x-6}$ was obtained by adding the two fractions $\frac{A}{x+2}$ and $\frac{B}{2x-3}$. The values of A and B must be:

 - $A = -1, B = 3$
 - $A = -11, B = 3$
 - $A = 5, B = -11$
 - $A = 3, B = -1$

5. There is a group of cows and men, the number of cows was 14 more than twice the number of men.

6. Two candles of the same height are lighted at the same time. The first is consumed in 4 hours and the second in 3 hours. Assuming that each candle burns at a constant rate, in how many hours after being lighted was the first candle twice the height of the second?

 - $\frac{3}{4}$ hours
 - $1\frac{1}{2}$ hours
 - 2 hours
 - $2\frac{2}{5}$ hours

7. Two boys A and B start at the same time to ride from Aligarh to Bulandshahar, 60 km away. A travels 4 km an hour slower than B. B reaches Bulandshahar and at once turns back meeting A 12 km from Bulandshahar. The speed of A was:

 - 4 km/hr
 - 8 km/hr
 - 12 km/hr
 - 16 km/hr

8. In a single throw of two dice, the probability of getting a total of 8 is:

 - $\frac{1}{36}$
 - $\frac{7}{36}$
 - $\frac{5}{36}$
 - None of these

9. The volume of the largest sphere carved out of a cube is $\frac{11}{21} \text{ cm}^3$. The side of the cube is:

- (c) ± 20 (d) None of these

$$\left(\pi = \frac{22}{7}\right)$$

- (a) 1 cm (b) 2 cm
(c) 3 cm (d) $\frac{1}{2}$ cm

10. In the GCD of x^2+ax-3 and $2x^2+bx+3$ is $x+1$, then the values of a and b are respectively:

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

11. The pair of equations $3^{x+y} = 81$ and $81^{x-y} = 3$ have:

- (a) no common solution
(b) the solution $x=2, y=2$

- (c) the solution $x = \frac{5}{2}, y = \frac{3}{2}$
(d) the solution $x = \frac{17}{8}, y = \frac{15}{28}$

- (c) the solution $x = \frac{5}{2}$ and the ratio of the first to the second is $\frac{2}{3}$ and the ratio of the second to the third is $\frac{5}{8}$. The second number is:

- (a) 15 (b) 20
(c) 30 (d) 32

12. If the quadratic equation $\frac{x(x-1)-(m+1)}{(x-1)(m-1)} = \frac{x}{m}$ has roots are equal

where:

- (a) $m = \frac{1}{2}$ (b) $m = -\frac{1}{2}$
(c) $m = 1$ (d) $m = -1$

13. Two numbers whose sum is 6 and whose

- difference is 8 are the roots of the equation:

- (a) $x^2 - 6x + 7 = 0$ (b) $x^2 - 6x - 7 = 0$
(c) $x^2 + 6x + 8 = 0$ (d) $x^2 + 6x - 7 = 0$

14. The value of a in the equation,

$$\log_{10}(a^2 - 15a) = 2$$
 arc:

- (a) $\frac{15 \pm \sqrt{233}}{2}$ (b) $20, -5$

20. The base of a triangle is 15 cm. Two lines are drawn parallel to the base, terminating in the

15. When the sum of the first ten terms of an A.P. is four times the sum of the first five term, the ratio of the first term to the common difference is:

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

16. Simplifying $\left[\sqrt[3]{\sqrt{a^6}}\right]^4 \cdot \left[\sqrt[4]{\sqrt{a^9}}\right]^4$, the result is:

- (a) a^{16} (b) a^{12}
(c) a^8 (d) a^4

17. The sum of three number is 98. The ratio of the

- first to the second is $\frac{2}{3}$ and the ratio of the

- second to the third is $\frac{5}{8}$. The second number is:

- (a) 15 (b) 20
(c) 30 (d) 32

18. The point P is outside a circle and is 13 cm from the centre. A secant from P cuts the circle at Q and R so that the external segment of the secant PQ is 9 cm and QR is 7 cm. The radius of the circle is:

- (a) 3 cm (b) 4 cm
(c) 5 cm (d) 6 cm

19. A circle of radius 10 cm has its centre at the vertex C of an equilateral triangle ABC and passes through the other two vertices. The side AC extended through C intersects the circle at

- D. The $\angle ADB$ is:

- (a) 15° (b) 30°
(c) 45° (d) 90°

20. The base of a triangle is 15 cm. Two lines are drawn parallel to the base, terminating in the

- other two sides, and dividing the triangle into three equal areas. The length of the parallel line closer to the base is:

- (a) $5\sqrt{6}$ cm (b) 10 cm
(c) $4\sqrt{3}$ cm (d) 7.5 cm

- (a) $\frac{1}{1}$ (b) $\frac{1}{2}$
(c) $\frac{2}{3}$ (d) $\frac{2}{1}$

21. The number of distinct lines representing the altitudes, medians and interior angle bisectors of a triangle that is isosceles, but not equilateral, is:

- (a) 9 (b) 7
(c) 6 (d) 3

22. If two poles 20' and 80' high are 100' apart, then the height of the point of intersection of the lines joining the top of each pole to the foot of the opposite pole is:

- (a) 50' (b) 40'
(c) 60' (d) 16'

23. The medians of a right triangle which are drawn from the vertices of the acute angles are 5 and $\sqrt{46}$. The value of the hypotenuse is:

- (a) 10 (b) $2\sqrt{40}$
(c) $\sqrt{13}$ (d) $2\sqrt{13}$

24. The value of $\cos(40^\circ + \theta) - \sin(50^\circ - \theta) + \frac{\cos^2 40^\circ + \cos^2 50^\circ}{\sin^2 40^\circ + \sin^2 50^\circ}$ is

- (a) 0 (b) -1
(c) 1 (d) None of these

25. A 25 foot ladder is placed against a vertical wall of a building. The foot of the ladder is 7 feet from the base of the building. If the top of the ladder slips 4 feet, then the foot of the ladder will slide:

- (a) 9 feet (b) 15 feet
(c) 5 feet (d) 6 feet

26. A right circular cone has its base a circle having the same radius as a given sphere. The volume of the cone is one half that of the sphere. The ratio of the altitude of the cone to the radius of its base is:

- (a) $\frac{1}{3}$ (b) $\frac{1}{2}$
(c) $\frac{2}{3}$ (d) $\frac{2}{1}$

27. The coordinates of the centroid of a triangle are $(\frac{1}{3}, 4)$ and two of its vertices are $(-2, 5)$ and $(8, 5)$. The third vertex of the triangle is:

- (a) $(1, 0)$ (b) $(0, 1)$
(c) $(-1, 0)$ (d) $(0, -1)$

28. Rs. 800 at 5% per annum compound interest amount to Rs. 882 in:

- (a) 4 years (b) 3 years
(c) 2 years (d) $1\frac{1}{2}$ years

29. The price of an article is cut 10%. To restore it to its former value, the new price must be increased by:

- (a) 10% (b) 9%
(c) $1\frac{1}{9}\%$ (d) 11%

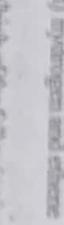
30. If an angle of a triangle remains unchanged but each of its two in-clining sides is doubled, then the area becomes:

- (a) 2 times (b) 3 times
(c) 4 times (d) 6 times

31. The solubilization of organic material in each cell is controlled by the hydrolase released from:

- (a) Peroxisomes (b) Leucoplasts

32. The cells of protective tissues are specialized in many ways which develop by the deposition of:
- Saberm
 - Tannin
 - Cellulose
 - Pectin
33. The body is filled with hemococel, in the phylum:
- Annelida
 - Porifera
 - Arthropoda
 - Cnidaria
34. Fats are comparable with carbohydrates, as they have:
- Carbon and hydrogen atoms
 - Carbon, hydrogen and oxygen atoms
 - Carbon, Nitrogen and oxygen atoms
 - Carbon, hydrogen and nitrogen atoms
35. Identify the vitamin which, as such, is not available in vegetables:
- Ascorbic acid
 - Vitamin K
 - Vitamin E
 - Vitamin A
36. The common method adopted for disinfection of drinking water, employed in house appliances is by using filters and:
- UV-radiations
 - Chlorination
 - Ozonisation
 - Chlorination and ozonisation
37. Diet, rich in maize, causes disturbance in Vitamin because of its:
- Higher degree of absorption
 - Lower degree of absorption
 - Fixation
 - Inactivation
38. The chemical method adopted for the control of weeds is by the spray of:
- Idole - 3 - acetic acid
39. Which one of the following may not be classified as pigment?
- Carotenoid
 - Phytochrome
 - Cryptochrome
 - Hormone
40. The light reaction in photosynthesis leads to the production of:
- ATP and NADPH
 - ATP and photolysis of water
 - ATP, NADPH and Photolysis of water
 - ATP, NADH and photolysis of water
41. Rapid muscular activity result in the production of:
- Ethanol and energy
 - Ethanol, water and energy
 - Water and energy
 - Ethanol, CO_2 and energy
42. Older part of the roots exchange gases through:
- Root hairs
 - Lentils
 - Epidemis
 - All of these
43. The life span of R.B.C. is:
- 150 days
 - 120 days
 - 100 days
 - 125 days
44. The function of the extracellular fluid, following towards the heat, is:
- Fight against infection
 - Carry digested fat towards the tissue
 - Transport protein to the tissue
 - All of these
45. Neuron is the structural and functional unit of nervous system, passing the message in the form of:
- Chemicals
46. Adenine and thymine bases of the two parallel strands of deoxyribonucleic acid are paired by the presence of:
- Hydrogen bond
 - Covalent bond
 - Electrostatic force
 - Coordinate bond
47. Name the hormone that is used for the senescence of fruits:
- Auxin
 - Gibberellin
 - Ethylene
 - Abscisic acid
48. Salt water is an example of:
- Heterogeneous mixture
 - An element
 - Solution
 - Compound
49. 4 g of oxygen will have:
- 0.125 mol of oxygen
 - 1.25 mol of oxygen
 - 12.5 mol of oxygen
 - 125 mol of oxygen
50. Existence of neutrons was demonstrated by:
- Chadwick
 - J.J. Thomson
 - Niels Bohr
 - Rutherford
51. The elements 'A' and 'B' have atomic numbers 12 and 17 respectively. Element 'A' reacts with element 'B' to form compound with molecular formula.
- AB
 - AB_2
 - A_2B
 - A_2B_3
52. The atomic radius of Li, K, Rb, and Cs varies in the order:
- $\text{Li} > \text{K} > \text{Rb} > \text{Cs}$
 - $\text{K} > \text{Cs} > \text{Rb} > \text{Li}$
 - $\text{Rb} > \text{Cs} > \text{K} > \text{Li}$
 - $\text{Cs} > \text{Rb} > \text{K} > \text{Li}$
53. The electron affinity of F, Cl, Br and I varies in the order
- $\text{F} < \text{Cl} > \text{Br} > \text{I}$
 - $\text{F} < \text{Cl} < \text{Br} < \text{I}$
 - $\text{F} > \text{Cl} > \text{Br} > \text{I}$
 - $\text{F} > \text{Cl} > \text{Br} < \text{I}$
54. The elements 'W', 'X', 'Y' and 'Z' have atomic number of 4, 11, 13 and 15 respectively, which of these elements is/are s-block element?
- 'W' and 'X'
 - 'X' and 'Y'
 - 'W' and 'Z'
 - 'Z'
55. Which of the following molecules has polar covalent bond?
- Cl_2
 - O_2
 - HI
 - NaCl
56. Which of the following is an example of combination reaction?
- $2\text{Mg}(\text{s}) + \text{O}_2(\text{g}) \rightarrow 2\text{MgO}(\text{s})$
 - $\text{Pb}(\text{s}) + \text{CuSO}_4(\text{aq}) \rightarrow \text{PbSO}_4(\text{aq}) + \text{Cu}(\text{s})$
 - $\text{BaCl}_2(\text{aq}) + \text{Na}_2\text{SO}_4(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + \text{NaCl}(\text{aq})$
 - $\text{ZnCO}_3(\text{s}) \rightarrow \text{ZnO}(\text{s}) + \text{CO}_2(\text{g})$
57. Which of the following metals is most reactive?
- Magnesium
 - Calcium
 - Aluminium
 - Zinc
58. In electrolytic cell for refining of aluminium, the anode is made up of
- Pure aluminium
 - Impure Aluminium
 - Graphite
 - Cylofile
59. Bronze is an alloy of:
- Copper and zinc
 - Copper and tin
 - Copper, nickel and chromium
 - Copper and aluminium
60. Nylon is a:
- Polyamide
 - Polythene

61. Ethene reacts with water in the presence of sulphuric acid to give:
 (a) Ethanal (b) Ethanol
 (c) Ethyl sulphate (d) Diethyl sulphate
62. Ethyne is prepared by the reaction of:
 (a) hydrogen and benzene
 (b) sodium ethoxide and sodium
 (c) water and calcium carbide
 (d) hydrogen and ethene
63. Which of the following is an isomer of 2-butene?
 (a) 
 (b) 
 (c) 
 (d) 
64. The two planets nearest to Earth are:
 (a) Mercury and Venus
 (b) Mercury and Mars
 (c) Jupiter and Venus
 (d) Venus and Mars
65. Asteroids, the small rocky bodies, generally have their orbits between:
 (a) Jupiter and Saturn
 (b) Mars and Jupiter
 (c) Mercury and Earth
 (d) Uranus and Neptune
66. Read the following statements:
 I. Acid rain damages monuments, buildings etc., due to corrosion
 II. Acid rain upgrades soil and increases agricultural productivity
 III. Acid rain is a result of air pollution.
 Which of the following is true?
 (a) I and II (b) II and III
 (c) I and III (d) I, II and III

67. Which of the following group consists of all non-biodegradable pollutant?
 (a) Wood, sewage, plastics, mercury
 (b) Insecticides, paper, radioactive waste, lead
 (c) Arsenic, mercury, urine and faecal matter, aluminium
 (d) Pesticides, aluminum, plastics, mercury
68. Read the following statements:
 I. The greenhouse effect increase the temperature of Earth's atmosphere causes the greenhouse effect.
 II. The presence of high concentration of carbon dioxide in the Earth's atmosphere.
 III. The greenhouse effect occurs when the emitted solar radiation is not retained and escapes out of the Earth's atmosphere.
 Which of the following is true?
 (a) I and II (b) II and III
 (c) I and III (d) I, II and III
69. Examine the following groups of sources of energy available to us.
 I. Petroleum and coal
 II. Solar and tidal
 III. Wind and hydropower
 Which of the following combination is pollution free source of energy?
 (a) I and II (b) II and III
 (c) I and III (d) I, II and III
70. From the destructive distillation of coal obtain:
 (a) Methane, carbon dioxide and charcoal
 (b) Coal tar, oxygen, carbon dioxide, nitrogen oxides and charcoal
 (c) Ammonia, hydrogen, charcoal and ash
 (d) Coal tar, coal, gas, ammonia and coke
71. A car starts from rest and attains a speed of 72 km/h in 10 seconds. The distance travelled by the car in the above duration is
 (a) $1 \times 10^2 \text{ m}$ (b) $2 \times 10^2 \text{ m}$
 (c) I and III (d) I, II and III

72. For a particle which moves around a circular path of radius ' r ' and takes time ' t ' to go a round the circle one, the velocity of the particle is:
 (a) $2\pi r/t$ and the direction changes continuously
 (b) $4\pi r/t$ and the direction is always towards the centre of the circle
 (c) $2\pi r/t$ and the direction is always in the direction opposite to the centre of the circle
 (d) $4\pi r/t$ and the direction is always in the direction of the tangent on the circle
73. Consider the following statements regarding friction on bodies:
 I. Force of friction decreases with the application of lubricants.
 II. Rolling friction is lesser than the sliding friction.
 III. We always try to minimize friction
 Which of the following is true?
 (a) I and II (b) II and III
 (c) I and III (d) I, II and III
74. For a hypothetical spherical body revolving around Earth with radius $r = \frac{R}{100}$ and mass $m = \frac{M}{100}$, where R and M are the radius and the mass of Earth respectively, the acceleration due to the gravitational force exerted by the above body on its surface would be (taking g as the acceleration due to the gravity on Earth's surface):
 (a) $100g$ (b) $100g$
 (c) $10g$ (d) $0.1g$
75. A body of mass 100 kg moving with a uniform velocity of 72 km/h has kinetic energy equal to:
 (a) $1 \times 10^6 \text{ J}$ (b) $2 \times 10^6 \text{ J}$
76. Read the following statements:
 I. The velocity of a fastest moving car is lesser than the velocity of sound
 II. The velocity of light is greater than the velocity if sound in air
 III. We do not hear echo in rooms smaller than 17 m . Which of the following is true?
 (a) Only I (b) Only II
 (c) Only III (d) I, II and III
77. For a concave mirror, the image of an object kept at the centre of curvature would be formed:
 (a) Real and inverted, diminished, at infinity
 (b) Virtual and erect, enlarged, beyond the centre of curvature
 (c) Real and inverted, same size, at the centre of curvature
 (d) Virtual and erect, same size, behind the mirror
78. Consider the following statements:
 I. The electric charge is conserved; it can neither be created nor destroyed.
 II. Ohm's law defines resistance, a property of the current carrying conductor.
 III. 1 Kilowatt hour is equal to $3 \times 10^8 \text{ J}$
 Which of the following is true?
 (a) I and II (b) Only II
 (c) Only III (d) I, II and III
79. The direction of the force on a current-carrying conductor in a magnetic field can be obtained:
 (a) By Fleming's right hand rule
 (b) By Fleming's left hand rule
 (c) By measuring only the value of the current flowing through the conductor
 (d) By asking the direction of the magnetic field only
80. Read the following statements:
 I. The natural uranium contains about 99% U-238

- II. In nuclear fission reaction of U^{235} , 5 fast neutrons are released.
- III. The nuclear fusion reaction is accompanied by absorption of energy.
- Which of the following is true?
- I and II
 - Only II
 - Only III
 - None of these
81. Which of the following persons has been honoured with the Padam Vibhushan this year:
- R.K. Lakshman
 - Irfan Habib
 - Shahrukh Khan
 - Qurratulain Hyder
82. My Experiments with Truth' was written by
- Mohammad Ali Jinnah
 - Abul Kalam Azad
 - Mohandas Karamchand Gandhi
 - Motilal Nehru
83. Who is the leader of opposition in the Lok Sabha:
- Atal Bihari Vajpayee
 - Lal Krishna Advani
 - Jaswant Singh
 - Vankaiah Naidu
84. Which state of India receives the maximum average annual rainfall:
- Tamil Nadu
 - Maharashtra
 - Assam
 - Madhya Pradesh
85. A Tsunami is a powerful, often devastating sewage caused by:
- Submarine earthquake
 - Submarine volcanic eruption
 - Cyclonic winds
 - Both (a) and (b)
86. Pope John Paul II is succeeded by:
- Edward de Costa
 - Ernest Schrodinger
 - Emmanuel de Pedrola
 - Joseph Ratzinger
87. Teacher's day is celebrated on:
- 5th May
 - 5th September
 - 5th November
 - None of these
88. Which of the following agencies works for well-being of children:
- UNESCO
 - UNICEF
 - WHO
 - UNICORN
89. Christopher Columbus discovered the New World:
- 1492
 - 1498
 - 1526
 - None of these
90. Which country suffered the greatest loss of life and property in Tsunami disaster:
- Thailand
 - India
 - Indonesia
 - Sri Lanka
91. The real name of the Arab Scholar Avicenna:
- Al-Beruni
 - AIRazi
 - Ibn Khaldun
 - Ibn Sina
92. The M.A.O. College became the Aligarh Muslim University in the year:
- 1930
 - 1920
 - 1921
 - 1925
93. Urdu poetry which deals with death and sorrow is known as:
- Ghazal
 - Qasida
 - Marsiya
 - Nazam
94. Munshi Premchand's original writing were in
- Sanskrit
 - Hindi
 - Urdu
 - Both Hindi & Urdu
95. Which famous Urdu poet wrote 'Bang-e-Darwaza'?
- Allama Iqbal
 - Mirza Ghalib
 - Faiz Ahmad Faiz
 - Mir Taqi Mir
96. The Taj Mahal, built by the Mughal emperor Shah Jahan represents:
- Islamic Architecture
 - Indian Architecture
 - Indo-Greek Architecture
 - Indo-Persian Architecture

99. A 17th century book 'Kitab-e-Nauras' which praises Hindu and Muslim saints was written by:
- Baz Bahadur
 - Ibrahim Adil Shah-I
 - Ibrahim Adil Shah-II
 - Anir Khusro
100. A true representative of Indo-Islamic poetry in the medieval period was:
- Amir Khusro
 - Omar Khayyam
 - Malik Mohammad Jaisi
 - Kabir

101. The author of 'Khamoshi' is
- Abdullah Qutub
 - Abdullah Khan
 - Abdullah Khan
 - Abdullah Khan
102. The author of 'Rabha' is
- Abdullah Khan
 - Abdullah Khan
 - Abdullah Khan
 - Abdullah Khan
103. The author of 'Makhdum' is
- Abdullah Khan
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104. The author of 'Khanda' is
- Abdullah Khan
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105. The author of 'Nuzhatul-Uloom' is
- Abdullah Khan
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106. The author of 'Taqi' is
- Abdullah Khan
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107. The author of 'Mashayekh' is
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150. The author of 'Mashayekh' is
- Abdullah Khan
 - Abdullah Khan
 - Abdullah Khan
 - Abdullah Khan

(10+2) XITH SCIENCE

13. The average temperature of Monday, Tuesday and Wednesday was 40°C . The average for Tuesday, Wednesday and Thursday was 41°C .

If the temperature on Thursday be 42°C , the temperature on Monday was:

- (a) 37°C (b) 38°C
 (c) 39°C (d) 40°C

14. If $(a+b) : (a-b) = 1 : 5$, then $(a^2 - b^2) : (a^2 + b^2)$ equals

- (a) 2 : 3 (b) 3 : 2
 (c) 5 : 13 (d) 13 : 5

15. A goods train leaves a station at a certain time at a uniform speed. After 6 hours, an express train leaves the same station and moves in the same direction at a uniform speed of 90 km/hr .

This train catches the goods train in 4 hours. The speed of the goods train is:

(a) 30 km/hr (b) 32 km/hr
 (c) 36 km/hr (d) 38 km/hr

16. The ages of two persons differ by 20 years. If 5 years ago, the elder one be 5 times as old as the younger one, their present age are:

- (a) 30 years, 10 years (b) 25 years, 5 years
 (c) 29 years, 9 years (d) 50 years, 30 years

17. An amount was put at simple interest at a certain rate for 2 years. Had it been put at 3% higher rate, it would have fetched Rs. 300 more.

The amount was:

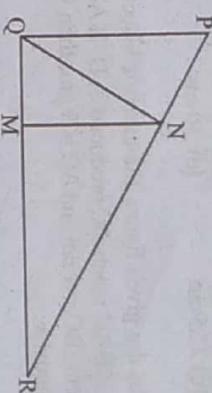
- (a) Rs. 4000 (b) Rs. 5000
 (c) Rs. 6000 (d) Rs. 6500

18. The area of a rhombus each one of whose sides measures 20 cm and one diagonal is 24 cm is:

- (a) 380 cm^2 (b) 384 cm^2
 (c) 390 cm^2 (d) 400 cm^2

19. In $\triangle PQR$, side $QR=10 \text{ cm}$ and height $PQ=4.4 \text{ cm}$. If $PR=11 \text{ cm}$, then altitude QN equals:

- (a) 20% (b) 36%
 (c) 50% (d) 56%



20. A copper wire of diameter 3 mm is evenly wrapped on the cylinder of length 42 cm and diameter 49 cm to cover the whole surface. The length of wire is:

- (a) 215.6 m (b) 492.4 m
 (c) 204.8 m (d) 196.5 m

21. Three cubes of sides 8 cm , 6 cm and 1 cm are melted to form a new cube. The surface area of the cube so formed is:

- (a) 480 cm^2 (b) 486 cm^2
 (c) 490 cm^2 (d) 496 cm^2

22. The diameters of two cones are equal. If their slant height are in the ratio $5 : 4$, the ratio of their curved surface areas is:

- (a) $4 : 5$ (b) $25 : 16$
 (c) $16 : 25$ (d) $5 : 4$

23. The sum of all odd numbers between 100 and 200 is:

- (a) 6200 (b) 6500
 (c) 7500 (d) 3700

24. The value of $\sin 43^{\circ} \cos 47^{\circ} + \cos 43^{\circ} \sin 47^{\circ}$ is:

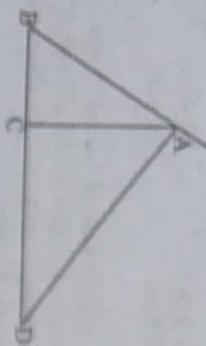
- (a) 0 (b) 1
 (c) $\sin 4^{\circ}$ (d) $\cos 4^{\circ}$

25. $\triangle ABC$ is such that $AB=3 \text{ cm}$, $BC=2 \text{ cm}$ and $CA=2.5 \text{ cm}$, $\triangle DEF$ is similar to $\triangle ABC$. If $EF=4 \text{ cm}$, then the perimeter of $\triangle DEF$ is:

1. If $x+y=5$ and $xy=6$ then the value of (x^3-y^3)
 (a) 0 (b) 10
 (c) 15 (d) 19
2. $x^{29}-x^{25}+x^{13}-1$ is divisible by:
 (a) Both $(x-1)$ and $(x+1)$
 (b) $(x-1)$ but not by $(x+1)$
 (c) $(x+1)$ but not by $(x-1)$
 (d) Neither $(x-1)$ nor $(x+1)$
3. If $(5x^2+14x+2)^2 - (4x^2 - 5x+7)^2$ is divided by (x^2+x+1) , then quotient q and remainder r are given by:
 (a) $q=(x^2+19x-5)$, $r=1$
 (b) $q=9(x^2+19x-5)$, $r=0$
 (c) $q=(x^2+19x-5)$, $r=1$
 (d) $q=9(x^2+19x-5)$, $r=1$
4. If $(x-1)$ is the H.C.F. of (x^2-1) and $px^2-q(x+1)$, then
 (a) $p=2q$ (b) $q=2p$
 (c) $3p=2q$ (d) $2p=3q$
5. The monthly income of A and B are in the ratio $4 : 3$. Each of them saves Rs. 600. If the ratio of their expenditure is $3 : 2$, then the monthly income of A is:
 (a) Rs. 2400 (b) Rs. 1800
 (c) Rs. 2000 (d) Rs. 3600
6. If one root of $3x^2+11x+k=0$ be reciprocal of the other, then the value of k is:
 (a) 1 (b) 2
 (c) 3 (d) 4
7. $\frac{x^2-7x+12}{x^2-2x-35} \times \frac{x^2-13x+42}{x^2-x-6} \times \frac{x^2+7x+10}{x^2-10x+24}$

- (a) 7.5 cm (b) 15 cm
(c) 22.5 cm (d) 30 cm

26. In the given figure, the exterior bisector of $\angle BAC$ meets BC produced at D . If $AB = 6$ cm, $BC = 4$ cm and $AC = 5$ cm, then CD is equal to:



- (a) 3 cm (b) 4 cm
(c) 5 cm (d) 6 cm

... πr^2 . The value of r in order that the minimum angle be 24° is:

- (a) 3 (b) 4
(c) 5 (d) 6

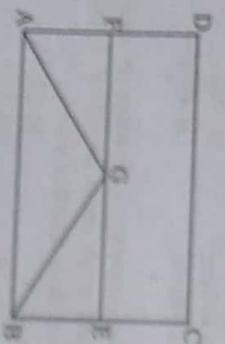
29. The ratio in which the line segment joining $A(2, -3)$ and $B(5, 0)$ is divided by x -axis is:

- (a) 1 : 2 (b) 2 : 1
(c) 3 : 5 (d) 2 : 3

30. Two circles touch externally. The sum of their areas is 130π sq. cm and the distance between their centres is 14 cm. The radius of the smaller circle is:

- (a) 2 cm (b) 3 cm
(c) 4 cm (d) 5 cm

31. $MABCD$ is rectangle, E , F are the midpoints of BC and AD respectively and G is any point on EF , then the area of the triangle $GA B$ equals:



- (a) 24cm (b) 30cm
(c) 20cm (d) 33cm

32. $MABCD$ is rectangle, E , F are the midpoints of BC and AD respectively and G is any point on EF , then the area of the triangle $GA B$ equals:

- (a) 10^{-4} mol $L^{-1}S^{-1}$ (b) 10^3 mol $L^{-1}S^{-1}$
(c) 10^{-6} mol $L^{-1}S^{-1}$ (d) 10^{-3} mol $L^{-1}S^{-1}$

33. When acidified hydrogen peroxide is added to a solution of potassium iodide, iodine is liberated. If the concentration of iodine rises from 0 to 10^{-5} mol L^{-1} in 10 seconds the reaction rate will be:

- (a) 10^{-4} mol $L^{-1}S^{-1}$ (b) 10^3 mol $L^{-1}S^{-1}$
(c) 10^{-6} mol $L^{-1}S^{-1}$ (d) 10^{-3} mol $L^{-1}S^{-1}$

34. Which of the following compound is an example of weak electrolyte?

- (a) NaCl (b) KCl
(c) HCl (d) CH₃COOH

35. If steel is heated to bright red hot, and is then cooled slowly, the process is called:

- (a) quenching (b) tempering
(c) annealing (d) calcining

35. If steel is heated to bright red hot, and is then cooled slowly, the process is called:

- (a) propenol (b) propanal
(c) propane (d) propanoic acid

36. The relative reactivities of metal Mg, Al, Zn and Fe varies in the order:

- (a) Mg > Al > Zn > Fe
(b) Fe > Zn > Al > Mg
(c) Mg > Fe > Al > Zn
(d) Mg > Zn > Fe > Al

37. The elements 'X' and 'Y' have atomic numbers 12 and 18 respectively. Element 'X' reacts with element 'Y' to form compound with molecular formula:

- (a) XY (b) XY₂
(c) X₂Y (d) XY₃

38. In electrolytic cell for refining of copper, the cathode is made of:

- (a) Impure copper
(b) a strip of pure copper
(c) Graphite
(d) Bronze

$$(a) K = [C]^p [D]^q$$

$$(b) K = \frac{[A]^p [B]^q}{[C]^r [D]^s}$$

$$(c) K = \frac{[CT]^p [D]^q}{[AT]^r [BT]^s}$$

$$(d) K = [A]^p [B]^q$$

39. Which of the following alloys does not contain copper?

- (a) Brass (b) Bronza
(c) Duralumin (d) Magnalium

40. On treatment with sodium borohydride propane gives:

- (a) 1-propanol (b) 2-propanol
(c) propane (d) propene

41. Which of the following metals is most reactive?

- (a) Calcium
(b) Iron
(c) Copper
(d) Mercury

48. The main component of cell wall that provides strength to the plant cell are glucose.

- (a) Disaccharides
(b) Polysaccharides
(c) Monosaccharides
(d) Fructose and Maltose

42. Concentrated nitric acid oxidises sulphur to:

- (a) SO₂ (b) H₂SO₄
(c) SO₃ (d) H₂SO₃

43. Which of the following resins is an example of saprophytic?

- (a) $2C_2H_5OH + 2Na \rightarrow 2C_2H_5ONa + H_2$
(b) $C_2H_5OH + CH_3COOH \xrightarrow{\text{cat. } KMnO_4}$, CH_3COOH
(c) $CH_3COOC_2H_5 + NaOH \rightarrow CH_3COONa + C_2H_5OH$

44. The boundary layer of each cell that separates its contents from other cells is made up of:

- (a) Lipids and carbohydrates
(b) Lipids and proteins
(c) Proteins and carbohydrates
(d) Lipids, proteins and carbohydrates

45. Chemically, detergents are sodium salts of:

- (a) sulphonic acid (b) oleic acid
(c) stearic acid (d) palmitic acid

46. For a general reaction $aA + bB \rightleftharpoons cC + dD$ at equilibrium, equilibrium constant can be written as:

$$(a) K = [C]^p [D]^q$$

$$(b) K = \frac{[A]^p [B]^q}{[C]^r [D]^s}$$

$$(c) K = \frac{[CT]^p [D]^q}{[AT]^r [BT]^s}$$

47. The boundary layer of each cell that separates its contents from other cells is made up of:

- (a) Lipids and carbohydrates
(b) Lipids and proteins
(c) Proteins and carbohydrates
(d) Lipids, proteins and carbohydrates

48. In the given figure, the exterior bisector of $\angle BAC$ meets BC produced at D . If $AB = 6$ cm, $BC = 4$ cm and $AC = 5$ cm, then CD is equal to:

- (a) $\frac{1}{6}$ the area of AED
(b) $\frac{1}{6}$ the area of ABC

28. n coplanar straight lines meet at a point. The angles between consecutive lines are x° , $2x^\circ$,

- (a) 1.8 (b) 2
(c) 2.8 (d) 4

29. In the given figure, the exterior bisector of $\angle BAC$ meets BC produced at D . If $AB = 6$ cm, $BC = 4$ cm and $AC = 5$ cm, then CD is equal to:

- (a) 3 (b) 4
(c) 5 (d) 6

49. The sac like bodies, packed with the material synthesised in the lung of endoplasmic reticulum, are used in the formation of:
- Lysosomes
 - Peroxisomes
 - Lysosomes and peroxisomes
 - Lysosomes and centrosomes
50. The cells with thin wall, dense cytoplasm and few vacuoles is the characteristic of:
- Cambium
 - Filum
 - Xylem
 - Cortex
51. The tissue that transports sucrose is characterized with the presence of:
- Sieve tube, companion cell of fibre
 - Sieve tube, parenchyma and fibre
 - Sieve tube, companion cell and parenchyma
 - Sieve tube, companion cell, parenchyma and fibre
52. In which respect fats resemble with carbohydrates?
- Presence of C, H and O
 - Presence of C and H
 - Presence of H and O
 - Presence of C, H and N
53. The organic chemicals that are used in our body as co-enzymes are classified as:
- Vitamins
 - Hormones
 - Vitamins and Hormones
 - Proteins and Hormones
54. The oxidation / reduction reaction in the cells require the presence of:
- Iron
 - Calcium
 - Sodium
 - Phosphorus
55. The presence of sunken stomata is the characteristic of:

- Xerophytes
- Mesophytes
- Both (a) and (c)

perform:

- Excretory function
- Osmoregulatory function
- Excretory and osmoregulatory function
- Excretory and storage functions

60. Read the following statements:
- Superconductors offer no resistance to the flow of current.
 - Superconductivity has been found to exist in material upto -150°C
 - Electric charge cannot flow through superconductors.
 - Which of the following is true?
- I, II and III
 - II and III only
 - I and III only
 - I and II only

61. Clumps formed during blood transfusion is the result of the interaction between the products of:
- RBC and WBC
 - Plasma and Platelets
 - WBC and RBC
 - Platelets and RBC

62. The contractile vacuoles in single celled amoeba

56. To active plant pigments, the wavelength of light lies in the range of:
- 320 – 800 nm
 - 660 – 800 nm
 - 400 – 800 nm
 - 360 – 800 nm

57. The photolysis of water in photosynthesis releases:
- $2H^+ + 2e^- + E$
 - $2H^+ + 2e^- + \frac{1}{2}O_2$
 - $2H^+ + \frac{1}{2}O_2 + E$
 - $2H^+ + 2e^- + NADPH$

58. How many pairs of elongated glands are present in the mid gut of grasshopper's digestive system?
- 6
 - 4
 - 8
 - 2

59. The exchange of gases between blood capillaries and the tissue takes place because of:
- Simple exchange
 - Concentration gradient
 - Active process
 - Active and exchange process

63. The differentiation of vegetative to reproductive phase involves:
- Proteins and hormones
 - Chromophore
 - Chromoproteins
 - Hormones

64. DNA molecule consists of two polynucleotide strands where each helix turns at a length of:
- 3 nm with 10 nucleotides
 - 3.6 nm with 8 nucleotides
 - 3.4 nm with 8 nucleotides
 - 3.4 nm with 10 nucleotides

65. For a domestic electric bulb with line voltage of 250 volts drawing a current of 0.24 amperes and lighted for 10 hours, which of following is correct:
- Charge flowing through the circuit is 8640 coulomb and bulb is of 100 watts
 - Charge flowing through the circuit is 8640 coulomb and bulb is of 60 watts
 - Charge flowing through the circuit is 864 coulomb and bulb is of 60 watts
 - Charge flowing through the circuit is 864 coulomb and bulb is of 100 watts

66. A circuit containing three resistance of 2, 3 and 6 ohms connected in parallel is joined to another resistance of 1 ohm in series and then connected to a battery of 12 volta. The total resistance of the circuit and the current flowing through the circuit is:
- 1 ohm and 12 amperes
 - 6 ohms and 2 amperes
 - 2 ohms and 6 amperes

67. The principle of Electromagnetic induction is used in:
- Generation of electricity
 - Calculation of magnetic field around a bar magnet
 - Calculation of force between the charged particles
 - Calculation of voltage drop across a resistance in a circuit

68. Read the following statements:

- About half of the solar energy striking the earth's periphery reaches its surface
- The ultraviolet radiations are not absorbed in earth's atmosphere
- The solar energy on earth induces wind, storms, rain, ocean waves etc.
- The solar radiation reaching earth's surface is mostly in the form of heat and visible light. Which of the following is true?

- (a) I, II and III

- (b) II, III and IV

- (c) I, III and IV

- (d) None of these

70. Read the following statements:
- In nuclear fission heavy uranium atoms split into lighter atoms
 - In nuclear fission mass is converted into energy
 - In nuclear fusion process nuclei of low atomic numbers combine to form heavier atomic

69. Read the following statements:

- I
- II
- III
- IV

- (a) I, II and III

- (b) II, III and IV

- (c) I, III and IV

- (d) None of these

71. In nuclear fission mass is converted into energy

72. In nuclear fusion process nuclei of low atomic numbers combine to form heavier atomic

IV. Energy in the sun is mostly produced due to nuclear fission.

Which of the following is true?

- (a) I, II and III
- (b) II, III and IV
- (c) I, III and IV
- (d) None of the above statements is correct

71. Read the following statements for a situation where a ray of light passes from a medium '1' to the medium '2':

- I. The ratio $\frac{\sin i}{\sin r}$, where ' i' and ' r ' are the angles of incidence and the angle of refraction is called refractive index of medium '2' with respect to medium '1'.

- II. $n_{21} = \frac{\sin i}{\sin r} = \frac{n_2}{n_1}$

- III. The absolute refractive index of medium '1' n_1 is the ratio of speed of light in medium 1 to the speed of light in vacuum.

Which of the following is true?

- (a) I and II
- (b) II and III
- (c) I and III
- (d) None of the above statements is incorrect

72. A 5 cm tall object is placed at a distance of 30 cm perpendicular to the principle axis of a convex lens of focal length 20 cm.

In this case which of the following statement is true?

- (a) The image length is 10 cm, real, erect at a distance of 60 cm on the right of lens.
- (b) The image length is 10 cm, virtual, erect at a distance of 60 cm on the left of lens.
- (c) The image length is 10 cm, real, inverted at a distance of 60 on the right of lens.
- (d) The image length is 5 cm, real, erect at a distance of 30 cm on the right of lens.

73. Read the following statements about the Earth:

- (a) The thin atmosphere around the Earth acts like greenhouse and keeps the temperature within suitable range
- (b) The ozone layer around Earth passes ultraviolet radiations coming from the Sun to the Earth's surface. Which of the following is true?

- (a) I and II
- (b) II and III
- (c) I and III
- (d) All the above statements are incorrect

74. The brakes are applied to a moving car producing a negative acceleration of 2 m/s^2 and the car slopes after 6s. The distance travelled by the car after applying the brakes is:

- (a) 128 m
- (b) 36 m
- (c) 32 m
- (d) 16 m

75. Two spheres A and B with mass m_1 and m_2 respectively are placed on a flat platform and move towards each other with the respective velocity of u_1 and u_2 . After collision they move in opposite direction with velocity v_1 and v_2 . The velocity of sphere B after collision is:

- (a) $v_2 = \frac{\{m_1(u_1 + v_1)\} + m_2 u_2}{m_2}$
- (b) $v_2 = \frac{\{m_1 u_1 + m_2 u_2\}}{m_2}$

76. A boy throws a ball upwards and the ball after travelling in air hits the ground some distance away from the boy. The path followed by the ball is:

- (a) a straight line
- (b) two sides of a triangle
- (c) a parabola
- (d) an ellipse

77. Small metallic ball is suspended by a thread from a fixed support and the pendulum then swings from one extreme side to another. For this swinging back and forth motion read the following statements:

- I. The kinetic energy of the system is minimum at the mid-position.
- II. The potential energy is minimum at the extreme position
- III. The sum of potential energy and the kinetic energy is zero at every position of the pendulum. Which of the following is true?

- (a) I, II and III
- (b) II, III and IV
- (c) I, III and IV
- (d) All the statements are incorrect

82. The "Essays on the life of Mohammad" was written by:

- (a) Maulana Abul Kalam Azad
- (b) Maulana Shibli Nomani
- (c) Sir Syed Ahmad
- (d) Maulana Hali

83. Who started the Rama Krishna Mission:

- (a) Annie Besant
- (b) Raja Ram Mohan Roy
- (c) Gopal Krishna Gokhale
- (d) Swami Vivekanand

84. The first Khalifa to succeed Hazrat Mohammad was:

- (a) Hazrat Usman Ghani
- (b) Hazrat Umar Farooq
- (c) Hazrat Abu Bakr
- (d) Hazrat Ali

85. Hazrat Amir Khusro was the disciple of:

- (a) Khwaja Moinuddin Chishti
- (b) Hazrat Nizamuddin Aulia
- (c) Baba Fariduddin Ganjshakar
- (d) None of these

86. The famous story "Idgah" was written by:

- (a) Krishan Chander
- (b) Munshi Prem Chand
- (c) Ghulam Abbas
- (d) Ismat Chughtai

- (a) $T = 2\pi\sqrt{\frac{L}{g}}$
- (b) $T = 2\pi\sqrt{\frac{M}{g}}$
- (c) $T = 2\pi\sqrt{\frac{L}{M}}$
- (d) $T = 2\pi\sqrt{\frac{M}{L}}$

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87. The Badshahi Masjid at Lahore was built by
 (a) Hunayyun (b) Akbar
 (c) Shahjahan (d) Aurangzeb

88. Sir syed Ahmad Khan founded the Scientific Society in

- (a) 1864 (b) 1862
 (c) 1865 (d) 1876

89. Who has written, "Sare Jahan Se Achha"...

- (a) Tagore (b) Prem Chand
 (c) Khuse (d) Iqbal

90. Which Indian language also uses Urdu script:

- (a) Gajami (b) Sindhi
 (c) Bengali (d) Punjabi

91. The Mughal Emperor who was the patron of fine arts was

- (a) Asarzazeb (b) Jahangir
 (c) Shahjahan (d) Akbar

92. The National Anthem of India has been composed by:

- (a) Bankim Chandra Chattopadhyay
 (b) Sarat Chandra
 (c) Rabindranath Tagore
 (d) Sankar Ray

93. The author of "Glimpses of World History" is:

- (a) Jawaharlal Nehru
 (b) Bipin Chandra
 (c) Mahatma Gandhi
 (d) V.K. Krishna Menon

94. World War II lasted from:

- (a) 1935-1942 (b) 1939-1945
 (c) 1939-1942 (d) 1939-1946

95. The founder of the British Empire in Indian was

- (a) Lord Wellesley (b) Lord Curzon
 (c) Lord Clive (d) Warren Hastings

96. The place of worship of the Jew is:

- (a) The Fire Temple (b) The Synagogue
 (c) The Church (d) The Monastery

97. The British scientist who discovered electromagnetism was:

- (a) Marie Curie (b) Isaac Newton
 (c) Michael Faraday (d) Albert Einstein

98. The Arjuna Award is given to people for outstanding contribution/performance in:

- (a) Literature (b) Sports
 (c) Music (d) Science

99. Which of the following is incorrectly matched:

- (a) Telescope - to view distant objects in space
 (b) Barometer - measures atmospheric pressure
 (c) Voltmeter - measures the power of electric current
 (d) Hydrometer - measures the relative density of liquid

100. A ball of mass 70 g moving with a speed of 0.5 m/s is stopped by a player in 0.05 seconds. Calculate the force exerted by the player.

- (a) 0.07 N (b) 0.7 N
 (c) 7 N (d) 3.5 N

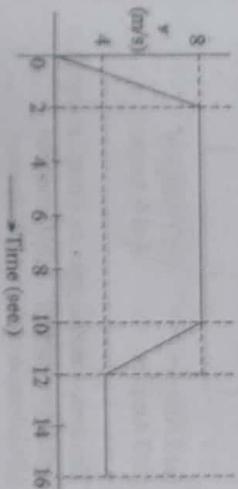
4. A volume of a box is 500 cm³. What is the relative density of the material of the box and its weight in water?

- (a) 1.43, 100g (b) 1.43, 50g
 (c) 1.11, 50g (d) 1.50, 150g

5. A body A of 100 N weight is placed on a table. Another smaller body B of 50 N weight is placed on top of A. What is the force of I. Upper body B from the lower body A and

- I. An object has a uniform acceleration of 3 m/s². At a certain time its velocity is 10m/s. What was its velocity 2 second earlier?
 (a) -2 m/s (b) +6 m/s
 (c) +4 m/s (d) +0 m/s
- II. The lower body A from the table?
 (a) 150N, 150N (b) 100N, 150N
 (c) 50N, 50N (d) 50N, 150N
6. Calculate the initial upward acceleration of a rocket of mass 1.3×10^6 kg if the initial upward force produced by its engines is 2.6×10^6 N ($g = 10 \text{ m/s}^2$)
 (a) 13 m/s^2 (b) 26 m/s^2
 (c) 10 m/s^2 (d) 20 m/s^2

2. The velocity-time graph of a runner is shown below. Calculate the distance travelled by the runner.



7. A ball of mass 1.5kg is dropped from a tower 40m high.

- I. What is its speed when it has covered 20m?
 II. What is its speed when it hits the ground?
 (a) 20 m/s , $20\sqrt{2} \text{ m/s}$ (b) 15 m/s , $20\sqrt{2} \text{ m/s}$
 (c) 20 m/s , $30\sqrt{2} \text{ m/s}$ (d) 30 m/s , 50 m/s

8. Satellite of mass 'm' is in a circular orbit of radius 'a' around earth (mass M, Radius R). The speed of the satellite vis

- (a) $v = \sqrt{\frac{GM}{R}}$ (b) $v = \sqrt{\frac{GM}{R}}$
 (c) $v = \sqrt{\frac{GM}{a}}$ (d) $v = \sqrt{\frac{Gm}{a}}$

9. A force F acts on a body of mass 'm' initially at rest producing a uniform acceleration 'v' for a time interval 't'. The work done W on the body is

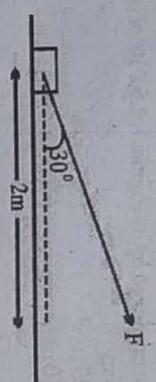
- (a) $\frac{1}{3}mv^2t^2$ (b) $\frac{1}{2}mv^2t$
 (c) $\frac{1}{2}mv^2t^2$ (d) $\frac{1}{2}mv^2t^2$

THE CONCEPTUM

10. A body of mass 0.5 Kg is thrown vertically upwards by spending 2 joules of energy. Calculate the height to which it rises (taken $g = 10 \text{ m/s}^2$)

- (a) 0.5 m (b) 0.2 m
(c) 0.4 m (d) 2.0 m

11. A boy pulls an object by applying a force $F = 50\text{N}$ as shown. The horizontal displacement is 2m. The force F makes an angle of 30° with the horizontal. Calculate the work done



- (a) $50\sqrt{2} \text{ J}$ (b) $50\sqrt{3} \text{ J}$
(c) $100\sqrt{2} \text{ J}$ (d) $100\sqrt{3} \text{ J}$

12. Calculate the final temperature of water when 2 Kg of water at 80°C is mixed with 8 Kg of water at 20°C .

- (a) 32°C (b) 40°C
(c) 36°C (d) 45°C

13. What is the wavelength of ocean waves of speed

- 20m/s and time period 5sec?

- (a) 20 m (b) 4 m
(c) 100 m (d) 200 m

14. Which of the following is wrong?

- (a) Image formed by a concave mirror is always smaller than the object
(b) Image formed by a concave mirror is always real
(c) Image formed by a plane mirror is always virtual
(d) Image formed by a concave lens is always virtual

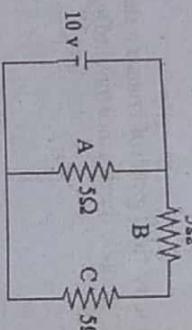
15. 2 lenses of power +2D & -1.5D are placed in

21. The elements 'X' and 'Y' have atomic numbers

contact with each other. What is focal length of the combination and the nature of this lens combinations?

- (a) 200cm, convergent (b) 150cm, divergent
(c) 350cm, convergent (d) 150cm, divergent

16. Three resistance A, B and C each of 5Ω are connected to a battery of 10V as shown in the figure. Calculate the current through C.



- (a) 2 Ampere (b) 1 Ampere
(c) 3 Ampere (d) 0.6 Ampere

17. The device used to generate electrical energy is

- (a) Electric motor (b) Generator
(c) Galvanometer (d) Voltmeter

18. The number of molecules in 11 gm of CO_2 are

- (a) 0.25×10^{23} (b) 0.50×10^{23}
(c) 1.00×10^{23} (d) 1.51×10^{23}

19. Value of $\frac{q}{m}$ ratio of electron was determined by

- (a) W. K. Roentgen (b) J. J. Thomson
(c) Marie curie (d) Niels Bohr

20. Which of the following reaction is an example of combination reaction?

- (a) $\text{Zn(s)} + \text{CuSO}_4(\text{aq}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Cu(s)}$
(b) $\text{BaCl}_2(\text{aq}) + \text{Na}_2\text{SO}_4(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + 2\text{NaCl}(\text{aq})$
(c) $\text{CaCO}_3(\text{s}) \rightarrow \text{CaO(s)} + \text{CO}_2(\text{g})$
(d) $\text{C(s)} + \text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g})$

12 and 17 respectively. Element 'X' reacts with elements 'Y' to form compound with molecular formula

- (a) XY (b) XY^2
(c) X_3Y (d) X_2Y_3

22. The atomic radius (pm) of Li, Na, K and Rb varies in the order

- (a) $\text{Na} < \text{K} < \text{Rb} < \text{Li}$ (b) $\text{K} < \text{Na} < \text{Li} < \text{Rb}$
(c) $\text{Li} < \text{Na} < \text{K} < \text{Rb}$ (d) $\text{Rb} < \text{K} < \text{Na} < \text{Li}$

23. The electron affinity value (KJ/mol) of Fluorine is less than

- (a) Hydrogen (H) (b) Lithium (Li)
(c) Oxygen (O) (d) Chlorine(Cl)

24. Which is an example of strong electrolyte.

- (a) H_2CO_3 (b) NH_4OH
(c) NaCl (d) $\text{HOOC}-\text{COOH}$

25. If pH of a solution changes from 5 to 4, the change in hydrogen ion concentration shall be

- (a) Two times (b) Five times
(c) Ten times (d) Twenty times

26. Bleaching powder is manufactured by the reaction of

- (a) CaCl_2 and CaCO_3 (b) Cl_2 and $\text{Ca}(\text{OH})_2$
(c) Cl_2 and CaSO_4 (d) Cl_2 and $\text{Ca}(\text{HCO}_3)_2$

27. The hard glass is obtained by fusing

- (a) Soda ash, sand and limestone
(b) A mixture of sand, lime, borax and alkali carbonates
(c) Potassium carbonate and limestone
(d) Potassium carbonate, lead oxide and sand

28. Which of the following metal is most reactive?

- (a) Aluminium (b) Lead
(c) Mercury (d) Silver

29. Which of the following alloys contains chromium?

- (a) Steel (b) Stainless steel
(c) Magnalium (d) Brass

30. Which of the following is monomer of natural rubber?

- (a) Chlороethene (b) Chloroprene
(c) Isopren (d) Buta-1, 3-diene

31. Alkaline KMnO_4 oxidises propanone to

- (a) Propanoic acid (b) Ethanoic acid
(c) Methanoic acid (d) Oxalic acid

32. Which of the following metals can displace Zn from ZnSO_4 solution?

- (a) Calcium (b) Copper
(c) Iron (d) Mercury

33. Heating of sodium ethanoate with soda lime yields

- (a) Ethane (b) Methane
(c) Ethanol (d) Methanol

34. The compound formed by the reaction of ethyne with bromine is

- (a) $\text{Br}-\text{CH}=\text{CH}-\text{Br}$
(b) $\text{Br}-\text{CH}_2=\text{CHBr}_2$
(c) $\text{CH}_2=\text{CH}-\text{Br}$
(d) $\text{Br}_2\text{CH}-\text{CHBr}_2$

35. Cells were first discovered by Robert Hooke in the year

- (a) 1665 (b) 1674
(c) 1831 (d) 1839

36. The plant cells have a rigid cell wall that lies

- (a) Outside the plasma membrane
(b) Inside the plasma membrane
(c) In between the plasma membranes
(d) None of these

THE CONCEPTUM

37. During mitosis nucleus and nuclear membrane are lost in stage
 (a) Prophase (b) Metaphase
 (c) Anaphase (d) Telophase
38. An example of simple and permanent tissue is
 (a) Xylem (b) Phloem
 (c) Selenchym (d) All of these
39. The shape of squamous epithelial tissue is
 (a) Cubical (b) Flattened
 (c) Pillar like (d) None of these
40. Fresh water sponge belongs to phylum
 (a) Arthropoda (b) Annelida
 (c) Porifera (d) Aschelminthes
41. In animal kingdom the largest phylum is
 (a) Arthropoda (b) Annelida
 (c) Mollusca (d) Echinoderms
42. In sea horse heart is two chambered, in wall lizard it is three chambered while in pigeon it is four chambered and in case of man it is
 (a) 1 chambered (b) 2 chambered
 (c) 3 chambered (d) 4 chambered
43. Energy giving food source are
 (a) Cereals like Rice and Wheat
 (b) Proteins, Milk and Meat
 (c) Minerals and Vitamins
 (d) All of these
44. Lead chromate is a common adulterant of
 (a) Powdered Haldi (b) Powdered Dhania
 (c) Powdered Mustard (d) Edible Oil
45. AIDS disease was first detected in
 (a) England (b) USA
 (c) South Africa (d) India
46. Biosphere means

47. The overall equation of photosynthesis is
 (a) $6CO_2 + 12H_2O \xrightarrow{Sunlight} C_6H_{12}O_6 + 6O_2$
 (b) $6CO_2 + 6H_2O \xrightarrow{chlorophyll} C_6H_{12}O_6 + 6O_2$
 (c) $CO_2 + 6H_2O \xrightarrow{Sunlight} C_6H_{12}O_6 + O_2$
 (d) None of these
48. In insects respiratory organ is
 (a) Skin (b) Gills
 (c) Lungs (d) Trachea
49. A person having AB blood group can receive blood from the person having a blood group of
 (a) A and B both (b) AB only
 (c) O only (d) All of these
50. In plants the movement during pollen tube growth is due to
 (a) Phototropism (b) Geotropism
 (c) Chemotropism (d) Photoperiodism
51. Fatehpur Sikri was built by
 (a) Akbar (b) Babur
 (c) Shahjahan (d) Jahangir
52. An Indian who received the Nobel prize within the last ten years is
 (a) Muishalkar (b) Amartya Sen
 (c) Ram Swaroop Bhattacharya
 (d) Rabindra Nath Tagore
53. In 1857 the rebelling sepoys who occupied Delhi declared the following to be their war cry
 (a) Russia (b) United States
 (c) Germany (d) United Kingdom

54. Kalidas wrote
 (a) Harshacharita (b) Kadambari
 (c) Kamasutra (d) Shakuntala
55. Kathakali is performed mostly in
 (a) Kerala (b) Karnataka
 (c) Bengal (d) Gujarat
56. Gandhiji was born in
 (a) Durban, South Africa
 (b) Porbandar, Gujarat
 (c) Mumbai, Maharashtra
 (d) Karachi, Sind
57. The state in India which has been re-electing the government of same political front for the largest number of years, is
 (a) Tamil Nadu (b) Andhra Pradesh
 (c) West Bengal (d) Karnataka
58. A Vice-Chancellor of the Aligarh Muslim University who rose letter to be the president of India, was
 (a) Fakhruddin Ali Ahmed
 (b) Dr. Ziauddin Ahmad
 (c) Dr. Abdul Kalam
 (d) Dr. Zakir Husain
59. The leader of soviet Union (Russia) under whom Hitler was defeated in world war II, was
 (a) Stalin (b) Lenin
 (c) Trotsky (d) Brezhnev
60. The only power that has actually used atomic weapons against another country is
 (a) Russia (b) United States
 (c) Germany (d) United Kingdom

61. In a group of 80 people, 45 like coffee, 50 like tea and each person likes at least one of the two drinks. The number of people who like both coffee and tea is
 (a) 5 (b) 10
 (c) 15 (d) 20
62. The domain of the real valued function $f(x) = \sqrt{x} + \sqrt{10-x}$ is
 (a) $(x: 0 \leq x \leq 10, x \in R)$
 (b) $(x: x \geq 10, x \in R)$
 (c) $(x: x \leq 10, x \in R)$
 (d) None of these
63. The value of $\frac{\sqrt{2}}{\sqrt{5}+\sqrt{3}} - \frac{4\sqrt{3}}{\sqrt{5}+\sqrt{2}} + \frac{2\sqrt{3}}{\sqrt{5}-2}$ is
 (a) $\sqrt{3}$ (b) $2\sqrt{3}$
 (c) $4\sqrt{3}$ (d) Zero
64. If $3^x - 3^{-x} = 12$, then the value of x is
 (a) 3 (b) 8
 (c) 27 (d) 216
65. Rs. 49 were divided among 150 children. Each girl got 50 paise and each boy 25 paise. The number of boys was
 (a) 101 (b) 102
 (c) 103 (d) 104
66. The numbers of degree in an angle which is equal to one-third of its supplement is
 (a) 15 (b) 30
 (c) 60 (d) 150
67. The sum of the base angles of a triangle is 140° and their difference is 40° . The angles of the triangle are
 (a) $90^\circ, 50^\circ, 40^\circ$ (b) $100^\circ, 40^\circ, 40^\circ$
 (c) $80^\circ, 40^\circ, 60^\circ$ (d) $130^\circ, 30^\circ, 20^\circ$

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68. The base of a triangle is smaller than its altitude. If its area is $\frac{1}{2}x^2 + 2x + \frac{3}{2}$, its base is.

- (a) $x+1$
(b) $(x+2)$
(c) $(x+3)$
(d) $(x-1)$

69. The perimeter of a rectangle is 82 m and its area is 400 m². The breadth of the rectangle is
- (a) 25 m
(b) 16 m
(c) 9 m
(d) 20 m

70. A goods train leaves a station at a certain time at fixed speed. After 6 hour, an express train leaves the same station and moves in the same direction at a uniform speed of 90 km/hr. This train catches the goods train in 4 hours. The speed of the goods train is:

- (a) 36 km/hr
(b) 40 km/hr
(c) 42 km/hr
(d) 45 km/hr

71. If $(x^3 - xy)^{1/2} + x^{1/2}y - y^{3/2}$ is divided

- by $x^{1/2} - y^{1/2}$, then the quotient is
- (a) $x+y$
(b) $x-y$
(c) $x^{1/2} + y^{1/2}$
(d) $x^2 - y^2$

75. If the sides AB & AC of the triangle ABC are produced to P and Q respectively. The bisectors of $\angle PBC$ and $\angle QCB$ intersect at O. If $\angle BAC = 60^\circ$, then $\angle BOC$ is

- (a) $P^2 = b^2 + c^2$
(b) $\frac{1}{P^2} = \frac{1}{b^2} + \frac{1}{c^2}$
(c) $\frac{P}{a} = \frac{P}{b}$
(d) $P^2 = b^2 c^2$

76. In the figure, AD is median of $\triangle ABC$ and $AE \perp BC$. If $BC=a$, $CA=b$, $AB=c$, $AD=p$, $AE=h$ and $DE=x$, then $b^2 + c^2$ is equal to

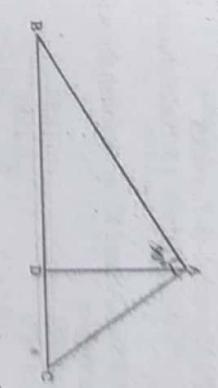
77. If $(x+k)$ is H.C.F. of $(x^2 + ax + b)$ and $(x^2 + cx + d)$, then the value of k is

- (a) $\frac{b+d}{a+c}$
(b) $\frac{a+b}{c+d}$
(c) $\frac{a-b}{c-d}$
(d) $\frac{b-d}{a-c}$

78. In a right angled $\triangle ABC$, right angled at A, if $AD \perp BC$ such that $AD=P$, if $BC=a$, $CA=b$ and $AB=c$, then

- (a) $\frac{1}{5}AC$
(b) $\frac{1}{4}AC$
(c) $\frac{1}{3}AC$
(d) $\frac{1}{2}AC$

79. In the figure, AD is median of $\triangle ABC$ and $AE \perp BC$. If $BC=a$, $CA=b$, $AB=c$, $AD=p$, $AE=h$ and $DE=x$, then $b^2 + c^2$ is equal to



- (a) $P^2 = b^2 + c^2$
(b) $\frac{1}{P^2} = \frac{1}{b^2} + \frac{1}{c^2}$
(c) $\frac{P}{a} = \frac{P}{b}$
(d) $P^2 = b^2 c^2$

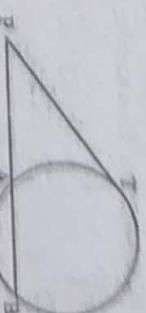
82. The sum of all 7 digit natural numbers

- (a) 4750
(b) 4945
(c) 3775
(d) 4640

83. The value of $\frac{\sin 58^\circ}{\sin 22^\circ} + \frac{\sin 20^\circ}{\cos 70^\circ}$ is

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

84. The angle of elevation of the top of the building from the foot of the tower is 30° and the angle of elevation of the top of tower from the foot of the building is 60° . If the tower is 50m high. Find the height of the building.



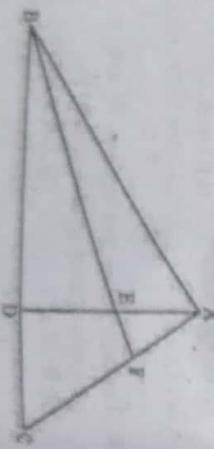
- (a) $60\frac{3}{2}$ m
(b) $16\frac{2}{3}$ m
(c) $32\frac{2}{3}$ m
(d) None of these

73. The value of

$$\frac{x-3}{x^2-x-6} + \frac{2x-1}{2x^2+5x-3} - \frac{2x+5}{x^2+5x+6} \text{ is}$$

- (a) 0
(b) 1

- (c) -1
(d) $\frac{x-3}{x-2}$



80. In the figure, AB and CD are two common tangents to two touching circles. If DC=4 cm, then AB is equal to



- (a) 4 cm
(b) 5 cm
(c) 8 cm
(d) 12 cm

85. The volume of a sphere of radius 'r' is equal to

- the volume of a right circular cone of the base radius r . The height of the cone is
 (a) r (b) $2r$
 (c) $3r$ (d) $4r$

85. 3-cubes of side 8 cm, 6 cm and 1 cm are melted to form a new cube. Surface area of the cubes so formed is:
 (a) 480 cm^2 (b) 486 cm^2
 (c) 400 cm^2 (d) 500 cm^2

87. Tickets numbered from 1 to 20 are mixed up and a ticket is drawn at random. The probability that the drawn ticket has a number multiple of 3 or 7 is
 (a) 1/5 (b) 1/2
 (c) 2/5 (d) 7/20

88. The arithmetic mean of 5 numbers is 27. If one of these no. is excluded, their mean is 25. The excluded no. is
 (a) 28 (b) 26
 (c) 25 (d) 35

89. The point on x -axis equidistant from the points A ($7, 6$) and B ($-3, 4$) is
 (a) $(0, 4)$ (b) $(-4, 0)$
 (c) $(0, 0)$ (d) $(0, 3)$

90. Two vertices of a triangle ABC are A ($-1, 4$) and B ($5, 2$) and its centroid is $(0, -3)$. The coordinates of C are
 (a) $(4, 7)$ (b) $(-4, -15)$
 (c) $(-15, -4)$ (d) None of these

91. The first Vice-Chancellor of Aligarh Muslim University was
 (a) Salabizade Afsak Ahmad Khan
 (b) Sir Ross Masoud
 (c) Reja Muhammad Ali of Mairanabad
 (d) Dr. Ziauddin Khan

92. Sir Syed A. Khan was the editor of the famous journal

- (a) Tulzeeb-ul-Akhlaq (b) Al-Hilal
 (c) Comrade (d) Young India

93. The Mughal empire was established in India by
 (a) Jahangir (b) Humayun
 (c) Babur (d) Shahjahan

94. Abul Fazl, the famous historian of Akbar's reign, is the author of
 (a) Akbarname
 (b) Muntakhab-ul-Tawarikh
 (c) Tabaqat-i-Akbari (d) Badshahname

95. Sir Syed Ahmad Khan establish the scientific society in
 (a) 1851 (b) 1864
 (c) 1875 (d) 1886

96. Mohammedan Anglo-Oriental College was established in
 (a) 1870 (b) 1875
 (c) 1880 (d) 1885

97. The famous sufi-poet, Amir Khusrau was the disciple of
 (a) Shaikh Moinuddin Chishti
 (b) Shaikh Qutubuddin Bakhtiar Kaki
 (c) Shaikh Nizamuddin Aulia
 (d) Shaikh Shihabuddin Suhravarzi

98. In post independence India, Maulana Abul Kalam Azad was the minister of
 (a) Home Affairs (b) Education
 (c) External Affairs
 (d) Health and Social Welfare

99. Kahl was the disciple of
 (a) Raivalas (b) Raibas
 (c) Ramnanda (d) Ramadas

100. Sir Syed's book, Asar-us-Sonaid deals with

(a) The revolt of 1857
 (b) The British rule in India
 (c) The movements of Delhi

1. The author of "Wings of fire" is
 (a) Pandit Jawahar Lal Nehru
 (b) M.A. Jimmeh
 (c) A.P.J. Abdul Kalam
 (d) H. J. Bhabha

2. In the famous trio of Lal, Bal and Pal, Bal stands for
 (a) S.P. Balasubrahmanyam
 (b) Laxmipata Balaji
 (c) Bal Gangadhar Tilak
 (d) K.G. Balakrishnan

3. The director of various films like Hyderabad Blues, Iqbal, Dor etc. is
 (a) Karun Johar (b) Subhash Ghai
 (c) Aditya Chopra (d) Negeesh Kukunoor

4. The width of a cricket ground is around
 (a) 150 m (b) 350 m
 (c) 550 m (d) 750 m

5. Milan, a famous fashion city is in:
 (a) Italy (b) Germany
 (c) France (d) England

6. Kimi Raikkonen is associated with:
 (a) Rowing (b) Horse Race
 (c) Rugby (d) Formula One Car Race

7. "Aryabhata" the first Indian satellite was launched from:
 (a) U.S.A (b) India
 (c) U.S.S.R (d) U.K.

8. Dr. Salim Ali was a:
 (a) Neurologist (b) Psychiatrist
 (c) Ornithologist (d) Chemist

9. Which city is known as sports good's capital of India?
 (a) Amritsar (b) Delhi
 (c) Jalandhar (d) Mumbai

10. Maulana Abul Kalam Azad edited the newspaper:
 (a) Comrade (b) Al-Hilal
 (c) Harjan (d) Zamindar

11. Who signs on a one rupee note?
 (a) Revenue Secretary
 (b) Secretary Ministry of Finance
 (c) Finance Minister
 (d) Governor, R.B.I.

12. Which expedition was the first to sail around the Earth and conclusively proved that the Earth is round?
 (a) Sir Francis Drake's
 (b) Vasco da Gama's
 (c) Christopher Columbus's
 (d) Magellan's Victoria

13. Which city is known as sports good's capital of India?
 (a) Amritsar (b) Delhi
 (c) Jalandhar (d) Mumbai

14. Maulana Abul Kalam Azad edited the newspaper:
 (a) Comrade (b) Al-Hilal
 (c) Harjan (d) Zamindar

15. Sir Syed Ahmed Khan was "Knighted" in the year:
 (a) 1877 (b) 1879

- (c) 1881 (d) 1882
16. Motilal Nehru purchased the building now known as Anand Bhawan in Allahabad from:
- Pt. Govind Ballabh Pant
 - Sampurnanand
 - Sir Syed Ahmad Khan
 - Rafi Ahmad Kishani
17. Which is India's most widely exported cereal?
- Wheat
 - Rice
 - Pulse
 - Mame
18. Al-Qur'an was revealed to the Prophet Mohammad SAW nearly:
- 19 years
 - 21 years
 - 23 years
 - 25 years
19. Prior to Hijrat (migration) of the Prophet Muhammad SAW, What was the name of Macrafa?
- Barba
 - Saqiya
 - Yathrib
 - Wahrah
20. The famous paintings like "The Last Supper" and "Mona Lisa" are by:
- Paul Cezanne
 - Leonardo da Vinci
 - Albrecht Durer
 - El Greco
21. If the distance between the two charged particles of equal magnitudes decreased by half while the charges on them are doubled, what change of force would occur?
- Increases by 16 times
 - Decreases by 16 times
 - Remains unchanged
 - Decreases by 4 times
22. Name the experiment which established the quantum number of electric charge:
- Rutherford's α -particle scattering experiment
 - Colden's experiment
 - Thomson's experiment
 - Milkman's oil drop experiment
23. If earth be assumed to be a spherical conductor of radius 6400km, its capacitance would be approximately:
- $300 \mu F$
 - $500 \mu F$
 - $700 \mu F$
 - $900 \mu F$
24. Which is correct in order of increasing resistivity?
- Copper < Nichrome < Germanium < Wood
 - Nichrome < Copper < Wood < Germanium
 - Germanium < Copper < Wood < Nichrome
 - Copper < Germanium < Wood < Nichrome
25. Three resistors of 10Ω , 20Ω and 30Ω are arranged in parallel and the combination is connected to a battery of emf 100V, the current across 10Ω Ohm resistance would be approximately:
- $5.5A$
 - $10A$
 - $2A$
 - $0.02A$
26. A long straight wire carries a current of 50 A and the magnitude of the magnetic field B at a distance of 1 m from the wire would be:
- 10^{-7} T
 - 10^{-8} T
 - 10^{-9} T
 - 1 T
27. Earth magnetic field has a horizontal component except at
- Magnetic pole
 - Equator
 - A latitude of 60°
 - An altitude of 60°
28. The frequency of red colour to which our eye are sensitive is around:
- $4 \times 10^4\text{ Hz}$
 - $4 \times 10^5\text{ Hz}$
 - $4 \times 10^6\text{ Hz}$
 - $4 \times 10^7\text{ Hz}$
29. An object placed in front of a concave mirror of focal length 20 cm produces a virtual image which is twice the size of the object, find where it is placed?
- 10 cm
 - 20 cm
 - 10 cm
 - 20 cm
30. For a convex lens, if an object is placed beyond $2f$, the position of the image would be:
- At focus f
 - Between f and $2f$
 - At $2f$
 - Beyond $2f$
31. An electric bulb is connected to a 220V generator. The current is 0.50 A. What is the power of the bulb?
- 100 W
 - 110 W
 - 200 W
 - 220 W
32. Position vector for a particle is initially $\vec{r}_1 = -5\hat{i} + 6\hat{j} + 7\hat{k}$ and then later is $\vec{r}_2 = 10\hat{i} + 11\hat{j} + 12\hat{k}$, the displacement from \vec{r}_1 and \vec{r}_2 is:
- $15\hat{i} + 5\hat{j} + 5\hat{k}$
 - $5\hat{i} + 17\hat{j} + 19\hat{k}$
 - $5\hat{i} + 5\hat{j} + 5\hat{k}$
 - $0\hat{i} + 0\hat{j} + 0\hat{k}$
33. A room has floor dimensions of 5 m and 4 m and height of 5 m, if the density of air be 1.2 kg/m^3 , weight of air in the room would be? ($g = 10\text{ m/s}^2$)
- 120 kg
 - 120 N
 - 1200 kg
 - 1200 N
34. The mass of 1 atom of Carbon is:
- $\frac{12}{6.023 \times 10^{23}}\text{ kg}$
 - $12 \times 6.023 \times 10^{23}\text{ kg}$
 - $\frac{12}{6.023 \times 10^{23}}\text{ kg}$
 - $12 \times 6.023 \times 10^{23}\text{ kg}$
35. What is the name of India's first moon mission?
- Chandrayaan-1
 - Chandra-1
 - Chandram-1
 - Chandram-1
36. Finding your friend, you applied the brakes on car which resulted a change of speed from 100 km/h to 20 km/h over a distance of 1 m, how much is the acceleration?
- $-4.8 \times 10^6\text{ km/H}^2$
 - $4.8 \times 10^6\text{ km/H}^2$
 - $-9.5 \times 10^6\text{ km/H}^2$
 - $9.5 \times 10^6\text{ km/H}^2$
37. An umpire tosses up a coin with a speed of 10 m/sec. If his hand is 1 m above the ground, how much total distance the coin will travel before hitting the ground? ($g = 10\text{ m/sec}^2$)
- 5 m
 - 6 m
 - 10 m
 - 11 m
38. Frictional force is the manifestation of:
- Electromagnetic interaction
 - Weak interaction
 - Strong interaction
 - Gravitational interaction
39. Masses of the Earth and the Moon, which are approximately separated by a distance of $3.8 \times 10^9\text{ m}$, are $6 \times 10^{24}\text{ kg}$ and $7.4 \times 10^{22}\text{ kg}$ respectively. The gravitational potential energy of the Moon-Earth system is ($G = 6.67 \times 10^{-11}\text{ N}\text{m}^2/\text{kg}^2$)
- $7.7 \times 10^{29}\text{ J}$
 - $-7.7 \times 10^{29}\text{ J}$
 - $7.7 \times 10^{28}\text{ J}$
 - $-7.7 \times 10^{28}\text{ J}$
40. The rate of evaporation increases with:
- A decrease in wind speed
 - An increase in humidity
 - A decrease of temperature
 - An increase of surface area
41. A solution contains 50 g of common salt in 450 g of water. The concentration in terms of mass by mass % of the solution is:
- 10%
 - 1000%
 - 1%
 - 0%
42. The size of a proton is approximately:
- 10^{-16} m
 - 10^{-12} m
 - 10^{-14} m
 - 10^{-11} m

43. The formula unit mass of CaCl_2 is:

- (a) 73.5 u (b) 111 u
(c) 125 u (d) 145 u

44. Number of electrons in the M-shell of Potassium:

- (a) 1 (b) 2
(c) 8 (d) 9

45. Boiling point of MgCl_2 is around:

- (a) 1000 K (b) 1300 K
(c) 1500 K (d) 1700 K

52. Organic compounds are mostly:

- (a) Electrovalent (b) Co-valent
(c) Tetravalent (d) Metallic compounds

53. Methane is:

- (a) Acyclic (b) Alicyclic
(c) Carboxylic (d) All of them

54. Vital force theory was given by:

- (a) Wholer (b) Berzelius
(c) Boyle (d) Charles

57. When Manganese dioxide is heated with Aluminium powder, which one of the following reaction takes place?

- (a) $2\text{Al} + \text{MnO}_2 \rightarrow 2\text{Mn} + 2\text{Al}_2\text{O}_3 + \text{Heat}$
(b) $3\text{MnO}_2 + 4\text{Al} \rightarrow 3\text{Mn} + 2\text{Al}_2\text{O}_3$
(c) $3\text{MnO}_2 + 4\text{Al} \rightarrow 3\text{Mn} + 4\text{Al} + 3\text{O}_2$
(d) $3\text{MnO}_2 + 6\text{Al} \rightarrow 3\text{Mn} + 4\text{Al} + 3\text{O}_2 + \text{Heat}$

48. The formula of functional group in Ketone is:

- (a) $\overset{\text{O}}{\underset{\text{C}-}{\text{C}}} - \text{OH}$ (b) $\overset{\text{O}}{\underset{\text{C}-}{\text{C}}} -$
(c) $\overset{\text{O}}{\underset{\text{C}-}{\text{C}}} - \text{H}$ (d) $- \text{COH}$

49. Esters react in the presence of an acid or a base to give back the alcohol and

- (a) Hydrochloric acid (b) Sulfuric acid
(c) Ed�ic acid (d) Carboxylic acid

50. The atomic number of Radon is:

(c) Below the small intestine
(d) Below the heart

60. The plants that live on other plants but do not receive nutrition from them are known as:

- (a) Xerophytes (b) Hydrophytes
(c) Parasites (d) Epiphytes

61. Plants which do not have well differentiated body design belongs to:

- (a) Bryophyta (b) Angiosperms
(c) Thallophyta (d) Pteridophyta

62. The tissue that makes the plant hard and stiff is:

- (a) Collenchyma (b) Sclerenchyma
(c) Parenchyma (d) Phloem

63. The hormone in the plant which inhibits growth is:

- (a) Cytokinins (b) Abscistic acid
(c) Auxins (d) Gibberellins

64. Which is a stem among these:

- (a) Carrot (b) Radish
(c) Potato (d) Onion

65. Of the total iron present in our body, what percent of it is found in haemoglobin?

- (a) 25% (b) 45%
(c) 65% (d) 85%

66. Which was the first organ to be transplanted successfully in humans?

- (a) Kidney (b) Heart
(c) Lung (d) Liver

67. Which of these belongs to the phylum Nematoda?

- (a) Earthworm (b) Leeches
(c) Ascaris (d) Pila

68. The structure, function and life history of plant cells is known as?

- (a) Genetics (b) Physiology
(c) Taxonomy (d) Cytology

69. The place where the kidneys are located is:

- (a) Upper posterior abdominal cavity
(b) In the chest cavity

body.
(a) Coelenterata (b) Porifera
(c) Nemertea (d) Mollusca

69. Tissues that forms inner lining of the mouse:

- (a) Squamous Epithelium
(b) Columnar Epithelium
(c) Cuboidal Epithelium
(d) Glandular Epithelium

70. The breakdown of pyruvate to give carbon dioxide, water and energy takes place in:

- (a) Cytoplasm (b) Chloroplast
(c) Mitochondria (d) Nucleus

71. What is the 9th term of the series:

- (a) 15 (b) 17
(c) 19 (d) 21

72. If the length of a rectangular field be increased by 50% and the breadth be decreased by 25%, find the percent change in area.

- (a) $10\frac{1}{2}\%$ (b) $12\frac{1}{2}\%$
(c) $15\frac{1}{2}\%$ (d) $17\frac{1}{2}\%$

73. Which of the following is a polynomial?

- (a) $x^2 - 5x + 6\sqrt{x} + 3$ (b) $\sqrt{x} + \frac{1}{\sqrt{x}}$
(c) $\frac{1}{x^2} - x + x^{\frac{1}{2}}$ (d) None of these

74. Find the value of 'K' for which the roots of the equation $(K+4)x^2 + (K+1)x + 1 = 0$

- (a) $x = -3$ (b) $x = 3$
(c) $x = 3$ (d) $x = -3$

75. Find the sum of real roots of the equation,

$$x^2 + |x| - 6 = 0$$

- (a) 0 (b) -1
(c) -4 (d) 1

76. Quadratic equation $x^2 + bx + c = 0$ has a root $3 - 2\sqrt{3}$, find the value of c:

- (a) 3 (b) $3\sqrt{3}$
(c) $-3\sqrt{3}$ (d) -3

77. In the figure given, $BC \parallel DE$, $AB = 6$ cm, $BC = 5$ cm, find AC.

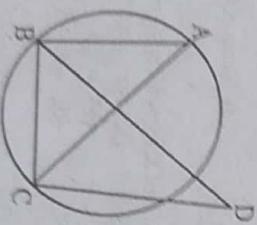


- (a) 0 (b) 1
(c) 4 (d) 5
(e) 7

78. If the sum of n terms of a series be $3n^2 + 5n$, find its 10th term

- (a) 60 (b) 62
(c) 64 (d) 66

79. In the figure given $\angle ACB = 50^\circ$, $\angle ABC = 70^\circ$, then $\angle BDC$ is:



- (a) $\frac{13}{2}$ cm (b) $\frac{15}{2}$ cm
(c) $\frac{17}{2}$ cm (d) $\frac{19}{2}$ cm

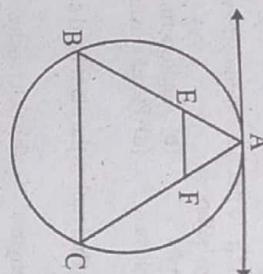
$$(a) 60^\circ$$

- (b) Less than 60°
(c) More than 60° (d) Both (b) and (c)

80. In the figure given EF is parallel to the tangent at A, a point of the circle and $\angle ABC = 57^\circ$, $\angle ACB = 55^\circ$, the measure of $\angle AFE$ is:

- (a) 0 (b) $-\frac{1}{\sqrt{3}}$
(c) -1 (d) $-\sqrt{3}$

77. In the figure given, $BC \parallel DE$, $AB = 6$ cm, $BC = 5$ cm, find AC.

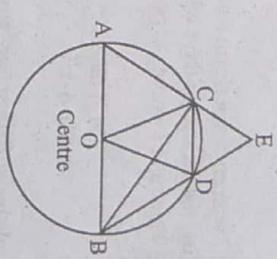


- (a) $\frac{3}{\sqrt{13}}$ (b) $-\frac{3}{\sqrt{13}}$
(c) $\sqrt{\frac{3}{13}}$ (d) $\sqrt{\frac{3}{13}}$

84. $270^\circ < \theta < 360^\circ$ and $\cos \theta = \frac{\sqrt{3}}{4}$ then $\cot \theta$ is:

- (a) $\frac{3}{\sqrt{13}}$ (b) $-\frac{3}{\sqrt{13}}$
(c) $\sqrt{\frac{3}{13}}$ (d) $\sqrt{\frac{3}{13}}$

90. In the given figure the length of the chord CD is equal to the radius of circle then measure of $\angle AEB$ is:



- (a) 30° (b) 45°
(c) 60° (d) 75°

85. If $\tan \theta + \sin \theta = m$, $\tan \theta - \sin \theta = n$ then $m^2 - n^2$ is:

- (a) $4\sqrt{mn}$ (b) $3\sqrt{mn}$
(c) $2\sqrt{mn}$ (d) \sqrt{mn}

86. If the centroid of a triangle be $(0, 0)$ and its two vertices are $(4, 5)$ and $(-4, 7)$ then the area of triangle is:

- (a) 70 (b) 72
(c) 74 (d) 76

91. If the mean of the following data be 5 find p:

x:	2	3	5	p	9
f:	9	4	6	3	8

- (a) 4 (b) 6
(c) 8 (d) 9

87. A train runs between two stations A and B. When it runs from A to B its average speed is 100 km/h while from B to A the average speed is 150 km/h, then the average speed for the entire journey is:

- (a) 120 km/h (b) 125 km/h
(c) 130 km/h (d) 135 km/h

92. The length of shadow of a tower is 40 m when the angle of elevation of sun be 60° . Find the angle of elevation when the shadow be of length 120 m:

- (a) 30° (b) 45°
(c) 60° (d) 75°

88. An insect crawls on a pillar of height 35 m. It ascends 5 m in the first minute but slips down 3 m in the next minute. If it continues crawling in this way what time it will take to reach at the top of the pillar?

- (a) 9 : 16 (b) 16 : 9
(c) 25 : 16 (d) 16 : 25

89. A batsman in his 12th inning makes a score of 63 and thereby increases his average by 2, what is his average after 12 inntings?

- (a) 39 (b) 41
(c) 43 (d) 45

93. If the ratios of the volumes of two spheres be 125 : 64, find the ratio of their surface areas:

- (a) 35 minutes (b) 33 minutes
(c) 31 minutes (d) 29 minutes

94. How many tiles of 40 cm square each will be required to pave a footpath 1 m wide carried round outside of a grassy plot 28 m by 18 m?

- (a) 450 (b) 500 (c) 550 (d) 600

95. What is the chance of having 53 Sundays in a leap year?

- (a) $\frac{1}{7}$ (b) $\frac{2}{7}$ (c) $\frac{3}{7}$ (d) $\frac{4}{7}$

96. If 5 men or 7 women can perform a work in 14 days then find the number of days which shall be taken by 9 men and 7 women to perform the same work.

- (a) 3 days. (b) 4 days (c) 5 days (d) 6 days

97. Find the angle between the hour-hand and the minute-hand of a watch at 8:45 AM?
- BC=12 cm, AC=15 cm, then the in-radius is:
-

- (a) $3\frac{1}{2}$ (b) 3 (c) $2\frac{1}{2}$ (d) 2

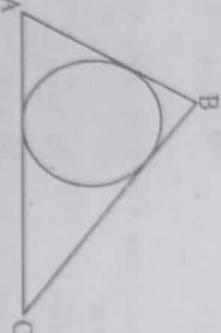
98. Mean of 25 numbers is 78.4. Later on it was detected that by a mistake a number 69 was misread as 69, then the correct mean is:

- (a) 77.48 (b) 78.48 (c) 79.48 (d) 80.48

99. If O be a point inside a rectangle ABCD. Join OA, OB, OC and OD, If $OA = 4$, $OB = 2\sqrt{11}$, $OC = 8$ then OD is:

- (a) 6 (b) 5 (c) 4 (d) 3

100. In the given triangle ABC, the sides $AB=9$ cm, $BC=12$ cm, $AC=15$ cm, then the in-radius is:



1. Some students planned for a picnic. Budget for food was Rs. 480. But eight of them failed to attend and the cost of food thereby increased by Rs. 10 per head. How many actually attended the picnic?
- (a) 12 (b) 14 (c) 16 (d) 18
2. Find the fraction which bears the same ratio to $\frac{1}{27}$ that $\frac{3}{7}$ has with $\frac{5}{9}$:
- (a) $\frac{1}{35}$ (b) $\frac{1}{42}$ (c) $\frac{1}{49}$ (d) $\frac{1}{52}$

3. Find the number of straight lines joining six non-collinear points:
- (a) 10 (b) 15 (c) 20 (d) 25

4. 2 men and 3 women perform a work in 8 days, 6 women and 8 children perform the same work in 4 days and 1 man and 2 children perform the same work in 16 days. Find the number of days 2 men, 3 women and 8 children take to perform the same work:
- (a) 2 (b) 3 (c) 4 (d) 6
5. A man starts from a given point. Each time that he takes three steps forward, he must take two steps back. How many steps must he take in order to reach a point six steps ahead of the

- starting point?

- (a) 23 (b) 25 (c) 17 (d) 18

6. For what value of p , the expression $2x^2 + 2x + p$ be factorized into real linear factors:

- (a) $p > \frac{1}{2}$ (b) $p \geq \frac{1}{2}$
(c) $p \leq \frac{1}{2}$ (d) $p < \frac{1}{2}$

7. The set of values of x satisfying $x+2=\sqrt{2x+7}$:
- (a) $\{-3\}$ (b) $\{1\}$
(c) $\{-2,1\}$ (d) $\{2\}$

8. Solve $2^{2x} - 3 \cdot 2^{x+2} + 32 = 0$:
- (a) $\{2,3\}$ (b) $\{3,3\}$
(c) $\{1,2\}$ (d) $\{3,4\}$

9. If $a^3 + b^3 + 15ab = 125$ find $a+b$
- (a) 3 (b) 5 (c) 7 (d) 9

10. The quadratic equation $\frac{1}{x} + \frac{1}{x+b} = \frac{1}{m} + \frac{1}{m+b}$ has roots m and $-m$ then:
- (a) $b^2 = m^3$ (b) $b^2 = 2m^2$
(c) $2b^2 = m^2$ (d) $2b^2 = m$

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(10+2) XITH SCIENCE

- tan β are the roots of the quadratic equation:
 (a) $\sqrt{3}x^2 - (1-a)x + \sqrt{3}a = 0$
 (b) $\sqrt{3}x^2 - (1+a)x + \sqrt{3}a = 0$
 (c) $\sqrt{3}x^2 + (1-a)x - \sqrt{3}a = 0$
 (d) $\sqrt{3}x^2 + (1-a)x + \sqrt{3}a = 0$

12. $\cos 1^\circ \cdot \cos 2^\circ \cdot \cos 3^\circ \dots \cos 178^\circ \cdot \cos 179^\circ =$
 $x+1$ then x is equal to
 (a) 1 (b) 0 (c) -1 (d) 2

13. Which of the following is not correct?
 (a) $\sin l > \sin 1^\circ$ (b) $\cos 2 < \cos 1$
 (c) $\sin 2 > \sin 1$ (d) $\tan l < \tan 2$

14. Evaluate
 $\frac{1}{\sqrt{2}} \csc(-675^\circ) + \sqrt{2} \sec(765^\circ) - \cot(1215^\circ)$

15. If θ and ϕ be acute angles and $\sin \theta = \frac{1}{2}$ and
 $\cos \phi = \frac{1}{3}$ then:
 (a) 0 (b) 4 (c) -4 (d) -2

16. The angles of elevation of a tower from two places in the line with the foot of tower are found to be 60° and 30° . If the places be 100 metres apart. Find the height of the tower:
 (a) $\frac{50\sqrt{3}}{3}$ (b) 50 (c) 18 (d) 21

tan β are the roots of the quadratic equation:

17. If A lies in the second quadrant and $3\tan A + 4 = 0$ then the value of $2 \cot A - 5 \cos A + \sin A$ is:
 (a) $-\frac{53}{10}$ (b) $\frac{23}{10}$ (c) $\frac{37}{10}$ (d) $\frac{7}{10}$

18. A circle is inscribed in an equilateral triangle whose side is 6 units. A square has its vertices on the circumference of the inscribed circle. Find the area of the square:

19. Two cones have their heights in the ratio 1 and radii of their bases in the ratio $3 : 1$. Ratio of their volumes is:
 (a) $\frac{\pi}{6} < \theta + \phi < \frac{\pi}{3}$ (b) $\frac{\pi}{3} < \theta + \phi < \frac{\pi}{2}$
 (c) $\frac{\pi}{2} < \theta + \phi < \frac{2\pi}{3}$ (d) $\frac{2\pi}{3} < \theta + \phi < \frac{5\pi}{6}$

20. Vertices of a triangle are $(6, 4), (0, 3)$ and $(0, 0)$. Find the area of the triangle:

21. ABC is a right angled triangle where $\angle B = 90^\circ$. An incircle is inscribed in it which has a radius of 6 units then $AB + BC - AC$ is:
 (a) 6 (b) 8 (c) 10 (d) 12

22. ABCD is a parallelogram. A circle passes through points A, B and C and cuts the side CD produced in E then:
 (a) $2\sqrt{2}$ (b) 3 (c) 4 (d) 5

23. Two circles intersect in A and B. CD is a direct common tangent touching the circles at C & D if $\angle CAD = 50^\circ$ then $\angle CBD$ is:
 (a) $AE > AD$ (b) $AE = AD$ (c) $AE < AD$ (d) $AE = AB$

24. Angle B of $\triangle ABC$ is acute. AD is perpendicular to BC. Find BD if $AB = 5, BC = 7, AC = 3\sqrt{2}$:
 (a) 12 (b) 15 (c) 18 (d) 21

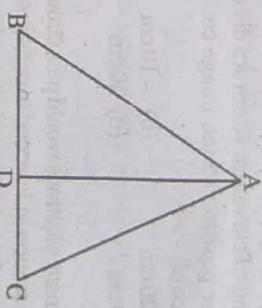
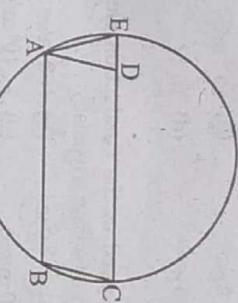
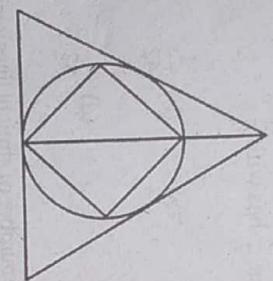
25. If $\vec{a} = 2\hat{i} - 3\hat{j}, \vec{b} = 4\hat{i} - 8\hat{j}$ value of $\vec{a} \cdot \vec{b}$ is:
 (a) 4 (b) -4 (c) 32 (d) -32

26. The number of students of a class in a school is 40, 35, 45 and 42. The mean marks obtained in a subject are respectively 50, 60, 55, 45. Determine average marks of a student:
 (a) 52.2 (b) 52.4 (c) 52.6 (d) 52.8

27. From a pack of playing cards numbering 52 a card is drawn. Probability that it is a king:
 (a) $\frac{1}{4}$ (b) $\frac{1}{13}$ (c) $\frac{1}{52}$ (d) $\frac{1}{52}$

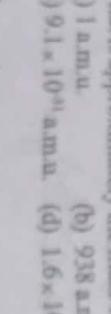
28. If $\vec{a} = 2\hat{i} - 3\hat{j}, \vec{b} = 4\hat{i} - 8\hat{j}$ value of $\vec{a} \cdot \vec{b}$ lies in:
 (a) $10^{-11} - 10^{-12}$ m (b) $10^{-4} - 10^{-2}$ m (c) $10^{-6} - 10^{-8}$ m (d) $10^{-8} - 10^{-10}$ m

$$\frac{1}{\sqrt{2}} \csc(-675^\circ) + \sqrt{2} \sec(765^\circ) - \cot(1215^\circ)$$



30. An object is placed in front of a concave mirror of radius of curvature 40 cm at a distance of 10 cm, the position of the image could be at a distance of:
 (a) -20 cm (b) -10 cm
 (c) 10 cm (d) 20 cm
31. How many electrons would pass through a given cross section in 1 second to constitute a current of 1 Amp?
 (a) 1.6×10^{-19} (b) 1.6×10^{-18}
 (c) 1.6×10^6 (d) 6×10^1
32. Freezing point of water is:
 (a) 0° F (b) 0° C
 (c) 20° C (d) 212° F
33. Which one of the following is true?
 (a) Speed of sound is less in Helium than in air at 20°C
 (b) Speed of sound is less in sea water than in water at 0°C
 (c) Speed of sound is less in Hydrogen than in air at 0°C
 (d) Speed of sound is less in sea water than in steel
34. Which of the following is true?
 (a) Sound and light need medium to travel
 (b) Only sound needs a medium to travel
 (c) Only light needs a medium to travel
 (d) Neither sound nor light needs a medium to travel
35. Sometimes we find dogs chasing motorcycles and we usually do not account for it. The reason for this is:
 (a) Dogs are attracted by the colour of the motor cycles
 (b) Dogs are attracted by the light that falls onto them
 (c) They listen to the sounds which we do not hear
 (d) They have a tendency to chase anything that goes by them

36. If one unit of electricity costs Rs.5, how much one would have to pay for using 1000 W bulb continuously for 30 days:
 (a) Rs.150 (b) Rs.3,600
 (c) Rs.5,000 (d) Rs.1,50,000
37. Two charges of the same magnitudes are separated by a distance of 100 cm and the force acting between them is 10^{-2} N, the charge on each one of them is:
 (a) 10^{-6} μC (b) 10^{-6} mC
 (c) 10^{-3} C (d) 10^{-6} C
38. Drift speed of the conduction electrons in household wiring is typically:
 (a) 4×10^5 m/sec (b) 100 m/sec
 (c) 330 m/sec (d) 3×10^6 m/sec
39. Big-Bang theory explains:
 (a) Evolution of the universe
 (b) Nuclear fusion reaction inside a star
 (c) Magnetic property of earth
 (d) Death of stars
40. In the given reaction, what is the missing particle?
 $\frac{1}{n} n + 235 U \rightarrow {}^{141}_{56} Ba + {}^{92}_{36} Kr + {}^{3}_{0} n + ?$

- (a) 50 N (b) 100 N
 (c) 150 N (d) 200 N
45. A 20kg box is pulled up on a slope with a constant speed to a distance of 4 mts raising it to a height of 2 mts above its starting point, the force \vec{F} that exerted on the box is:
 (a) 0.0025 (b) 0.8
 (c) 0.0025 (d) -0.8
46. Magnetic field in a long straight solenoid is:
 (a) Zero
 (b) Decreases as we move towards the ends
 (c) Increases as we move towards the ends
 (d) It is constant at every point
41. What is approximately the mass of proton?
 (a) 1 a.m.u. (b) 938 a.m.u.
 (c) 9.1×10^{-31} a.m.u. (d) 1.6×10^{-27} a.m.u.
42. The equivalent resistance across AB is:


43. Mohan could see clearly up to a distance of 2mts, however, he wanted to see clearly up to 10mts, what type of lens you would advise him?
 (a) Concave lens of power 0.4 dioptre
 (b) Convex lens of power 0.4 dioptre
 (c) Concave lens of power 0.6 dioptre
 (d) Convex lens of power 0.6 dioptre
44. A box of mass 400kg rests on a carrier of truck that is moving at a speed of 120km/hr. The driver applies brake and slow to a speed of 60km/hr in 20sec. The constant acceleration generated upon the box is (m/m/sec²):
 (a) -0.0025 (b) 0.8
 (c) 0.0025 (d) -0.8
45. H — C = C — OH H — C = C — OH

$$\begin{array}{c} \text{H} & \text{O} \\ | & | \\ \text{H} & \text{H} \\ | & | \\ \text{H} & \text{H} \end{array}$$

$$\begin{array}{c} \text{H} & \text{O} \\ | & | \\ \text{H} & \text{H} \\ | & | \\ \text{H} & \text{H} \end{array}$$
49. In a redox reaction Cu + 2AgNO₃ gives rise to:
 (a) NO₂ (b) Ag₂O₂
 (c) N₂O (d) AgO₂
50. A solution turns red litmus paper into blue. Its pH is:
 (a) 5 (b) 7
 (c) 10 (d) 12
51. What is the structural formula of acetic acid?

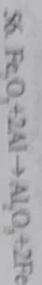
$$\begin{array}{c} \text{H} & \text{O} \\ | & | \\ \text{H} & \text{C} = \text{O} \\ | & | \\ \text{H} & \text{C} = \text{C} = \text{OH} \\ | & | \\ \text{H} & \text{H} \end{array}$$
52. Which one of the following is correct chemical equation?
 (a) $2\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$
 (b) $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{HCl}$
 (c) $\text{HNO}_3 + \text{Ca(OH)}_2 \rightarrow \text{Ca(NO}_3)_2 + \text{H}_2\text{O}$
 (d) $\text{BaCl}_2 + \text{K}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{KCl}$
53. Laughing gas is:
 (a) N₂O (b) SO₂
 (c) NH₃ (d) PH₃
54. Blue colour of water in sea is due to:
 (a) Reflection of blue light by impurities in sea water
 (b) Scattering of light by water
 (c) Reflection of blue sky in water
 (d) It is an illusion

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55. Silver items when exposed to air becomes blackish, name the black compound:

- (a) Silver nitrate
- (b) Silver sulphide
- (c) Silver oxide
- (d) Silver dioxide



The above reaction is an example of:

- (a) Combination reaction
- (b) Displacement reaction
- (c) Double displacement reaction
- (d) Decomposition reaction

57. What is the chemical formula of ammonium carbonate?

- (a) NH_4CO_3
- (b) $(\text{NH}_4)_2\text{CO}_3$
- (c) $\text{NH}_4(\text{CO}_3)_2$

58. Molar mass of $\text{C}_2\text{H}_4\text{O}_2$ is:

- (a) 15
- (b) 22
- (c) 34
- (d) 28

59. Blood may be purified by:

- (a) Dialysis
- (b) Electro-dialysis
- (c) Coagulation
- (d) Filtration

60. A solution mixed with albumens of egg produces a gas which turns water into milky white, name the solution:

- (a) NaCl
- (b) KCl
- (c) HCl
- (d) LiCl

61. Which gas is emitted when tartaric acid is heated with sodium bicarbonate?

- (a) CO_2
- (b) H_2
- (c) Cl_2
- (d) O_2

62. Richest source of iron among the following is:

- (a) Dates
- (b) Grapes
- (c) Banana
- (d) Mango

63. Milk and egg makes a complete food which is one nutrient which milk lacks and egg completes it?

- (c) Protein
- (d) Iron
- (a) Calcium
- (b) Carbohydrate

72. Which division of the kingdom plantae are without specialised vascular tissue?

- (a) Bryophyta
- (b) Thallophyta
- (c) Pteridophyta
- (d) Spermatophyta

73. Which among these tissue provides tensile strength, elasticity and mechanical strength to the plant?

- (a) Chlorenchyma
- (b) Sclerenchyma
- (c) Parenchyma
- (d) Collenchyma

74. The function of Ribosomes is:

- (a) Synthesis of protein
- (b) To destroy and foreign material that enter the cell
- (c) To maintain osmotic pressure in a cell
- (d) It forms supporting skeletal framework of the cell

75. Ecoli and salmonella are examples of:

- (a) Cyanobacteria
- (b) Enterobacteria
- (c) Gilding and budding bacteria
- (d) Actinomycetes

76. Ligaments are elastic structure which connect bones to bones

- (b) Muscles to bone
- (c) Nerve to muscle
- (d) Muscle to muscle

77. Monocot stems, roots and leaves do not have

- (a) Collenchyma
- (b) Sclerenchyma
- (c) Parenchyma
- (d) Chlorenchyma

78. Anaconda spends most of its time in a river, name it

- (a) Murray
- (b) Parana
- (c) Amazon
- (d) Mississippi

79. Common name of Acanthostoma is:

- (a) Roundworm
- (b) Filarial worm
- (c) Hookworm
- (d) Pinworm

80. Name the mammal that lays eggs

- (a) Platypus
- (b) Whale
- (c) Western grey Kangaroos
- (d) Anteaters

81. Which country's flag has no prints but is only in one colour?

- (a) Sudan
- (b) Libya
- (c) Turkey
- (d) Egypt

82. Recently launched Nano by Tata Motors has been termed as

- (a) Drive your passion
- (b) Sunshine car
- (c) People's car
- (d) Dream car

83. Pandit Jawaharlal Nehru had two sisters who were famous in the then Indian Politics, they were

- (a) Vijay Lakshmi, Sacheta
- (b) Sacheta, Avnra
- (c) Avnra, Krishna
- (d) Krishna, Vijay Lakshmi

84. Name the first person who was awarded Bharat Ratna

- (a) C. V. Raman
- (b) Rabindranath Tagore
- (c) Sarojini Naidu
- (d) Homi Jehangir Bhabha

85. The space shuttle Discovery which has recently returned to earth had number of crew

- (a) Three
- (b) Five
- (c) Seven
- (d) Nine

86. Standard width of a cricket bat is

- (a) $4\frac{1}{4}$ "
- (b) $4\frac{3}{4}$ "
- (c) $5\frac{1}{4}$ "
- (d) $5\frac{3}{4}$ "

87. Bees, wasps, ants and sawflies are

- (a) Beetle
- (b) Bugs

- (c) Lepidopterans (d) Hymenopterids

88. After the death of Emperor Jehangir one of his sons succeeded to the throne with the title of Shahjahan, name him

- (a) Shahryar (b) Khurram
(c) Asfandiyar (d) Hindal

89. What is the distance between parallel lines of Broad Gauge?

- (a) 1656cm (b) 1666cm
(c) 1676cm (d) 1686cm

90. The author of the book Mutiliya Sir Syed's is

- (a) AlAhamad Saroor
(b) Khalique Ahmed Nizami
(c) Abdul Haque (d) Nurul Hasan Naqvi

91. English team played a cricket match at cricket ground of Aligarh against Aligarh College team in 1891. Four runs were needed for the win of Aligarh College team. One ball was left and last batsman was in, who hit a six, name him

- (a) Maulana Mohammad Ali Jauhar
(b) Maulana Shaukat Ali
(c) Mr. Raja Mahendra Pratap
(d) Mr. C. K. Naidu

92. The name of grandfather (paternal) of Sir Syed Ahmad Khan was

- (a) Shah Rafiuddin (b) Shah Ghulam Ali
(c) Syed Mir Muttaqui (d) MirSyedMohammad

93. The person who laid the foundation stone of Mohammadian Anglo Oriental College at Aligarh was

- (a) Lord Lytton (b) Lord Lawrence
(c) Sir William Muir (d) Syed Ahmad Khan

94. Sir Syed Ahmad Khan in 1860 published a magazine "Loyal Mohammadian's of India" in English and "Risala Khair-e-Khahan of Muslims" in Urdu. Name the town from which these were published

- (a) Muradabad (b) Fatehpur Sikri
(c) Bijnor (d) Aligarh

95. The longitude on which Aligarh Muslim University, Aligarh is situated

- (a) 79°10' (b) 79°40'
(c) 80°10' (d) 80°40'

96. Name the Mother of Hazrat Ibrahim, the son of prophet Mohammad (P.B.U.)

- (a) Hazrat Maimuna
(b) Hazrat Maria Qubutiya
(c) Hazrat Umm Habiba
(d) HazratLawaria

97. The Prophet Mohammad (P.B.U.) stayed in the house of a sahabi for seven months after migration from Mecca to Yathrib (medina), name him

- (a) Utban Ibn Malik Ansari
(b) Kharrijah Ibn Zaid Ansari
(c) Abu Ibn Ayub Ansari
(d) Sayeed Ibn Ibadah Ansari

98. A dealer sells an article for Rs. 75.00 and gains as much percent as the cost price of the article. Find the cost price of the article

- (a) Rs.40 (b) Rs.45
(c) Rs.50 (d) Rs.55

99. A bag contains Rs.102 in the form of rupee, fifty paise and ten paise coins in the ratio 3:4:10. Find the number of 10 paise coins

- (a) 17 (b) 60
(c) 120 (d) 170

100. Average temperature for Monday, Tuesday and Wednesday was 40°C and the average temperature for Tuesday, Wednesday and Thursday was 41°C. If the temperature for Thursday be 42°C, then what was the temperature on Monday?

- (a) 38°C (b) 39°C
(c) 40°C (d) 41°C

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(10+2) XITH SCIENCE

1. Which of the following is building free encyclopedias in most of the languages of the world?

- (a) Encyclopedia Britannica
(b) Wikipedia
(c) GlobalHeritage
(d) World Book of Knowledge

2. Which of the following tower building is not located in U.A.E.?

- (a) Millennium Tower (b) Almas Tower
(c) Burj Dubai (d) Aspire Tower

3. Who among the following women has not been a judge of the Supreme Court of India?

- (a) Fatima Beevi (b) Ruma Paul
(c) Sujata Manohar (d) Lakshmi Srinath

4. The Chiang Mai Initiative is a currency pool of

- (a) ASEAN (b) Japan and South Korea
(c) China (d) All of these

5. 'Nurek', the world's highest dam is located in

- (a) China (b) Tajikistan
(c) Japan (d) Colombia

6. Which of the following is not an agency of the United Nations?

- (a) International Court of Justice
(b) Food And Agriculture Organisation
(c) International Labour Organisation
(d) International Maritime Organisation

14. Muslims first settled down in India in the 6th century (b) 7th century
(c) 8th century (d) 9th century

15. In his Poetry Mohammad Iqbal put forward the theory of

- (a) Ishq-i-elahi (b) Khudi
(c) Wahdat-ul-Wajood (d) Fana Filiah

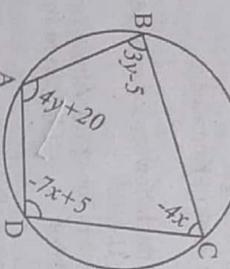
16. Mahdavi movement of India was founded by

- (a) Shah Abdul Aziz (b) Shah Waliullah

- (c) Syed Muhammad Jaunpuri
(d) Ahmad Raza Khan
17. The theory of "Wahdat-ul-Shuhud" was propounded by
(a) Shah Waliullah Dehlawi
(b) Allama Iqbal
(c) Sheikh Ahmad Sirhindī
(d) Syed Shaheed Ahmad Bardey
18. Babur's Tomb is situated in
(a) Agra
(b) Delhi
(c) Kabul
(d) Panipat
19. "Yadgar-i-Ghalib" is an important work, written by
(a) Altaf Hussain Hali
(b) Allama Iqbal
(c) Mir Taqi Mir
(d) Mirza Ghalib
20. Which of the following is correctly matched?
(a) Hazr. Khas - Firuz Shah Tughluq
(b) Siri Fort - Altamash
(c) Qutub Minar - Muhammad Tughluq
(d) Tughlaqabad - Alauddin Khilji

21. If the angles of a quadrilateral are in the ratio 3:5:9:13, then the angles of the quadrilateral are
(a) $36^\circ, 60^\circ, 108^\circ, 156^\circ$
(b) $35^\circ, 60^\circ, 110^\circ, 155^\circ$
(c) $45^\circ, 50^\circ, 120^\circ, 145^\circ$
(d) None of these
22. Which of the following cannot be the probability of an event?
(a) 23%
(b) 15%
(c) -1.5
(d) None of these
23. Area of a sector of angle p (in degrees) of a circle with radius R is
(a) $\frac{p}{360} \cdot 2\pi R^2$
(b) $\frac{p}{180} \cdot \pi R^2$
(c) $\frac{p}{720} \cdot 2\pi R^2$
(d) None of these

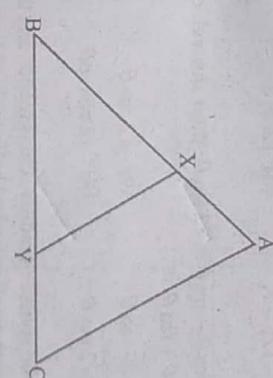
24. On dividing $(x^3 - 3x^2 + x + 2)$ by a polynomial $g(x)$, the quotient and remainder were $(x-2)$ and $(-2x+4)$ respectively, then the polynomial $g(x)$ is equal to
(a) $x^2 - x + 1$
(b) $x^2 + x + 1$
(c) $x^2 + x - 1$
(d) $x^2 - x - 1$
25. ABCD is a cyclic quadrilateral, then angles A, B, C and D are
(a) $2:3:4:9$
(b) $4:9$
(c) $8:1:16$
(d) $16:8:1$
26. Water in a canal 6m wide and 1.5m deep, is flowing with a speed of 10 km/h. How much area will it irrigate in 30 minutes, if 8 cm of standing water is needed?
(a) 5.625 hectares
(b) 562.5 hectares
(c) 56.25 hectares
(d) 5625 hectares



27. If the sum of first 7 terms of an AP is 49 and that of 17 terms is 289, find the sum of first n terms.
(a) 23
(b) 15%
(c) 1.5
(d) 0.7
28. If $\tan(A+B) = \sqrt{3}$ and $\tan(A-B) = \frac{1}{\sqrt{3}}$

29. Sides of two similar triangles are in the ratio 4:9. Areas of these triangles are in the ratio

30. In the given figure, the line segment XY is parallel to side AC of $\triangle ABC$ and it divides the triangle into two parts of equal areas. Find the ratio $\frac{AX}{AB}$



31. Let A(4,2), B(6,5) and C(1,4) be the vertices of $\triangle ABC$. The median from A meets BC at D. The coordinates of the point D are

- (a) $\left(\frac{9}{2}, \frac{3}{2}\right)$
(b) $\left(\frac{9}{2}, \frac{7}{2}\right)$

- (c) $\left(\frac{7}{2}, \frac{9}{2}\right)$
(d) $\left(\frac{-7}{2}, \frac{3}{2}\right)$

- (e) 3

- (f) 5

- (g) 6

- (h) 7

32. If the points A(6,1), B(8,2), C(9,4) and D(P,3) are the vertices of a parallelogram, taken in order, find the value of P

- (a) 6
(b) 5
(c) 3
(d) 7

33. The coordinates of the points of trisection of the line segment joining (4,-1) and (-2,3) are

- (a) $\left(-2, \frac{-5}{3}\right); \left(0, \frac{7}{3}\right)$ (b) $\left(2, \frac{-5}{3}\right); \left(0, \frac{-7}{3}\right)$

- (c) $\left(81:16\right)$ (d) $\left(16:81\right)$

- (e) $\left(2, \frac{-7}{3}\right); \left(1, \frac{5}{3}\right)$ (d) $\left(2, \frac{-5}{3}\right); \left(-1, \frac{7}{3}\right)$

34. Let A(4,2), B(6,5) and C(1,4) be the vertices of $\triangle ABC$. The median from A meets BC at D. The coordinates of the point D are

- (a) $\left(\frac{9}{2}, \frac{3}{2}\right)$
(b) $\left(\frac{9}{2}, \frac{7}{2}\right)$

- (c) $\left(\frac{7}{2}, \frac{9}{2}\right)$
(d) $\left(\frac{-7}{2}, \frac{3}{2}\right)$

- (e) 3

- (f) 5

- (g) 6

- (h) 7

35. If the points A(6,1), B(8,2), C(9,4) and D(P,3) are the vertices of a parallelogram, taken in order, find the value of P

- (a) 6
(b) 5
(c) 3
(d) 7

36. The following observations have been arranged in ascending order. If the median of the data is 63, find the value of x

- (a) 29
(b) 32
(c) 48
(d) 50
(e) x
(f) x+2
(g) 72
(h) 78
(i) 84
(j) 95

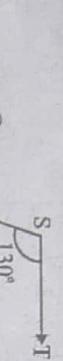
37. Two concentric circles are of radii 5cm and 3cm. Find the length of the chord of the larger circle which touches the smaller circle

- (a) 8 cm
(b) 4 cm
(c) 6 cm
(d) 10 cm

38. From a point Q, the length of tangent to a circle is 24 cm and distance of Q from the centre is 25 cm. The radius of the circle is

- (a) 4 cm
(b) 5 cm
(c) 6 cm
(d) 7 cm

39. In the given figure if $PQ \parallel ST$, $\angle PQR = 110^\circ$ and $\angle RST = 130^\circ$, then $\angle QRS$ is equal to



- (a) 45°
(b) 60°
(c) 50°
(d) 40°

40. If $\tan \theta = \frac{1}{\sqrt{7}}$, the value of $\frac{\cosec^2 \theta - \sec^2 \theta}{\cosec^2 \theta + \sec^2 \theta}$ is

- (a) $\frac{3}{5}$
(b) $\frac{3}{7}$
(c) $\frac{3}{4}$
(d) $\frac{3}{8}$

41. The angle of elevation of the top of a tower from two points at a distance of 4m and 9m from the base of the tower and in the same straight line with it are complementary. The height of the tower is

- (a) 5 m
(b) 6 m
(c) 7 m
(d) 8 m

42. The perimeter of a right triangle is 60 cm. Its hypotenuse is 25 cm, then area of the triangle is equal to

- (a) 300 cm^2
(b) 250 cm^2
(c) 200 cm^2
(d) 150 cm^2

43. A train travels 360 km at a uniform speed. If the speed had been 5 km/h more, it would have taken 1 hours less for the same journey. The speed of the train is

- (a) 35 km/hour
(b) 30 km/hour

- (c) 20 km/hour
(d) 40 km/hour

44. Sonu went to a bank to withdraw Rs. 2000. He asked the cashier to give him Rs.50 and Rs.100 notes only. Sonu got 25 notes in all. The number of notes of Rs.50 received by him are

- (a) 8
(b) 12
(c) 10
(d) 15

45. The sum of the 4th and 8th terms of an AP is 24 and the sum of the 6th and 10th terms is 44.

- The first three terms of the AP are

- (a) $13, 8, 3$
(b) $-13, -8, -3$
(c) $-12, -7, -2$
(d) $12, 7, 2$

46. If $\cos \theta - \sin \theta = \sqrt{2} \sin \theta$ then the value of $\cos \theta + \sin \theta$ is

- (a) $\sqrt{2} \tan \theta$
(b) $\sqrt{2} \cos \theta$
(c) $\sqrt{2} \cot \theta$
(d) $\sqrt{2} \cosec \theta$

47. A solid sphere of radius 3cm is melted and then cast into small spherical balls each of diameter 0.6 cm. The number of balls thus obtained are

- (a) 100
(b) 500
(c) 1000
(d) None of these

48. The radius and slant height of a cone are in the ratio of 4 : 7. If its curved surface area is 792

- cm^2 , then its radius is equal to $\left(\text{use } \pi = \frac{22}{7} \right)$

- (a) 11 cm
(b) 12 cm
(c) 13 cm
(d) 14 cm

49. The roots of a quadratic equation $(k-12)x^2 + 2(k-12)x + 2 = 0$ are equal, then values of k are:

- (a) $k = 12, k = 12$
(b) $k = 14, k = 14$
(c) $k = 12, k = 14$
(d) $k = -12, k = 14$

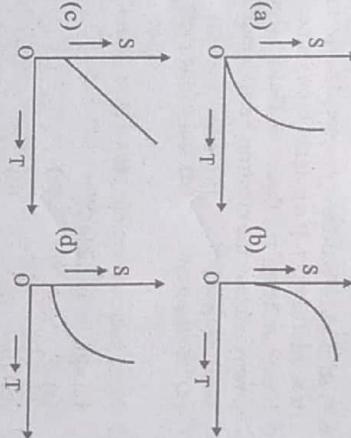
50. Three coins are tossed. Probability of getting one head is

- (a) $\frac{1}{8}$
(b) $\frac{1}{3}$
(c) $\frac{3}{8}$
(d) $\frac{1}{2}$

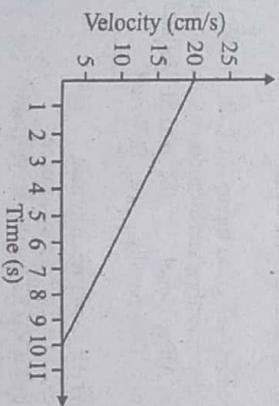
51. Which of the following graph is represented by

$$S = ut + \frac{1}{2} at^2 ?$$

Symbols have their usual meanings.



52. The velocity-time graph of a ball of mass 20 g moving along a straight line on a long table is given in figure. How much force does the table exert on the ball to bring it to rest?



56. The relative density of silver is 10.8. The density

- of water is 10^3 kg m^{-3} . The density of silver is

- his power is (taking $g = 10 \text{ ms}^{-2}$)

- (a) 375 W
(b) 500 W
(c) 37.5W
(d) 3.75 W

57. Which one of the following statements is correct about speed of sound?

- (a) They are so far from the earth that gravity is too weak to be noticed

- (b) A gravitational field cannot act in the vacuum of space

- (c) They are in a state of free fall

- (d) The gravitational force of the moon balances that of the earth

58. An object thrown at a certain angle from the ground moves in a curved path and falls back to the ground. The initial and the final points of the path of the object lie on the same horizontal line. What is the work done by the force of

- gravity on the object?

- (a) 9.8 J
(b) 9.8 erg
(c) 980 erg
(d) Zero

59. The astronauts in the space shuttle orbiting the

- earth are weightless because

- (a) they are so far from the earth that gravity is too weak to be noticed

- (b) A gravitational field cannot act in the vacuum of space

- (c) They are in a state of free fall

- (d) The gravitational force of the moon balances that of the earth

- earth are weightless because

- (a) they are so far from the earth that gravity is too weak to be noticed

- (b) A gravitational field cannot act in the vacuum of space

- (c) They are in a state of free fall

- (d) The gravitational force of the moon balances that of the earth

object ?

- (a) Between the principal focus and the centre of curvature
- (b) At the centre of curvature
- (c) Beyond the centre of curvature
- (d) Between the pole of the mirror and its principal focus

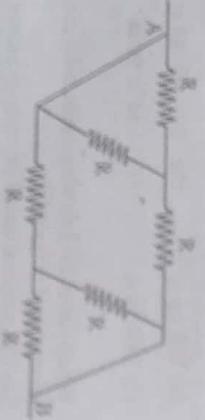
59. The clear sky is blue and sunset red because

- (a) The nitrogen in the air has a blue colour
- (b) The oxygen in the air has a blue colour
- (c) Air molecules scatter more blue light than blue light
- (d) Air molecules scatter more red light than red light

60. A myopic person has a far point for distinct vision at 5.6 m. What focal length spectacle lenses does he need to see distant objects distinctly?

- (a) Infinite
- (b) Zero
- (c) 12.2m
- (d) 560 cm

61. A network of six identical resistors, each of value R is made as shown in the figure. Equivalent resistance between points A and B is



- (a) R/4
- (b) 3R/4
- (c) 4R/3
- (d) 3R

62. A cell, an ammeter and a voltmeter are all connected in series. The ammeter reads a current I and the voltmeter a potential difference V. If a bulb is connected across the voltmeter, then

- (a) both I and V will increase

- (b) both I and V will decrease

(c) I will increase but V will decrease

(d) I will decrease but V will increase

63. The essential difference between an AC generator and a DC generator is that

- (a) AC generator has an electromagnet while a DC generator has a permanent magnet
- (b) DC generator generates a higher voltage
- (c) AC generator generates a higher voltage
- (d) AC generator has slip rings while the DC generator has a commutator

64. A stream of electrons is projected horizontally towards the right. If a magnet brought near the electron beam produces a field directed downward then the electron beam bends

- (a) Downward
- (b) upward
- (c) into the page
- (d) out of the page

65. In the nuclear reaction, ${}^3\text{H} + {}^2\text{H} \rightarrow {}^4\text{He} + \text{X}$ + Energy, the particle 'X' is

- (a) α
- (b) γ
- (c) $\frac{1}{2}n$
- (d) $\frac{1}{2}p$

66. Which is not a fossil?

- (a) Homo habilis
- (b) Homo sapiens
- (c) Homo erectus
- (d) Homo neanderthalensis

67. Natural selection theory of C.R. Darwin was independently given by another scientist called

- (a) Alfred Nobel
- (b) Alfred Wallace
- (c) T. Dobzhansky
- (d) S. Wright

68. Which is not true in human ?

- (a) XO is Turner's syndrome
- (b) XY is Klinefelter's syndrome
- (c) XY is super female
- (d) XX is super female

69. Who among the following is not associated with origin of life?

(a) A.I. Oparin

(b) J.B.S. Haldane

(c) Stanley Miller

(d) Lord Zuckerman

70. Oxytocin is released from pituitary. It is

- (a) A protein
- (b) Octapeptide
- (c) Decapeptide
- (d) Bioamine

71. Which statement is wrong for humans?

- (a) Fertilization is internal
- (b) Fertilization takes place in fallopian tube
- (c) Ovulation is followed by fertilization
- (d) Ovulation occurs prior to fertilization

72. Which of the following is a growth hormone of plants ?

- (a) Somatostatin
- (b) Leptin
- (c) Gastrin
- (d) Auxin

73. Ascent of sap in plants takes place through

- (a) Sieve tubes
- (b) Phloem
- (c) Tracheids and vessels
- (d) All of these

74. Pineal gland is located near

- (a) Hypothalamus
- (b) Thyroid gland
- (c) Adrenal gland
- (d) Pancreas

75. When are two inorganic phosphates used released

- (a) ADP to ATP
- (b) AMP to ADP
- (c) AMP to ATP
- (d) ATP to AMP

76. In which conversion is one inorganic phosphate released

- (a) ATP to AMP
- (b) ADP to AMP
- (c) AMP to ADP
- (d) ADP to ATP

77. Which is not the correct scientific name of honeybee species?

- (a) Apis indica
- (b) Apis dorsata
- (c) Apis Crassata
- (d) Apis mellifera

78. Which of the following aquatic animals are reared for obtaining pearls?

- (a) Mussels
- (b) Prawns
- (c) Molluscs
- (d) Oysters

79. Which of the following is an example of micro-nutrient needed by plants?

- (a) Sulphur
- (b) Magnesium
- (c) Manganese
- (d) Potassium

80. Peptic ulcer is caused by

- (a) Trypanosoma gambiense
- (b) Helicobacter pylori
- (c) L. Donovani
- (d) S. Typhimurium

81. Famous book 'Systema Naturae' was written by the scientist

- (a) C.R. Darwin
- (b) Lamarck
- (c) G.J. Mendel
- (d) Carolus Linnaeus

82. Members of which phylum are first coelomate with segmented body?

- (a) Nemertoda
- (b) Anthropoda
- (c) Mollusca
- (d) Annelida

83. Which belongs to sub-kingdom plantae?

- (a) Gymnosperms
- (b) Pteridophytes
- (c) Thallophytes
- (d) Bryophytes

84. Which distinguishes plant and animal cells ? Tick the wrong option

(a) Glycogen in animals

(b) Starch in plants

(c) Plastid in plants

(d) Pastid in animals

85. Cell wall of the cork is impervious to gases and water due to deposition of

- (a) Celulose and hemicelulose
- (b) Lignin
- (c) Suberin
- (d) Chitin



(10+2) XITH SCIENCE

86. Roasting results in the production of metal in case of
 (a) Bauxite (b) Zincblende
 (c) Chinnabar (d) Iron pyrite
87. Hydrogenation of vegetable oils is an example of
 (a) physical change
 (b) substitution reaction
 (c) addition reaction
 (d) decomposition reaction
88. Which sodium compound contains ten water molecules of crystallisation?
 (a) Baking soda (b) Washing soda
 (c) Corrosive salt (d) Sodium hydroxide
89. The components of which one of the following mixtures can be separated by the process of filtration?
 (a) Suspension (b) Solution
 (c) Emulsion (d) Sol
90. Which is not a chemical change?
 (a) Freezing of water (b) Rusting of iron
 (c) Burning of paper (d) Digestion of food
91. Al_2O_3 is
 (a) Acidic oxide (b) Basic oxide
 (c) Neutral oxide (d) Amphoteric oxide
92. Which of the following compound is not in tetrahedral geometry?
 (a) CO_4 (b) C_2H_4
 (c) CH_2Cl_2 (d) CH_4
93. Which of the following silicate chain when sodium salt of propionic acid is treated with soda-lime?
 (a) Methane (b) Ethane
 (c) Propane (d) Butane
94. Which of the following is acetone?
 H H H H O
 | | | | ||
 H-C-C-C-H (b) H-C-C-C-H
 | | | |
 H OH H H
95. $2Pb(NO_3)_2 \xrightarrow{\text{heat}} 2PbO(s) + 4NO_2(g) + O_2(g)$
 The above reaction is an example of a
 (a) combination reaction
 (b) double displacement reaction
 (c) decomposition reaction
 (d) displacement reaction
96. Law of Octaves is applicable only upto
 (a) Br (b) Li
 (c) Ca (d) Sr
97. The formula of plaster of Paris is
 (a) $CaSO_4 \cdot 2H_2O$ (b) $CaSO_4 \cdot \frac{1}{2}H_2O$
 (c) $(CaSO_4)_2 \cdot 2H_2O$ (d) $CaSO_4 \cdot \frac{1}{2}H_2O$
98. Among the following groups which is the Dobereiner's triad
 (a) Li, Na, K (b) N, P, As
 (c) F, Cl, Br (d) Cu, Ag, Au
99. Evaporation of liquid takes place
 (a) At its boiling point
 (b) Above its boiling point
 (c) Below its boiling point
 (d) Above and at its boiling point
100. What is the mass of 3.011×10^{23} molecules of nitrogen gas?
 (a) 2.8 g (b) 14 g
 (c) 28 g (d) 1.4 g
1. Who among the following is famous for translating the Holy Quran into English?
 (a) M.M. Pickhall (b) P.G. Woode
 (c) A. Intran Ali (d) Usman Ghazi
2. How many Surah are there in the Holy Quran?
 (a) 111 (b) 114
 (c) 118 (d) 121
3. Under whose region did mosque building reach its peak?
 (a) Babar (b) Humayun
 (c) Shah Jahan (d) Aurangzeb
4. Which of the following was not a part of Akbar's empire?
 (a) Kashmir (b) Assam
 (c) Khandhar (d) Bengal and Orissa
5. The Famous book "Seerat-un-Nabi" was written by
 (a) Shah Waliullah (b) Sir Syed
 (c) Moulana Shibli (d) maulana Mofid Ali
6. Who wrote "India Wins Freedom"?
 (a) Maulana Abul Kalam Azad
 (b) Khwaja Moinuddin Chisti
 (c) J.L. Nehru (d) M.K. Gandhi
7. When Prophet Muhammad's mother died what was his approximate age?
 (a) 4 years (b) 5 years
 (c) 6 years (d) 7 years
8. The last sermon of Prophet Muhammad was delivered on
 (a) 10th day of Dhil Hijjah
 (b) 9th day of Dhil Hijjah
 (c) 8th day of Dhil Hijjah
9. Who is the Chairman of the Public Accounts Committee?
 (a) Maruf Maroob Joshi
 (b) Arun Jaitley
 (c) Ahmad Patel
10. How many months are there in the Islamic calendar?
 (a) 10 (b) 11
 (c) 12 (d) 13
11. Who wrote "The White Tiger"?
 (a) Arvind Adiga (b) Kiran Desai
 (c) J.M. Coetzee
12. The Union Health Minister of India is
 (a) Mosukal Wasnik (b) Ambika Soni
 (c) Ghulam Nabi Azad (d) Kapil Sibal
13. Who wrote "The Fountainhead"?
 (a) John Osborne (b) Ayn Rand
 (c) Henry Miller (d) Pearl S. Buck
14. With which game is the Ryder Cup associated?
 (a) Polo (b) Hockey
 (c) Horse racing (d) Golf
15. Which of the following countries has the largest Muslim Population?
 (a) India (b) Pakistan
 (c) Indonesia (d) Iran
16. Who is the Chairman of the Public Accounts Committee?
 (a) Maruf Maroob Joshi
 (b) Arun Jaitley
 (c) Ahmad Patel

$$(d) \alpha + \beta + \gamma = m, \alpha\beta + \beta\gamma + \gamma\alpha = n, \alpha\beta\gamma = -1$$

17. India is the _____ biggest producer of rice in the world
 (a) 2nd (b) 3rd (c) 4th (d) 5th

18. Niraradia is a
 (a) Film star (b) Corporate lobbyist (c) Journalist (d) Novelist

19. Which famous financier was sentenced to 150 years in prison, for financial fraud, in U.S.?
 (a) David Souter (b) Bernia Madoff (c) John Koore (d) Tom Paine

20. Which famous Indian historian was awarded the John W.Kluge Prize?
 (a) Irfan Habib (b) Bipin Chandra (c) Sumit Sarkar (d) Romila Thapar

21. Consider the following Statement
 A Every whole number is a natural number
 B Every rational number is an integer
 In your opinion:
 (a) Only A is true
 (b) Only B is true
 (c) Both A and B are true
 (d) Both A and B are false

22. $0.231131\dots$ is equal to

- (a) $\frac{229}{999}$ (b) $\frac{229}{990}$ (c) $\frac{231}{990}$ (d) $\frac{231}{99}$

23. If α, β, γ are the zeroes of the cubic polynomial

$$x^3 - mx^2 + nx - 1, \text{ then}$$

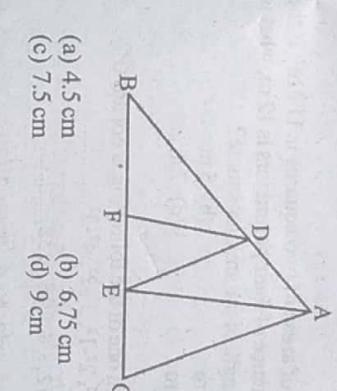
- (a) $\alpha + \beta + \gamma = m$, $\alpha\beta + \beta\gamma + \gamma\alpha = n$, $\alpha\beta\gamma = 1$
 (b) $\alpha + \beta + \gamma = -m$, $\alpha\beta + \beta\gamma + \gamma\alpha = n$, $\alpha\beta\gamma = -1$
 (c) $\alpha + \beta + \gamma = m$, $\alpha\beta + \beta\gamma + \gamma\alpha = -n$, $\alpha\beta\gamma = 1$

24. For what value of x are the points $(x, 7), (5, 3)$ and $(7, 1)$ are collinear?
 (a) 1 (b) 2 (c) 3 (d) 4

25. The point on the x -axis, which is equidistant from $(3, -5)$ and $(6, 2)$ is
 (a) $(1, 0)$ (b) $(2, 0)$ (c) $(4, 0)$ (d) $(4.5, 0)$

26. If AB is the diameter of a circle whose centre is at $(-2, -1)$ and A is $(4, -3)$ then B is
 (a) $(1, -2)$ (b) $(2, -2)$ (c) $(6, -4)$ (d) $(-8, 1)$

27. The area of the triangle formed by joining the middle points of the sides of the triangle whose vertices are $(0, 16), (0, 0)$ and $(4, 0)$ is
 (a) 8 (b) $\frac{32}{3}$ (c) 16 (d) 32



32. Diagonals of a trapezium ABCD with $AB \parallel CD$ intersect each other at O. If $2AB = 3CD$, the ratio of the areas of triangles AOB and COD is

- (a) 2 : 3 (b) 3 : 2 (c) 4 : 9 (d) 9 : 4

33. In a circle of radius 5 cm, chords PQ = QR = 6 cm. Then the length of the chord PR = ?

- (a) 8 cm (b) 9.6 cm (c) $6\sqrt{2}$ cm (d) 12 cm

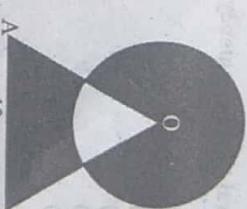
29. If $2x + y = 2xy$ and $\frac{2x + 4y}{xy} = 5$, then $x = ?$

- (a) 0 (b) 1 (c) 2 (d) 2.5

34. Two concentric circles are of radii 3 cm and 4 cm. The length of the chord of the larger circle which touches the smaller circle is

- (a) $\sqrt{7}$ cm (b) 5 cm (c) $2\sqrt{7}$ cm (d) 10 cm

35. What is the area of the shaded region where a circular arc of radius 6 cm has been drawn with vertex O of an equilateral triangle OAB of side 12 cm as centre?



38. A solid cylinder of base of 36 cm diameter is melted and recast into a solid cone of height 24 cm and radius of the base 36 cm. Height of the cylinder is
 (a) 24 cm (b) 30 cm (c) 32 cm (d) $12\sqrt{13}$ cm

39. Which of the following is not a measure of central tendency for ungrouped data?
 (a) Mean (b) Median (c) Mode (d) Range

40. The median of the distribution given below is
285.
- | Class-interval | Frequency |
|----------------|-----------|
| 0–100 | 15 |
| 100–200 | 20 |
| 200–300 | 20 |
| 300–400 | 15 |
| 400–500 | 5 |
| Total | 60 |
- The value of x, y are respectively
- 6, 10
 - 7, 9
 - 9, 7
 - 10, 6
41. The probability of an event lies between
- 0 and 1 (0 and 1 inclusive)
 - 0 and 1 (0 and 1 exclusive)
 - 1 and +1
 - ∞ and ∞
42. Consider the following statement.
- The probability of a sure event is 1
 - The probability of an impossible event is -1
 - For any events E, $P(E) = P(\bar{E}) = 1$, where \bar{E} stands for 'not E'
- In your opinion
- Only A is correct
 - Only B is correct
 - All the three are correct
 - All the three are incorrect
43. A box contains 90 discs, numbered from 1 to 90. If one disc is drawn at random from the box, the probability that it bears a two digit number is
- $\frac{1}{90}$
 - $\frac{1}{2}$
 - $\frac{8}{9}$
 - $\frac{9}{10}$

44. Consider the following statements
- A Only one line can pass through a single point
 - B Two distinct lines can not have more than one point in common.
- What is your opinion
- Only A is correct
 - Only B is correct
 - Both A and B are correct
 - Both A and B are incorrect
45. ABCD is a parallelogram. $AE \perp DC$ and $CF \perp AD$. If $AB = 8$ cm, $AE = 4$ cm, $CF = 3$ cm, then $AD = ?$
- 2.5 cm
 - 3.2 cm
 - 6 cm
 - 6.4 cm
46. Sum of areas of two squares is 117 m². If the difference of their perimeters is 12 m, what is the length of the smaller square?
- 4 m
 - 5 m
 - 7 m
 - 6 m
47. Which one of the following is not an AP?
- $1^1, 2^2, 3^3, 4^2, 3^2, \dots$
 - $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}, \dots$
 - $2, 3, 4, \sqrt{2}, 4 + 2\sqrt{2}, 5 + 3\sqrt{2}, \dots$
 - $0.2, 0.22, 0.222, 0.2222, \dots$
48. The sum of odd numbers between 0 and 100 is
- 2400
 - 2450
 - 2500
 - 2550
49. If $\cot 3A = \tan(45^\circ - 10A)$, where $3A$ is an acute angle, then the value of A is
- 20°
 - 25°
 - 30°
 - 40°
50. The shadow of a tower, standing on a horizontal ground, is found to be 30 m longer when the sun's altitude is 30° than when it is 60° . What is the height of the tower?
- $10\sqrt{3}$ m
 - 15 m

51. Consider the velocity-time graph of an object that moves under uniform acceleration. The slope of this graph gives us
- Kinetic energy of the object
 - Momentum of the object
 - Acceleration of the object
 - Speed of the object
52. A motorcar is moving with a velocity of 72 km/h and it takes 5 seconds to stop after brakes are applied. Calculate the force exerted by the passengers on the motorcar if its mass along with the passengers is 900 kg.
- 5400 N
 - 4500 N
 - 3100 N
 - 3600 N
53. A bullet of mass 40 gram is horizontally fired with a velocity 20 m/s from a pistol of mass 2 kg. What is the recoil velocity of the pistol?
- 10 m/s
 - 8 m/s
 - 5 m/s
 - 4 m/s
54. A stone is allowed to fall from the top of a tower 50 m high and at the same time another stone is projected vertically upwards from the ground with a velocity of 25 m/s. Calculate when the two stones will meet
- 2 seconds
 - 4 seconds
 - 8 seconds
 - 10 seconds
55. What is the work to be done to increase the velocity of a car from 36 km/h to 72 km/h if the mass of the car is 2000 kg?
- $5 \times 10^3 J$
 - $2 \times 10^3 J$
 - $3 \times 10^3 J$
 - $4 \times 10^3 J$
56. At a given temperature, the speed of sound is greater
- in vacuum
 - in air
 - in water
 - in aluminium
57. An object, 5.0 cm in size is placed at 25.0 cm in front of a concave mirror of focal length 20.0 cm and sharp image is obtained on the screen placed at the proper location. What is the height of the image?
- 20 cm
 - 10 cm
 - 6 cm
 - +20 cm
58. The human beings have two eyes instead of one because
- it gives a wider field of view
 - it gives a smaller field of view
 - distant objects can be seen easily
 - coloured objects can be seen easily
59. The electrical resistivity of a diamond at $20^\circ C$ may be of the order of
- $10^{-12} \Omega m$
 - $10^{-10} \Omega m$
 - $10^{-8} \Omega m$
 - $10^{-6} \Omega m$
60. How many 440Ω resistors (in parallel) are required to carry 5A on a 220 V line?
- 4
 - 6
 - 8
 - 10
61. A network of five identical resistors, each of value 25Ω is made as shown in the figure. Equivalent resistance between points A and B is
-
62. A rectangular coil of copper wires is rotated in a magnetic field. The direction of the induced current changes once in each

63. Most of the sources of energy we use represent stored solar energy. Which of the following is not ultimately derived from the sun's energy?
- Geometrical energy
 - Nuclear energy
 - Wind energy
 - Bio-mass
64. The estimated coal reserves of earth are said to be enough to last another
- 5000 years
 - 1000 years
 - 200 years
 - 50 years
65. The energy produced in the fission of an atom Uranium is nearly
- 10 million times the energy produced by the combustion of a carbon atom from coal
 - 100 million times the energy produced by the combustion of a carbon atom from coal
 - 1000 million times the energy produced by the combustion of a carbon atom from coal
 - 10000 million times the energy produced by the combustion of a carbon atom from coal
66. Tick the correct statement
- Water vapours at 100°C have less energy than water at 100°C
 - Water vapours at 100°C have more energy than water at 100°C
 - Water vapours at 100°C have equal energy than water at 100°C
 - None of the above statement is correct
67. Tick the correct statement
- Camphor and ammonium chloride both undergo sublimation
 - Only ammonium chloride undergoes sublimation
 - Only camphor undergoes sublimation
68. Which of the following metals is/are liquid at 50°C?
- Gallium
 - Mercury
 - All of these
69. The law of conservation of mass during a chemical reaction was established by
- Maharishi kanad and Pakhudha Katayama
 - Antoine L. Lavoisier and Joseph L. proust
 - Antoine L. Lavoisier only
 - Joseph L. proust only
70. Which of the following elements does not show any isotopes?
- Carbon
 - Hydrogen
 - Argon
 - Chlorine
71. A chemical reaction may have taken place if we observe
- Chemical in state and evolution of gas
 - Change of colour and temperature
 - Both of these
 - None of these
72. Which one of the following chemical equation is balanced?
- $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + O_2$
 - $3Fe + 4H_2O \rightarrow Fe_3O_4 + H_2$
 - $CH_3OH + O_2 \rightarrow CO_2 + 2H_2O$
 - $Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$
73. Sodium bicarbonate is used as
- Baking powder
 - Fire-extinguisher
 - Both of these
 - None of these
74. The example(s) of amphoteric oxide(s) is/are
- Al_2O_3 and ZnO both
 - Al_2O_3 only
 - ZnO only
 - None of these
75. Tick the name of the non-metal which is liquid at room temperature

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76. Tick one which is not an allotrope of carbon?
- Diamond
 - Crytlands
 - Graphite
 - Fullerences
77. Number of covalent bonds in propane (C_3H_8) is
- 8
 - 9
 - 10
 - 11
78. The metallic properties of elements in modern periodic table
- Increase in a period from left to right
 - Increase in a group from top to bottom
 - Both the statement A and B are correct
 - None of these
79. The position of an element in periodic table indicates its
- Chemical reactivity
 - Number of electrons in its outermost shell
 - Atomic number
 - All of these
80. Silicon is surrounded by the elements of atomic numbers 6, 13, 15 and 32 in the periodic table
- The properties of the elements of atomic numbers 6, 32 will be similar to silicon
 - The properties of the elements of atomic numbers 13, 15 will be similar to silicon
 - The properties of the elements of atomic numbers 6, 13 will be similar to silicon
 - The properties of the elements of atomic numbers 15, 32 will be similar to silicon
81. Which of the following organelle is present in plant cells only?
- Mitochondria
 - Plastids
 - Vacuoles
 - Endoplasmic reticulum
82. Which of the following is not meristematic tissue?
- Intercalary meristem
 - Cambium
 - Apical meristem
 - Vascular bundle
83. Which of the following is a thin walled simple permanent tissue?
- Collenchyma
 - Sclerenchyma
 - Parenchyma
 - Vessel element
84. Which of the following group of plants are without specialised vascular system?
- Monocots
 - Pteridophytes
 - Bryophytes
 - Gymnosperms
85. Protective tissues in animal body is
- Connective tissue
 - Epithelial tissue
 - Muscular tissue
 - Arealar connective tissue
86. Arthropoda with a meaning of jointed legs does not include
- Scorpion
 - Housefly
 - Prawn
 - Octopus
87. Which of the following is not placed under Pisces?
- Pohu fish
 - Seahorse
 - flying fins
 - Whale
88. Which of the following animal is not placed with aves?
- Bat
 - Ostrich
 - Pigeon
 - Sparrows
89. Carbon and energy requirements of autotrophs are fulfilled through
- Nutrition from soil
 - Respiration
 - Assimilation
 - Photosynthesis
90. The translocation of photosynthates in phloem is achieved by utilising
- Pressure gardened
 - Energy from ATP

- (c) Suction pressure
(d) Without osmotic and suction pressure

91. The growth inhibiting hormone in plant is

- (a) Gibberellin (b) Auxin
(c) Cytokinins (d) Abscisic acid

92. In germinating seeds, the organ which elongates to become future shoot is called as

- (a) Flavore (b) Radicle
(c) Embryo (d) Cotyledons

93. Central nervous system in humans consists of

- (a) brain and nerve tissues
(b) brain and spinal cord
(c) brain, spinal cord and veins
(d) brain only

94. The reflex arc connection between input nerves and output nerves are first made in

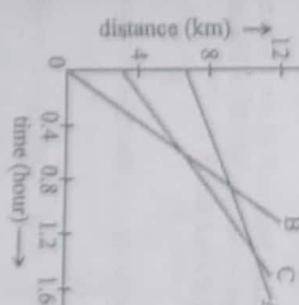
- (a) Spinal cord (b) Brain
(c) muscles (d) Skin

95. The gastric glands present in the walls of stomach release mainly

- (a) Bile-juice, HCl, Mucus
(b) HCl, enzymes, Saliva
(c) Hydrochloric acid, enzymes, peptin & Mucus
(d) Enzymes, insulin, Saliva

(10+2) XITH SCIENCE

1. Figure shows the distance-time graph of three objects A, B and C. Study the graph and choose the correct answer



- (b) Four times the initial value
(c) Twice the initial value
(d) Eight times the initial value

5. A boy of 50 kg runs up a staircase of 45 steps in 9 s. If the height of each step is 15 cm, his power is (taking $g = 10 \text{ m/s}^2$)

- (a) 37.5 W (b) 500 W
(c) 37.5 W (d) 3.75 W

6. A small wooden block is floating in a tub of water. The water is gradually heated. The volume of wooden block visible above the water level

- (a) fluctuates (b) decreases
(c) increases (d) remains the same

7. The higher the frequency of vibration, the higher is the _____ of the sound

- (a) quality (b) pitch
(c) loudness (d) intensity

2. If momentum is increased by 100% the percentage increase in kinetic energy is

- (a) 100% (b) 200%
(c) 300% (d) 400%

1. Newton deduced the inverse square law of gravitation

- (a) by observing motion of an apple falling from a tree
(b) by using Kepler's laws of planetary motion
(c) by studying motion of different objects in the laboratory
(d) by using data obtained from Cavendish experiment

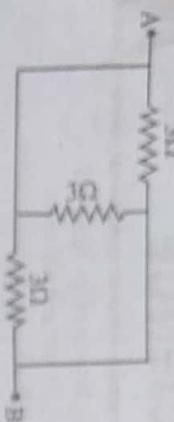
9. In which one of the following magnification can be -1^2

- (a) plane mirror (b) convex mirror
(c) concave mirror (d) concave lens

10. The human eye can focus objects at different distances by adjusting the focal length of the eye lens. This is due to

- (a) presbyopia (b) accommodation
(c) near-sightedness (d) far-sightedness

11. Which one of the following is the equivalent resistance of the given circuit? Punjab



- (a) 1Ω (b) 3Ω (c) 6Ω (d) 9Ω

12. Two conducting wires of the same material and equal length and equal diameters are first connected in series and parallel in a circuit across the same potential difference. The ratio of heat produced in series and parallel combinations for 10 minutes would be

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

13. The phenomenon of electromagnetic induction is

- (a) the process of charging a body
(b) the process of generating magnetic field due to a current passing through a coil
(c) producing induced current in a coil due to relative motion between a magnet and the coil
(d) the process of rotating a coil of an electric motor

14. Which one of the following materials is used for making solar cell?

- (a) Boron (b) Cadmium
(c) Silicon (d) Uranium

15. On which one of the following effects does electric fuse work?

- (a) Hall effect
(b) Chemical effect of electric current
(c) magnetic effect of electric current
(d) heating effect of electric current

16. During chlor-alkali process, which substance do

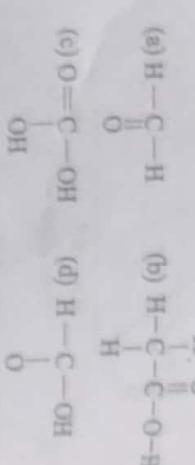
we get at anode?

- (a) Cl₂ (b) H₂
(c) Na (d) O₂

17. Which of the following metals, produce hydrogen gas on reacting with very dilute

- HNO₃?
(a) Mg (b) Zn
(c) Fe (d) Na

18. An ant when bites us, it injects a substance 'X' which causes pain and irritation. The structural formula of substance 'X' is



19. Which one of the following has highest number of molecules?

- (a) 11 gram of CO₂ (b) 9 gram of N₂
(c) 9 gram of O₂ (d) 2 gram of H₂

20. Which hydrocarbon does not undergo addition reaction?

- (a) C₂H₆ (b) C₃H₈
(c) C₂H₄ (d) C₂H₆

21. The incorrect statement regarding evaporation is

- (a) It is a surface phenomenon
(b) It causes cooling
(c) It is a bulk phenomenon
(d) Rate of evaporation increases with the increase of temperature

22. 2,2-dimethylpropane is the isomer of which of the following alkane?

- (a) Butane (b) Pentane
(c) Propane (d) All of these

23. Which of the following oxide of nitrogen is most covalent in nature?

- (a) N₂O₄ (b) NO₂
(c) N₂O₃ (d) NO₃

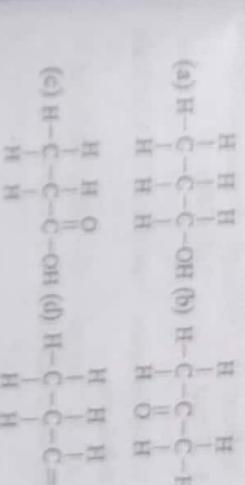
24. Which of the following method is used to separate two miscible liquids from their mixture?

- (a) crystallization (b) differential extraction
(c) sublimation (d) fractional distillation

25. The poisonous alcohol is

- (a) Propanol (b) Methylol
(c) Butanol (d) Ethanol

26. Which of the following is propanoic acid



27. The below reaction is



- (a) Exothermic (b) Photochemical
(c) Decomposition (d) Displacement

28. Element X forms an oxides with the formula XO. What will be formula of the compound formed when this X reacts with chlorine?

- (a) XCl (b) XCl₃
(c) XCl₅ (d) XCl₇

29. A common metal present in bronze and solder alloy is

- (a) copper (b) lead
(c) tin (d) zinc

30. Rate of evaporation increases with the increase of temperature

- (a) Motor neuron (b) Sensory neuron
(c) Brain (d) Relay neuron

31. Which one is not the correct direction of blood circulation?

- (a) Artery → arteriole → capillary network → vein
(b) Organ → capillary network → vein → heart
(c) Pulmonary artery → lung → pulmonary vein → heart
(d) Pulmonary artery → lung → pulmonary artery

32. Fish circulatory system does not consist of

- (a) Single circulation
(b) Double circulation
(c) Mixing of oxygenated and deoxygenated blood
(d) Closed circulation

33. Vertebrate heart receives oxygenated blood from lungs through

- (a) Pulmonary artery (b) Pulmonary vein
(c) Left atrium (d) Right atrium

34. Which is not an asexual reproduction?

- (a) Fission (b) Budding
(c) Regeneration (d) Fertilisation

35. Which of the following is not a simple tissue in plants

- (a) Parenchyma (b) Palisade
(c) Collenchyma (d) Sclerenchyma

36. A reflex arc does not involve

- (a) Motor neuron (b) Sensory neuron
(c) Brain (d) Relay neuron

37. A neuron can't have

- (a) an axon
(b) a dendrite
(c) more than one dendrite
(d) two nuclei

- (b) Only B is true
 (c) Both A and B are true
 (d) Both A and B are false
73. There are 5 red and 8 green balls in a bag. A ball is taken out at random from the bag. What is the probability that the ball is red?
 (a) $\frac{5}{13}$ (b) $\frac{5}{8}$
 (c) $\frac{1}{2}$ (d) 5
74. A die is thrown twice. What is the probability that 6 will not come up either time?
 (a) $\frac{11}{36}$ (b) $\frac{12}{36}$
 (c) $\frac{24}{36}$ (d) $\frac{25}{36}$
75. Class-mark of a class-interval is given by
 (a) Upper Limit – Lower Limit
 (b) $\frac{1}{2}$ (Upper Limit – Lower Limit)
 (c) Upper Limit + Lower Limit
 (d) $\frac{1}{2}$ (Upper Limit + Lower Limit)
76. Empirical relationship among the three measures of central tendency is:
 (a) 3 Mean = Median + 2 Mode
 (b) 3 Median = Mode + 2 Mean
 (c) 3 Mode = 2 Mean + Median
 (d) Mode = $\frac{1}{2}$ (Mean + Median)
77. What is the volume of a sphere whose surface area is 1386 cm^2 ?
 (a) $\frac{2}{3} \text{ cm}^3$ (b) 539 cm^3
78. How many coins, 3.5 cm in diameter and of thickness 2 mm, must be melted to form a cuboid of dimensions $11 \text{ cm} \times 10 \text{ cm} \times 7 \text{ cm}$?
 (a) 40 (b) 400
 (c) 1600 (d) 4000
79. A chord of a circle is equal to the radius of the circle. What is the angle subtended by the chord at a point on the minor arc?
 (a) 30° (b) 60°
 (c) 120° (d) 150°
80. Which of the following is not true?
 (a) the value of $\sin A$ can never exceed 1.
 (b) the value of $\sec A$ is always greater than or equal to 1.
 (c) $\sin(90^\circ - A)\sec(90^\circ - A) = \cot A$
 (d) $\sec^2 A + \tan^2 A = 1$ for $0^\circ \leq A \leq 90^\circ$
81. Which one of the following is true?
 (a) $\sin(A+B) = \sin A + \sin B$
 (b) the value of $\sin \theta$ increases as θ increases in $(0^\circ, 90^\circ)$
 (c) the value of $\cos \theta$ increases as θ increases in $(0^\circ, 90^\circ)$
 (d) $\tan A$ is not defined for $A = 0$
82. If $\cot(A+B) = \frac{1}{\sqrt{3}}$, $\cot(A-B) = \sqrt{3}$ where $A > B$ and $0^\circ < A+B < 90^\circ$, then A and B are respectively
 (a) $60^\circ, 30^\circ$ (b) $60^\circ, 15^\circ$
 (c) $45^\circ, 30^\circ$ (d) $45^\circ, 15^\circ$
83. A straightway leads to the foot of a tower. A man standing at the top of the tower observes a car at an angle of depression of 30° , which is approaching the foot of the tower with a uniform speed. Ten seconds later, the angle of depression of the car is found to be 60° . What will be the

- time taken by the car to reach the foot of the tower from this time?
- (a) cannot be found (b) 5 seconds
 (c) $5\sqrt{3}$ seconds (d) 10 seconds
84. If the fifth and fifteenth terms of an AP are 20 and –20 respectively, which term of this AP is zero?
 (a) 9th (b) 10th
 (c) 19th (d) 20th
85. How many three digit numbers are divisible by 6?
 (a) cannot be found (b) 149
 (c) 150 (d) 166
86. For what value of n are the n^{th} terms of two AP's, 51, 53, 55, and 1, 5, 9, 13, equal?
 (a) 24 (b) 25
 (c) 26 (d) 50
87. If the sum of first n terms of an AP is $4n - n^2$, what is its common difference?
 (a) –2 (b) –1
 (c) 1 (d) cannot be found
88. The roots of the quadratic equation $4x^2 - 4\sqrt{3}x + 3 = 0$ are
 (a) $-\frac{\sqrt{3}}{2}, -\frac{\sqrt{3}}{2}$ (b) $-\frac{\sqrt{3}}{2}, +\frac{\sqrt{3}}{2}$
 (c) $\frac{\sqrt{3}}{2}, \frac{\sqrt{3}}{2}$ (d) $-\frac{\sqrt{3}}{4}, -\frac{\sqrt{3}}{4}$
89. AB is diameter of a circle. Point C on its circumference is such that $AC = \sqrt{13} \text{ cm}$, $BC = 6 \text{ cm}$. The area of the circle is
 (a) $3\sqrt{13} \text{ cm}^2$ (b) $19\frac{1}{4} \text{ cm}^2$
 (c) $38\frac{1}{2} \text{ cm}^2$ (d) 77 cm^2
90. For what values of a and b does the following pair of linear equations have an infinite number of solutions?

$$2x + 3y = 7$$

$$(a-b)x + (a+b)y = 3a + b - 2$$
- (a) 5, –1 (b) –5, 1
 (c) 5, 1 (d) –5, –1
91. If a transversal intersects two parallel lines, then which of the following is true?
 (a) Each pair of corresponding angles is equal
 (b) Each pair of alternate interior angles is supplementary
 (c) Each pair of interior angles on the same side of the transversal is equal
 (d) All the above statements are true
92. A girl of height 120 cm is walking away from the base of a lamp post at a speed of 1.5 m/s. If the lamp is 6 m above the ground, what will be the length of her shadow after 4 seconds?
 (a) 1.2 m (b) 1.5 m
 (c) 1.6 m (d) 1.8 m
93. In $\triangle ABC$, $AB = 3\sqrt{3}$, $BC = 3$ and $AC = 6$, then which one is correct?
 (a) $\angle A = 90^\circ$ (b) $\angle B = 90^\circ$
 (c) $\angle C = 90^\circ$ (d) None of these
94. Consider the following statements
 A: A linear equation in two variables has infinitely many solutions
 B: The graph of $x = a$ is a straight line parallel to x -axis
 What is your opinion?
 (a) Only A is true (b) Only B is true
 (c) Both A and B are true
 (d) Both A and B are false
95. One woman and 2 men can finish some work in 4 days. Three women and two men can finish the same work in 2 days. In how many days

one woman alone can finish the work?

- (a) 6
- (b) 8
- (c) 12
- (d) 16

96. For what value of k will the following pair of linear equation have no solution

$$\begin{aligned}x+3y &= 1 \\(k-1)x+(2k-1)y &= 2k+1\end{aligned}$$

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

97. In which quadrant each of points

- (3, -1), (-2, -2) and (-5, 2) lie?
- (a) 2nd quadrant, 3rd quadrant, 4th quadrant
- (b) 3rd quadrant, 4th quadrant, 2nd quadrant
- (c) 4th quadrant, 3rd quadrant, 2nd quadrant
- (d) 4th quadrant, 2nd quadrant, 3rd quadrant

98. What figure is obtained by joining the points

- (A, -1), (5, 3), (6, -1)?
- (a) equilateral triangle
- (b) isosceles triangle
- (c) right triangle
- (d) None of these

99. If 2 is one of the zeroes of the polynomial

$$x^3 - 4x^2 + 5x - 2, \text{ then the other two zeroes are}$$

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

100. $0.\overline{001}$ is equal to

- (a) $\frac{1}{1000}$
- (b) $\frac{1}{999}$
- (c) $\frac{1}{990}$
- (d) $\frac{1}{99}$

3. The following observation have been arranged

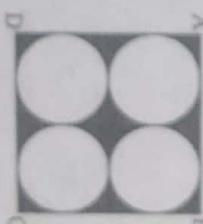
in ascending order:

29, 32, 48, 50, x , $x+2$, 72, 78, 84, 95

If the median of the data is 63, then the value of x is

- (a) 65
- (b) 64
- (c) ~~60~~ 62
- (d) 62

4. The area of shaded region in the given figure, where ABCD is a square of side 14 cm is



- (a) 58 cm^2
- (b) 83 cm^2
- (c) 42 cm^2
- (d) 42 cm^2

5. Other zeros of $3x^4 + 6x^3 - 2x^2 - 10x - 5$, if

$$\text{two of its zeros are } \sqrt{\frac{5}{3}} \text{ and } -\sqrt{\frac{5}{3}}$$

- (a) 1, 1
- (b) ~~-1, -1~~

98. What figure is obtained by joining the points

- (A, -1), (5, 3), (6, -1)?
- (a) equilateral triangle
- (b) isosceles triangle
- (c) right triangle
- (d) None of these

99. If the number of square centimetres on the surface of a sphere is equal to the number of cubic centimetres in its volume, then the diameter of the sphere is

- (a) 4 cm
- (b) 5 cm
- (c) 6 cm
- (d) 3 cm

7. The roots of

$$x + \frac{1}{x} = 3, x \neq 0$$

are

- (a) $3, \frac{1}{3}$
- (b) $\frac{3}{2}, -\frac{3}{2}$
- (c) $\frac{\sqrt{5}}{2}, -\frac{\sqrt{5}}{2}$
- (d) $\frac{3+\sqrt{5}}{2}, \frac{3-\sqrt{5}}{2}$

8. The floor of a rectangular hall has a perimeter 250 m. If the cost of painting the four walls at the rate of Rs. 10 per m² is Rs. 15000, then the height of the hall is

- (a) 5 m
- (b) 8 m
- (c) 6 m
- (d) 7 m

9. The roots of

- (A, -1), (5, 3), (6, -1)?
- (a) equilateral triangle
- (b) isosceles triangle
- (c) right triangle
- (d) None of these

10. Which term of the A.P. : 3, 15, 27, 39, will be 132 more than its 54th term?

11. Two A.P.s have the same common difference. The difference between their 10th terms is 100, then the difference between their 1000th term is
 (a) 10 (b) 100 (c) 1000 (d) None of these
12. If $\sin 3A = \cos(4 - 26^\circ)$, where $3A$ is an acute angle, then the value of A is
 (a) $A = 13^\circ$ (b) $A = 64^\circ$
 (c) $A = 29^\circ$ (d) $A = 26^\circ$
13. ABC and BDE are two equilateral triangles such that D is the mid-point of BC. The ratio of areas of triangles ABC and BDE is
 (a) 4 : 1 (b) 1 : 4 (c) 2 : 1 (d) 1 : 2
14. In figure, PS is the bisector of $\angle QPR$ in the ΔPQR . If $PQ = 6$ cm, $PR = x$ cm, $QS = 4$ cm and $RS = 3$ cm, then the value of x is
-
15. If $(1, 2), (4, y), (x, 6)$ and $(3, 5)$ are the vertices of a parallelogram taken in order, then x and y are
 (a) $x = 3, y = -1$ (b) $x = 4, y = 1$
 (c) $x = 5, y = 2$ (d) $x = 6, y = 3$
16. The centre of a circle passing through the points

- (a) $(6, -6), (3, -7)$ and $(3, 3)$ is
 (b) $(55^{\text{th}}$ term (c) $(2, 3)$
 (d) $(35^{\text{th}}$ term (d) $(-2, -3)$
17. If the points $(7, -2), (5, 1)$ and $(3, k)$ are collinear, then the value of k is equal to
 (a) 1 (b) 2 (c) 3 (d) 4
18. In the given figure, the side QR of ΔPQR is produced to a point S. If the bisector of $\angle PQR$ and $\angle PRS$ meet at point T, then $\angle QTR$ is equal to
-
19. The value of $\tan 48^\circ \tan 23^\circ \tan 42^\circ \tan 67^\circ$ is
 (a) 0 (b) $\frac{1}{3}$ (c) 2 (d) 3
20. The value of $\sqrt{\frac{1 - \sin A}{1 + \sin A}}$ is
 (a) 4.5 cm (b) 9 cm (c) 8 cm (d) 5.4 cm
21. The zeros of the polynomial $x^3 - 3x^2 + x + 1$ are $a - b$, a , $a + b$, then the values of a and b are
 (a) $a = -1, b = \pm \sqrt{2}$ (b) $a = 1, b = \pm \sqrt{2}$
 (c) $a = \pm \sqrt{2}, b = 1$ (d) $a = \pm \sqrt{2}, b = \pm 1$
22. Sum of the areas of two squares is 468 m^2 . If the difference of their perimeters is 24 m , the sides of the two squares are
 (a) $18 \text{ m}, 12 \text{ m}$ (b) $16 \text{ m}, 12 \text{ m}$
 (c) $18 \text{ m}, 16 \text{ m}$ (d) $14 \text{ m}, 10 \text{ m}$
23. If the p th term of an A.P. is $\frac{1}{q}$ & q th term is $\frac{1}{p}$, then sum of pq terms is
 (a) $\frac{1}{3}(pq - 1)$ (b) $\frac{1}{3}(pq + 1)$
 (c) $\frac{1}{2}(pq + 1)$ (d) $\frac{1}{2}(pq - 1)$
24. The area of a rhombus if its vertices are $(3, 0)$, $(4, 5)$, $(-1, 4)$ and $(-2, -1)$ taken in order is
 (a) 24 sq. unit (b) 23 sq. unit
 (c) 25 sq. unit (d) 22 sq. unit
25. The 'Median' for the following data is
- | Marks | No. of Students |
|----------|-----------------|
| 00 - 10 | 5 |
| 10 - 25 | 10 |
| 25 - 40 | 15 |
| 40 - 50 | 40 |
| 50 - 60 | 15 |
| 60 - 75 | 10 |
| 75 - 100 | 5 |
| Σ | 100 |
26. Two dice are rolled. Probability that both show six is

- (a) $\frac{1}{36}$ (b) $\frac{1}{18}$ (c) $\frac{1}{12}$ (d) $\frac{1}{6}$
27. A sphere and a cube have equal surface areas. Ratios of their volumes is
 (a) $\sqrt{6} : \sqrt{\pi}$ (b) $\pi : 6$
 (c) Herivorous (d) Omnivorous
28. Number of sides of a polygon is equal to the number of its diagonals, then the polygon is a
 (a) pentagon (b) hexagon
 (c) septagon (d) octagon
29. If the Arithmetic Mean of 100 values is 50 and their Median is 48, then the approximate value of Mode is
 (a) 44 (b) 46 (c) 49 (d) 54
30. The angle between the hour hand and minute hand of a clock at $10 : 10$ is
 (a) 60° (b) 105° (c) 115° (d) 120°
31. An organism which obtains nourishment from another larger living organism and harms it also is best defined as
 (a) Parasite (b) Autotroph
 (c) Saprophyte (d) Symbiont
32. Which of the following cannot multiply outside the living cells
 (a) Bacteria (b) Prokaryotes
 (c) Viruses (d) Fungi
33. Those plants that grow in places with scanty water are called as
 (a) Mesophytes (b) Hydrophytes
 (c) Xerophytes (d) Epiphytes
34. Which one of the following is called "Suicide Bag" of a cell?
 (a) Plastids (b) Lysosomes
 (c) Golgi Apparatus (d) None of these
35. The organisms that feed on both plants and animals are
 (a) Carnivorous (b) Parasitic
 (c) Herbivorous (d) Omnivorous

36. Which is not an example of connective tissue
 (a) Tendon
 (b) Cartilage
 (c) Blood
 (d) Neuron
37. Sea urchin belongs to
 (a) Echinoidea
 (b) Mollusca
 (c) Arthropoda
 (d) Cnidaria
38. Archaeopteryx is considered missing link between
 (a) Fishes and amphibians
 (b) Birds and reptiles
 (c) Birds and mammals
 (d) Reptiles and mammals
39. Villi are present in
 (a) Small intestine
 (b) Large intestine
 (c) Large intestine
 (d) Both (a) and (c)
40. The deficiency of iodine in the diet of a person causes disease known as 'goitre'. This is because of reduction in the production of a hormone namely
 (a) insulin
 (b) thyroxin
 (c) glucagon
 (d) testosterone
41. Almond are found in which one of the following parts
 (a) Brain
 (b) Lung
 (c) Heart
 (d) Stomach
42. Which one is wrong?
 (a) Catabolism and anabolism \rightarrow Metabolism
 (b) Meiosis and fertilization \rightarrow Sexual reproduction
 (c) Abiotic and biotic components \rightarrow Ecosystem
 (d) Prokaryotic and eukaryotic components \rightarrow Ecosystem
43. Which enzyme is present in salivary?
 (a) Papain
 (b) Trypsin
 (c) Amylase
 (d) None of these
44. Pinus is included in which group of Plantae?
 (a) Pteridophyta
 (b) Bryophyta
 (c) Gymnosperms
 (d) Angiosperms
45. The three 'Rs' of reducing pressure on environment do not include
 (a) Refuse
 (b) Reduce
 (c) Recycle
 (d) Reuse
46. Sea Horse (Hippocampus) comes in which group of Vertebrates
 (a) Amphibia
 (b) Aves
 (c) Reptiles
 (d) Pisces
47. In a Food Chain, which one of the following is the starting point
 (a) Primary consumers
 (b) Secondary consumers
 (c) Tertiary consumers
 (d) Producers
48. Which is not an invertebrate fossil form
 (a) Trilobite
 (b) Ammonite
 (c) Dinosaur
 (d) Brachiopod
49. Morphological evidence of evolution is exhibited by
 (a) Fossils
 (b) Homologous organs
 (c) Analogous organs
 (d) DNA sequence homology
50. Which is not correct
 (a) Y-bearing sperm + X-bearing egg \rightarrow Male foetus
 (b) X-bearing sperm + X-bearing egg \rightarrow Female foetus
 (c) X-bearing sperm + Y-bearing egg \rightarrow Female foetus
 (d) XX-bearing sperm + X-bearing egg \rightarrow Abnormal female foetus
51. Which is the capital of Spain?
 (a) Berlin
 (b) Madrid
52. Ranji Trophy is associated with
 (a) Tennis
 (b) Cricket
 (c) Hockey
 (d) Kabaddi
53. Leander Paes is a famous Indian player of
 (a) Tennis
 (b) Golf
 (c) Volley Ball
 (d) Foot Ball
54. NCERT is concerned with
 (a) Film
 (b) Sports
 (c) Education
 (d) Law
55. Tsunami had struck Andaman and Nicobar in
 (a) 2004
 (b) 2005
 (c) 2006
 (d) 2007
56. Kofi Annan is the
 (a) present Secretary General of the UN
 (b) former Secretary General of the UN
 (c) former President of the World Bank
 (d) present President of the World Bank
57. PDS stands for
 (a) Poor Development Scheme
 (b) Poor Distribution Scheme
 (c) Public Distribution System
 (d) Private Distribution System
58. Quartz is made of
 (a) Iron and Carbon
 (b) Silicon and Oxygen
 (c) Iron and Nitrogen
 (d) Silicon & Hydrogen
59. Murthy is
 (a) a dead body
 (b) a name for a witch
 (c) an embalmed dead body
 (d) the American slang word for mother
60. Who among the following is not a compiler of Hadith
 (a) Shah Waliullah
 (b) Imam Malik
 (c) Imam Nasai
 (d) Imam Abu Dawud
61. Who did lead Prayers in Prophet Muhammad's (pbuh) last days?
 (a) Abu Bakr
 (b) Umar
 (c) Usman
 (d) Ali
62. Who formulated first the laws of planetary motion?
 (a) Kepler
 (b) Newton
 (c) Galileo
 (d) Einstein
63. Who did destroy the seat of the Naqshbandi order in Sirhind?
 (a) Sikhs
 (b) British
 (c) Hindus
 (d) Rival Muslim sects
64. Sultan period in Muslim India history was from
 (a) 1268 - 1512
 (b) 1369 - 1498
 (c) 1206 - 1526
 (d) 1367 - 1483
65. Qutub Minar in Delhi is located next to
 (a) Masjid Qunawat al-Islam
 (b) Jamia Masjid
 (c) Mori Masjid
 (d) Kalii Masjid
66. Who was the editor of Sirhind?
 (a) Hakim Abdal Hamid
 (b) Muhammad Ali Jangir
 (c) Abd Kadam Azad
 (d) Hakim Muhammad Sad
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 (b) Umar
 (c) Usman
 (d) Ali

70. Abdul-Muttalib was Prophet Muhammad's (pbuh)

- (a) Uncle (b) Cousin
(c) Father (d) Grandfather

71. An object is moving with uniform velocity. The area enclosed under the velocity-time graph between any two instants $t = t_1$ and $t = t_2$ gives

- (a) the magnitude of the displacement
(b) velocity of the object
(c) acceleration of the object
(d) force acting on the object

72. The natural tendency of an object to resist any change in its state of motion is called its

- (a) weight (b) momentum
(c) energy (d) inertia

73. A batsman hits a cricket ball which then rolls on a level ground. After covering a short distance, the ball comes to rest. The ball comes to a stop because

- (a) the batsman did not hit the ball hard enough
~~(b)~~ there is a force on the ball opposing the motion
(c) the velocity is proportional to the force exerted on the ball
(d) there is no unbalanced force on the ball, so the ball would want to come to rest

74. A ball is thrown vertically upwards with a velocity of 69 m/s. What is the total time it takes to return to the surface of the earth?

- (a) 5 seconds (b) 10 seconds
(c) 15 seconds (d) 20 seconds

75. An electric bulb of 1000 W is used for 5 hours per day. The 'units' of energy consumed in one day are

- (a) 10 units² (b) 5 units²
(c) 4 units² (d) 4 units

76. A person clapped the hands near a cliff and

heard the echo after 4 seconds. Assuming the speed of sound in air at the given temperature to be 346 m/s, calculate the distance of the cliff from the person

- (a) 1730 m (b) 1384 m
(c) 865 m (d) 692 m

77. Where should an object be placed in front of a convex lens to get a real image of the size of the object?

- (a) at the principal focus of the lens
(b) at infinity
(c) at twice the focal length
(d) between the optical centre of the lens and its principal focus

78. The human eye can focus 'objects at different distances by adjusting the focal length of the eye lens. This is due to

- (a) near sightedness (b) far sightedness
(c) accommodation (d) presbyopia

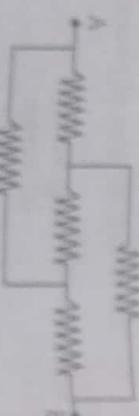
79. A 16 Ω resistance wire is doubled on it. Calculate the new resistance of the wire

- (a) 01 Ω (b) 04 Ω
(c) 08 Ω (d) 32 Ω

80. A nichrome wire has diameter 0.5 mm and resistivity of $10^{-8} \Omega \text{ m}$. What will be the length of the wire to make its resistance of 70Ω ?

- (a) 48.75 m (b) 187.5×10^{-4} m
(c) 137.5×10^{-4} m (d) 122.7 m

81. A network of five identical resistors, each of value 10 Ω is made as shown in the figure. Equivalent resistance between points A and B is



82. Commonly used electric generators work on the principle of

- (a) nuclear fission
(b) nuclear fusion
(c) solar energy conversion
(d) electromagnetic induction

83. The temperature at which the fusion of light nuclei may occur is of the order of

- (a) 10^3 deg. K (b) 10^2 deg. K
(c) 10^4 deg. K (d) 10^{-1} deg. K

84. Which energy source may yield relatively pollution free energy?

- (a) Wood (b) Solar energy
(c) Coal (d) Petrol

85. The ocean thermal energy is due to

- (a) geothermal changes deep inside the ocean
(b) nuclear fission inside the ocean
(c) chemical reactions inside the ocean
(d) heating of water of the surface of the ocean by the sun

86. Biogas does not contain

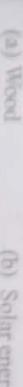
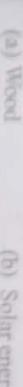
- (a) CH_4

- (b) CO_2
(c) H_2S
(d) N_2

87. Identify the substance that is oxidised in the reaction given below



88. Identify the substance that is oxidised in the reaction given below



89. Isobars do not differ in the number of which compound has the lowest pH?

- (a) NaOH (b) NH_4Cl
(c) Na_2CO_3 (d) NaCl

90. Out of the following, the aqueous solution of which element has twice as many electrons in its second shell as in its first shell?

- (a) Ne (b) B
(c) Si (d) C

91. Which element has twice as many electrons in its second shell as in its first shell?

- (a) Ne (b) B
(c) Si (d) C

92. Which of the following reaction is mainly performed by the alkene?

- (a) Substitution (b) Addition
(c) Decomposition (d) Replacement

93. In which of the following process metal carbonates change into metal oxide?

- (a) Calcination (b) Roasting
(c) Reduction (d) All of these

94. Which of the following is isoelectronic of Na^+ ?

- (a) Cl^- (b) O_3^-
(c) O^{2-} (d) Li^+

95. Autobiotic oxide is

- (a) Na_2O (b) BaO
(c) ZnO (d) K_2O

96. Oxidation of ethanol with alkaline potassium permanganate produces

- (a) CH_3CHO (b) CH_3COOH
(c) CH_3COONa (d) CH_3COONa

97. The following reaction shows that

- $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$

- (a) Zn is more reactive metal than Cu
(b) Zn and Cu both have same reactivity
(c) Cu is more reactive than Zn
(d) All of these

98. For rusting of iron, the necessary condition is
 (a) dry N₂ (b) moist air
 (c) dry air (d) None of these

99. An isotope of cobalt is used in the treatment of
 (a) goitre (b) anaemia

100. The organic compound present in tincture iodine is
 (a) Potassium (b) Iodine
 (c) Ethanol (d) Chloroform

- A.M.U. ANSWER PAPER : 2013-2014
- | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|-------|
| 1-c | 2-d | 3-d | 4-d | 5-b | 6-c | 7-c | 8-c | 9-d | 10-c |
| 11-b | 12-c | 13-a | 14-a | 15-d | 16-b | 17-d | 18-c | 19-b | 20-c |
| 21-b | 22-a | 23-c | 24-a | 25-b | 26-a | 27-a | 28-a | 29-a | 30-c |
| 31-a | 32-c | 33-c | 34-b | 35-d | 36-d | 37-a | 38-b | 39-d | 40-b |
| 41-b | 42-d | 43-c | 44-c | 45-a | 46-d | 47-d | 48-c | 49-d | 50-c |
| 51-b | 52-b | 53-a | 54-c | 55-a | 56-b | 57-c | 58-b | 59-c | 60-a |
| 61-a | 62-d | 63-d | 64-c | 65-a | 66-b | 67-a | 68-a | 69-d | 70-d |
| 71-a | 72-d | 73-b | 74-b | 75-b | 76-d | 77-c | 78-c | 79-b | 80-c |
| 81-d | 82-d | 83-a | 84-b | 85-d | 86-d | 87-b | 88-c | 89-d | 90-b |
| 91-d | 92-b | 93-a | 94-c | 95-c | 96-b | 97-a | 98-b | 99-d | 100-c |

ALIGARH MUSLIM UNIVERSITY

XI-SCIENCE/DIPLOMA Engg.

SESSION : 2014-2015

1. Ibn Battuta visited India during the reign of
 (a) Balban (b) Alauddin Khalji (c) Mohd. bin Tughluq (d) Firoz Tughluq
2. Who among the following is known as the 'Flying Sikh of India'?
 (a) Milkha Singh (b) Ajit Pal Singh (c) Joginder Singh (d) Mohinder Singh
3. Border Security Force was established in the year
 (a) 1965 (b) 1966 (c) 1967 (d) 1968
4. Maulvi Ahmadullah of Faizabad led the Revolt of 1857 in
 (a) Delhi (b) Central India (c) Bihar (d) Rohilkhand
5. Who among the following had constructed the Red Fort in Delhi?
 (a) Akbar (b) Jahangir (c) Shah Jahan (d) Aurangzeb
6. Arvind Kejriwal the leader of the Aam Admi Party (AAP) has served in which of these services?
 (a) Indian Administrative Service (IAS) (b) Indian Foreign Service (IFS)
 (c) Indian Revenue Service (IRS) (d) Indian Police Service (IPS)
7. Sultan Azlan Shah Cup is associated with
 (a) Football (b) Hockey (c) Basketball (d) Cricket
8. Who was the first woman Speaker of the Lok Sabha?
 (a) Najma Heptullah (b) Sarojini Naidu (c) Meira Kumar (d) Sushma Swaraj
9. Telecome company 'Nokia' belongs to which country?
 (a) USA (b) Finland (c) Sweden (d) France
10. Buland Darwaza at Fatehpur Sikri was constructed by Akbar to commemorate the
 (a) Birth of Prince Salim (b) Victory of Gujarat
 (c) Victory of Malwa (d) Victory of Bengal
11. Real name of Nurjahan wife of Jahangir was
 (a) Mehrun Nisa (b) Mahnoor (c) Qaisar Jahan (d) Jodha Bai
12. Sir Syed Ahmed Khan wrote Tafsir of
 (a) Bible (b) Zuboor (c) Sahif-e-Ibrahim (d) None of these

13. Quran was revealed to prophet Muhammad (PBUH) at
 (a) Makkah and Madina
 (c) Makkah and Taif
14. Battle of Uhud was fought in
 (a) Makkah
 (b) Madina
 (c) Syria
 (d) Kufa
15. Where is Masjid-e-Nabvi?
 (a) Habsia
 (b) Madinah
 (c) Madina
 (d) Taif
16. Who was famous with the title of "Ameen" in Makkah?
 (a) Abd Allah
 (b) Abdul Muttlib
 (c) Muhammad (SAW)
 (d) Ibrahim
17. The following is known traditionally as Hadith
 (a) The word of God
 (c) Saying of the Companions of the Prophet
 (d) None of these
18. Compilation of the Quran was done during the period of the Companion
 (✓) Abu Bakr Siddique (R.A.)
 (b) Umar Farooque (R.A.)
 (d) Ali Murtaza (R.A.)
19. The Islamic calendar is called
 (a) Hijri
 (b) Shamsi
 (c) Abnai
 (d) Arabic
20. Agrement of Sadiq Hudaibiyah was settled in
 (a) 7 A.H.
 (b) 10 A.H.
21. In the electric circuit shown below
 (a) All the bulbs will glow
 (b) Only bulbs 4, 5 and 6 will glow
 (c) Only bulb 3 will glow
 (d) None of the bulbs will glow
22. The specific resistance of a rod of copper as compared to that of thin wire of copper is
 (a) more
 (b) less
 (c) same
 (d) depends upon the length and area of wire
23. Two mirrors are placed at right angles to each other as shown in the figure. The total number of images of an object O, placed between them, are seen as
 (a) two
 (b) three
 (c) four
 (d) six
24. The echo of a sonar beep is heard 2.5 s later. If the speed of sound in the water is 1400 m/s, the iceberg is at the distance
 (a) 3500 m
 (b) 1900 m
 (c) 175 m
 (d) 142 m

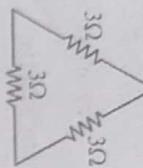
25. An electric bulb is rated 220 V and 100 W. When it is operated on 110 V, the power consumed will be
 (a) 100 W
 (b) 75 W
 (c) 50 W
 (d) 25 W
26. A body floats with $\left(\frac{1}{3}\right)$ of its volume outside water and $\left(\frac{3}{4}\right)$ of its volume outside another liquid. The density of the another liquid is
 (a) $\left(\frac{9}{4}\right) \times 10^3 \text{ kg m}^{-3}$
 (b) $\left(\frac{4}{9}\right) \times 10^3 \text{ kg m}^{-3}$
 (c) $\left(\frac{8}{3}\right) \times 10^3 \text{ kg m}^{-3}$
 (d) $\left(\frac{3}{9}\right) \times 10^3 \text{ kg m}^{-3}$
27. If you read a book placed at distance 35.0 cm from your eye and the distance from eye lens to retina is 19.0 mm the focal length of your eye lens is
 (a) 3.50 cm
 (b) 5.93 cm
 (c) 2.00 cm
 (d) 1.89 cm
28. Which of the following cannot be speed-time graph of a body in motion?
29. What is the momentum of a body of mass 100 g, having a K.E. of 20 J?
 (a) 2 kg m/s
 (b) $\frac{1}{2}$ kg m/s
 (c) 12 g cm/s
 (d) None of these
30. In order to calculate the gravitational force of attraction Sir Isaac Newton had made use of
 (a) The planet revolve around the sun in elliptical orbit with the sun at one of the foci
 (b) The line joining the planet and the sun sweeps equal areas in equal intervals of time
 (c) The cube of the mean distance of a planet from the sun is proportional to the square of its orbital period
 (d) Gravitational force is proportional to the rate of change in momentum
31. The V-I graphs of parallel and series combinations of two metallic resistors are shown in the figure below. The graph that represent parallel combination is
 (a) A
 (b) B
 (c) Both (a) and (b)
 (d) None of these

32. Which one of the following take(s) place in hydrogen bomb while detonating?

- (a) Fission only
- (b) Fusion only
- (c) First fission then fusion only
- (d) First fusion then fission only

33. Three resistors of resistance 3Ω each are combined to form an equilateral triangle. Resistance between any two ends of the triangle would be

- (a) $\frac{1}{2}\Omega$
- (b) 2Ω
- (c) 6Ω
- (d) 9Ω



34. Kinetic energy of a car, when its speed is tripled, is increased by the factor

- (a) 3
- (b) 4
- (c) 9
- (d) 27

35. When a potential difference of 3.0 V across a resistor set up a current of 0.6 A in it to flow. The potential difference required to set up the current of 0.4 A in the resistor

- (a) 1.0 V
- (b) ~~2.0~~ 2.0 V
- (c) 3.0 V
- (d) 4.0 V

36. Gold can be dissolved in

- (a) Hydrochloric acid
- (b) Nitric acid
- (c) Steam
- (d) ~~Aqua regia~~

37. Mixing an acid with water results in

- (a) decrease in the concentration of H_3O^+ ions per unit volume
- (b) increase in the concentration of H_3O^+ ions per unit volume
- (c) the concentration of H_3O^+ ions per unit volume remains same
- (d) absorption of heat

38. Which gas is produced when sodium reacts with ethanol?

- (a) Hydrogen
- (b) Carbon monoxide
- (c) Carbon dioxide
- (d) Water vapours

39. When a metal X reacts with cold water, it produces hydrogen gas and metal hydroxide having formula $X(OH)_2$. Its balanced chemical equation is below



If the nucleolar mass of XOH is 40. The name of metal X is

- (a) Calcium
- (b) Potassium
- (c) Magnesium
- (d) Sodium

40. The electronic configuration of the element ${}_{18}X$ is

- (a) $2, 8, 10$
- (b) $2, 8, 8, 2$
- (c) $2, 10, 8$
- (d) $2, 8, 18, 8, 4$

41. A solution reacts with crushed egg shells to give a gas that turns lime water milky. The solution contains:

- (a) NaCl
- (b) KCl
- (c) HCl
- (d) CaCl_2

42. Aqua regia is a freshly prepared mixture of

- (a) 3 : 1 concentrated sulphuric acid and concentrated nitric acid
- (b) 3 : 1 concentrated hydrochloric acid and concentrated sulphuric acid
- (c) 3 : 1 concentrated hydrochloric acid and concentrated nitric acid
- (d) 3 : 1 concentrated nitric acid and water

43. Which of the following pairs will give displacement reactions?

- (a) NaCl solution and copper metal
- (b) MgCl_2 solution and aluminium metal
- (c) FeSO_4 solution and silver metal
- (d) AgNO_3 solution and copper metal

44. Formula unit mass of CaCl_2 is

- (a) 70 u
- (b) 82 u
- (c) 111 u
- (d) 65 u

45. 1 mole of nitrogen gas is equal to

- (a) 14 g
- (b) 7 g
- (c) 28 g
- (d) 42 g

46. The valency of Fe in Fe_2O_3 is

- (a) 2
- (b) 3
- (c) 4
- (d) 5



The above reaction is

- (a) Combustion reaction
- (b) Displacement reaction
- (c) Double-displacement reaction
- (d) Combination reaction

48. Phenolphthalein gives pink colour in

- (a) Acidic medium
- (b) Basic medium
- (c) Neutral medium
- (d) Both acidic and basic

49. HCl dissolves in water and give and Cl^- ion.

- (a) H^+
- (b) OH^-
- (c) H_3O^+
- (d) None of these

50. Plaster of Paris on mixing with water changes to

- (a) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
- (b) $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$
- (c) $(\text{CaSO}_4)_2 \cdot \frac{1}{2}\text{H}_2\text{O}$
- (d) $\text{CaSO}_4 \cdot \text{H}_2\text{O}$

51. The value of $\tan 48^\circ \tan 21^\circ \tan 42^\circ \tan 6^\circ$ is

- (a) 0
- (b) 1
- (c) 2
- (d) None of these

52. The two roots of the equations $a(b-c)x^3 + b(c-a)x + c(a-b) = 0$ are 1 and

the cost of one pencil is equal to

- (a) Rs. 5 (b) Rs. 7 (c) Rs. 3 (d) Rs. 9

- (a) $\frac{c(a-b)}{b(c-a)}$ (b) $\frac{b(c-a)}{a(b-c)}$ (c) $\frac{a(b-c)}{b(c-a)}$ (d) $\frac{c(a-b)}{a(b-c)}$

53. If the points $(2, 3), (4, k)$ and $(6, -3)$ are collinear, then the value of k is

- (a) 0 (b) 2 (c) -2 (d) 4

54. ABCD is a rhombus and P, Q, R and S are the mid-points of the sides AB, BC, CD and DA the quadrilateral PQRS is a

- (a) Rectangle (b) Parallelogram (c) Triangle (d) Rhombus

55. If the points A(5, 2), B(4, 7) and C(7, -4) form a triangle ABC, then the area of triangle is equal to

- (a) -4 (b) 4 (c) +2 (d) 5

56. If the roots of the quadratic equation $(a^2 + b^2)x^2 - 2b(a+c)x + (b^2 + c^2) = 0$ are equal, then

- (a) $2b = a+c$ (b) $b^2 = ac$ (c) $b = \frac{2ac}{a+c}$ (d) $b = ac$

57. If \bar{x} is the mean of $x_1, x_2, x_3, \dots, x_n$ then mean of $(x_1 + k), (x_2 + k), (x_3 + k), \dots, (x_n + k)$ will be

- (a) \bar{x} (b) $k\bar{x}$ (c) k (d) $\bar{x} + k$

58. Two dice are thrown simultaneously. What is the probability of getting a doublet?

- (a) $\frac{1}{6}$ (b) $\frac{1}{12}$ (c) $\frac{5}{18}$ (d) $\frac{11}{36}$

59. In $\triangle ABC$, D is the mid-point of BC, E is the mid-point of DC and O is the mid-point of AE. The ratio of areas of $\triangle AOC$ and $\triangle ABC$ is

- (a) 1 : 6 (b) 1 : 7 (c) 1 : 8 (d) 1 : 9

60. The length of a tangent from a point A at distance 5 cm from the centre of the circle is 4 cm. The radius of the circle is equal to

- (a) 5 cm (b) 3 cm (c) 4 cm (d) 8 cm

61. In the adjoining figure if YO and ZO are the bisectors of $\angle Y$ and $\angle Z$ then $\angle YOZ$ equals to

- (a) 121° (b) 36° (c) 40° (d) 25°

62. 5 pencils and 7 pens together cost Rs. 50 whereas 7 pencils and 5 pens together cost Rs. 46, then



the cost of one pencil is equal to

- (a) Rs. 5 (b) Rs. 7 (c) Rs. 3 (d) Rs. 9

63. The area of a sector of a circle with radius 6 cm, if angle of the sector is 60° is equal to

- (a) $\frac{132}{7} \text{ cm}^2$ (b) $\frac{135}{7} \text{ cm}^2$ (c) 130 cm^2 (d) 135 cm^2

64. The diagonals of parallelogram are

- (a) bisect each other (b) equal (c) perpendicular to each other (d) None of these

65. Sum of the n term of the series $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}, \dots$ is

- (a) $\frac{n(n+2)}{\sqrt{2}}$ (b) $\sqrt{2}(n)(n+1)$ (c) $\frac{n(n+1)}{\sqrt{2}}$ (d) None of these

66. If α and β are the zeroes of the quadratic polynomial $x^2 - 2x - 8$, then $\alpha + \beta + \alpha\beta$ is

- (a) 6 (b) -6 (c) -10 (d) 10

67. The quadratic polynomial formed by the reciprocal of zeroes of the quadratic polynomial $x^2 - 3x + 2$ is

- (a) $-3x^2 + x + 2$ (b) $2x^2 - 3x + 1$ (c) $x^2 + 2x - 3$ (d) $2x^2 + 3x - 1$

68. If $\triangle ABC \sim \triangle DEF$ and their areas be, respectively 64 cm^2 and 121 cm^2 . If $EF = 15.4 \text{ cm}$ then the value of BC is

- (a) 15 cm (b) 12 cm (c) 11.2 cm (d) 18 cm

69. Two poles of heights 6 m and 11 m stand on a plane ground. If the distance between the feet of the poles is 12 m. The distance between their tops equal to

- (a) 13 m (b) 14 m (c) 15 m (d) 20 m

70. If the zeroes of the polynomial $x^3 - 3x^2 + x + 1$ are $a - b, a, a + b$, find a and b .

- (a) $a = 2, b = \pm \sqrt{3}$ (b) $a = 1, b = \pm \sqrt{2}$ (c) $a = 3, b = 0$ (d) $a = \sqrt{2}, b = \sqrt{3}$

71. In $\triangle ABC$, 'E' is the mid-point of median AD then, $\text{ar}(\triangle AED) =$

- (a) $1/3 \text{ ar}(\triangle ABC)$ (b) $1/4 \text{ ar}(\triangle ABC)$ (c) $1/8 \text{ ar}(\triangle ABC)$ (d) $1/6 \text{ ar}(\triangle ABC)$

72. ABCD is a parallelogram. X and Y are the mid-points of BC and CD respectively, then the area

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- (a) $\frac{1}{2} \sigma(ABCD)$ (b) $\frac{1}{4} \sigma(ABCD)$ (c) $\frac{3}{4} \sigma(ABCD)$ (d) $\frac{5}{8} \sigma(ABCD)$

73. If $y + \frac{1}{4y} = 2$ then the value of $16y^3 + \frac{1}{4y^3}$ is

74. A river 3 m deep and 40 m wide is flowing at the rate of 2 km per hour into the sea. How much

75. If $\alpha + \beta = 90^\circ$ and $\alpha = 2\beta$, then $\cos^2 \alpha + \sin^2 \beta$ is equal to

76. ABC is a right triangle, right angled at C. Let BC = a , CA = b , AB = c and let p be the length of

78. If the points $(a, -1)$, $(5, b)$, $(2, 1)$ and $(1, 1)$ are the vertices of a parallelogram taken in order,

- Given the values of a and b are:

79. If the volume of a right circular cone is 98.56 cm^3 and diameter of base is 28 cm then slant height is

0. $(x+y)^2 - (x-y)^2 = 6xy$ is equal to

- $$x' + x \equiv u$$

ALJGARH MUSLIM UNIVERSITY AND ITS PAPERS 2011-2012

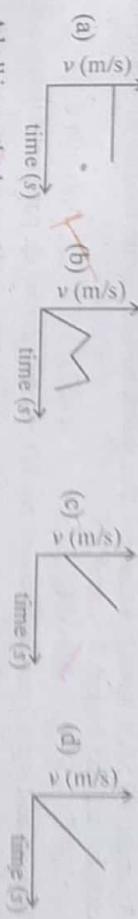
- (a) Fresh water fishes (b) Marine fishes (c) Honey-bees (d) Poultry birds
95. Japanese encephalitis or brain fever is caused by
 (a) Bacteria (b) Virus (c) Protozoan (d) Fungus
96. Which of these is not a true fish?
 (a) Jelly fish (b) Flying fish (c) Sea horse (d) Lion fish
97. Fungal cell wall is made up of
 (a) Lignin (b) Suberin (c) Chitin (d) Cellulose and pectin
98. The five kingdom classification was given by
 (a) Carl Woese (b) Carolus Linnaeus (c) Ernst Haeckel (d) Robert Whittaker
99. Eosinophil and basophil cells are found in
 (a) Cartilage (b) Areolar tissue (c) Adipose tissue (d) Blood
100. Solid matrix of cartilage is made up of
 (a) Proteins and sugar (b) Calcium and phosphorus (c) Proteins and calcium carbonate (d) Proteins and phosphorus

A.M.U. ANSWER PAPER 1 2014-2015

- 1-c 2-a 3-a 4-d 5-c 6-c 7-b 8-c 9-b 10-b
 11-a 12-a 13-a 14-a 15-c 16-c 17-b 18-a 19-a 20-b
 21-d 22-c 23-b 24-c 25-d 26-c 27-d 28-b 29-a 30-c
 31-a 32-c 33-b 34-c 35-b 36-d 37-b 38-a 39-d 40-b
 41-c 42-c 43-d 44-c 45-c 46-b 47-d 48-b 49-c 50-a
 51-b 52-d 53-a 54-a 55-c 56-b 57-d 58-a 59-c 60-b
 61-a 62-c 63-a 64-a 65-c 66-b 67-b 68-c 69-a 70-b
 71-b 72-d 73-b 74-c 75-c 76-a 77-c 78-d 79-b 80-d
 81-d 82-d 83-c 84-c 85-c 86-b 87-d 88-c 89-a 90-a
 91-c 92-c 93-a 94-b 95-b 96-a 97-c 98-d 99-d 100-a

**ALIGARH MUSLIM UNIVERSITY (AMU)
XI-SCIENCE ENTRANCE**

1. The nature of the velocity-time graph for non uniform motion of an object is



2. A ball is gently dropped from a height of 20 m. If its velocity increases uniformly at the rate of 10 m/s^2 , after what time will it strike the ground?

(a) 1.414 s (b) 2 s (c) 4 s (d) 1 s

3. Which of the following has more inertia if their size is same

(a) A rubber ball (b) A stone ball (c) A plastic ball (d) An iron ball

4. An objects weight 12 N when measured on the surface of the earth, what would be its weight when measured on the surface of the moon?

(a) 12 N (b) 1 N (c) 3 N (d) 2 N

5. A block of wood is kept on a table top. The mass of wooden block is 10 kg and its dimensions are 50cm \times 20cm \times 10cm. What would be the pressure exerted by the wooden block on the table top, if it is made to lie on the table top with its sides of dimensions 20cm \times 10cm?

(a) 2450 N/m² (b) 4900 N/m² (c) 980 N/m² (d) 9800 N/m²

6. An object of weight 120 N is at a certain height above the ground. If the potential energy of the object is 480 J, the height at which the object is with respect to the ground will be

(a) 0.25 m (b) 4 m (c) 0.4 m (d) 25 m

7. Two girls A and B each of weight 400 N climb up a rope through a height of 10 m. Girl A takes 25 s while girl B takes 50 s to accomplish this task. The comparison of power spent by two girls is

(a) Both Equal (b) Girl A has more power (c) Girl B has more power (d) None of these

8. A person clapped his hands near a minaret and heard the echo after 4 s. What is the distance of the minaret from the person if the speed of the sound, is taken as 344 ms⁻¹?

(a) 1376 m (b) 688 m (c) 2752 m (d) 344 m

9. If the object is placed between centre of curvature C and focus F, the position of the image by a concave mirror is

(a) At the focus F (b) At C (c) Beyond C (d) Behind mirror

10. A spherical mirror and a thin spherical lens have each a focal length of - 15 cm. The mirror and lens are likely to be

- (a) Both concave

- (c) mirror concave, lens is convex

- (d) mirror is convex, lens is concave

11.

- Which diagram shows the defect of hypermetropia?



12.

- The change in focal length of an eye lens is caused by the action of the

- (a) pupil

- (b) retina

- (c) ciliary muscles

- (d) iris

13. A current of 0.5 A is drawn by a filament of an electric bulb for 20 min . Find the amount of electric charge that flows through the circuit?

- (a) 300 C

- (b) 600 C

- (c) 20 C

- (d) 200 C

14. 100 J of heat is produced each second in a 4Ω resistance. Find the potential difference across the resistor

- (a) 10 V

- (b) 200 V

- (c) 30 V

- (d) 20 V

15. At the time of short circuit, the current in the circuit

- (a) reduces substantially

- (c) increases heavily

- (d) vary continuously

16. Which is not the part of electric motor

- (a) insulated copper wire

- (b) coil

- (d) stationary brushes (different position)

17. Biogas contains about

- (a) 29% Methane

- (b) 80% Methane

- (c) 92% Methane

- (d) 75% Methane

18. The cause of twinkling of the sun and twinkling of stars respectively is

- (a) Scattering of light & atmospheric refraction

- (b) Atmospheric refraction and scattering of light

(c) Dispersion and Tyndall effect

(d) Tyndall effect and dispersion

19. Dry ice is also known as

- (a) H_2O in solid state

- (b) CaCO_3

- (c) CO_2

- (d) D_2O

20. Brass is a mixture of

- (a) 20% zinc and 80% iron

- (c) 30% zinc and 70% copper

21. A solution contains 20 g of common salt in 520 g of water. The concentration in terms of mass by mass percentage of the solution is

- (a) 4.02%

- (b) 11.1%

- (c) 3.84%

- (d) 3.70%

22. According to the law of constant proportions, in ammonia, nitrogen and hydrogen are always present in the ratio (by mass)

- (a) $1 : 8$

- (b) $3 : 14$

- (c) $8 : 1$

- (d) $14 : 3$

23. Which among the following is a tetro atomic element

- (a) Oxygen

- (b) Iodine

- (c) Phosphorus

- (d) Neon

24. Isotopes have

- (b) Both convex

- (d) Same number of electrons

- (a) Same mass number and different atomic number

- (b) Same atomic number and different atomic mass number

- (c) Same number of protons and neutrons

- (d) Same number of electrons

25.

- What is correct electronic configuration of Aluminium?

- (a) $2, 8, 1$

- (b) $2, 8$

- (c) $2, 8, 2$

- (d) $2, 8, 3$

26.



- (a) displacement reaction

- (b) decomposition reaction

- (c) double displacement reaction

- (d) oxidation and reduction

27.

Which of the following is an example of redox reaction

- (a) $2\text{Cu} + \text{O}_2 \rightarrow 2\text{CuO}$

(b) $2\text{AgBr} \xrightarrow{\Delta} 2\text{Ag} + \text{Br}_2$

- (c) $\text{ZnO} + \text{C} \rightarrow \text{Zn} + \text{CO}$

- (d) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

28.

Tooth decay starts when the pH of the mouth is

- (a) $= 5.5$

- (b) > 5.5

- (c) < 5.5

- (d) $= 6.0$

29.

Washing soda is obtained by the recrystallisation of

- (a) Sodium hydrogen carbonate

- (b) Bleaching powder

- (c) Sodium hydroxide

- (d) Sodium carbonate

30.

What is the correct order of reactivity of metals in increasing order

- (a) $\text{Al} > \text{Mg} > \text{Ca} > \text{Cu}$

- (b) $\text{Na} > \text{Ca} > \text{Mg} > \text{Zn}$

- (c) $\text{Cu} > \text{Ca} > \text{Al} > \text{Mg}$

- (d) $\text{Au} > \text{Ag} > \text{Hg} > \text{Cu}$

31.

The alloy of mercury is called

- (a) Brass

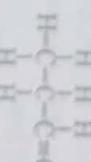
- (b) Bronze

- (c) Arrelagan

- (d) Steel

32.

Give name of the structure



- (a) Propanone

- (b) Propanol

- (c) Propanal

- (d) Propene

33.

What is the structure of functional group carboxylic acid

- (a) $-\text{C}^{\text{H}}\text{OH}$

- (b) $-\text{C}=\text{O}$

- (c) $\text{C}\equiv\text{O}$

- (d) $-\overset{\text{H}}{\underset{\text{O}}{\text{C}}}-$

34.

The atomic size

- (a) Increases down the group

- (c) Increases along the period

- (d) First increase then decrease in period

35.

Cells were first discovered by

- (a) Robert Hooke

- (b) Schleiden

- (c) Schwann

- (d) Virchow

36.

Which out of the following is not an example of Pteridophyte

- (a) Marsilea

- (b) Ferns

- (c) Horse tails

- (d) Funaria

37.

Which of the following is not a Vertebrate

- (a) Dog fish

- (b) Rana Tigrina

- (c) Turtle

- (d) Starfish

38. Who amongst the following received Nobel prize for physiology and medicine in 2005?
 (a) Marshall and Warren
 (b) William and Anderson
 (c) Amartya Sen
 (d) Abhis Salam

39. The process in which water evaporates and falls on the land as rain and later flows back into the sea varieties is called
 (a) Carbon cycle
 (b) Nitrogen cycle
 (c) transport for water
 (d) None of these

40. They system in plants are responsible for
 (a) transport for water
 (b) transport for food
 (c) transport for oxygen
 (d) transport of oxygen

41. The breakdown of pyruvate to give carbon dioxide, water and energy takes place in
 (a) cytoplasm
 (b) mitochondria
 (c) chloroplast
 (d) nucleus

42. Which of the following is not a part of the female reproductive system in human beings?
 (a) Ovary
 (b) Uterus
 (c) Vasa deferens
 (d) Fallopian Tube

43. The antler contains
 (a) Sepals
 (b) Ovules
 (c) Carpel
 (d) Pollen grains

44. An example of homologous organs is
 (a) Our arm and a dog's fore-leg
 (b) Our teeth and an elephant's tusks
 (c) Potato and runners of grass
 (d) All of these

45. Which of the following groups does not contain only biodegradable items?
 (a) Grass, flowers and leather
 (b) Grass, wood and plastic
 (c) Coke, wood and grass
 (d) Coke, wood and grass

46. Which of the following constitute a food chain?
 (a) Cactus, wheat and mango
 (b) Goat, cow and elephant
 (c) Goat, cow and elephant
 (d) Grass, fish and goat

47. Which of the following are environment friendly practices?
 (a) Carrying cloth bags to put purchases while shopping
 (b) Switching off unnecessary lights and fans
 (c) Walking to school instead of getting your mother to drop you on her scooter
 (d) All of these

48. The kidney in human beings are a part of the system for
 (a) Nutrition
 (b) Respiration
 (c) Excretion
 (d) Transportation

49. The autotrophic mode of nutrition requires
 (a) Carbon dioxide and water
 (b) Chlorophyll
 (c) Sunlight
 (d) All of these

50. A sexual reproduction takes place through budding in
 (a) amoeba
 (b) yeast
 (c) plasmiodium
 (d) kishmania

51. Which of the following statement is false?
 (a) Every integer is a rational number
 (b) There are infinitely many rational numbers between any two given rational numbers
 (d) Every real number is represented by a unique point on the number line

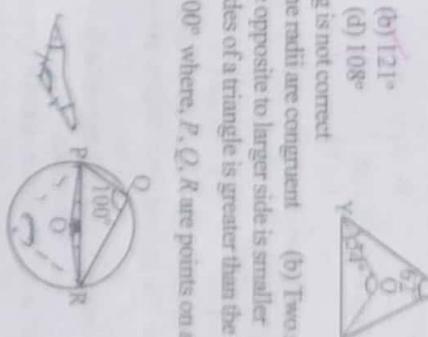
52. Factors of $x^3 - 23x^2 + 147x - 120$ are

- (a) $(x+1)(x-10)(x-12)$
 (b) $(x-1)(x+1)(x-12)$
 (c) $(x-1)(x-10)(x+12)$
 (d) $(x-1)(x-10)(x+12)$

53. It is given that $\angle XYZ = 64^\circ$ and XY is produced to point P . If ray YQ bisects $\angle ZYP$, the reflex $\angle QYP$ is
 (a) 322°
 (b) 290°
 (c) 120°
 (d) 302°

54. In the figure $\angle X = 62^\circ$ and $\angle XYZ = 54^\circ$. If YO and ZO are the bisectors of $\angle XZY$ respectively of $\angle XYZ$, $\angle YOZ$ will be
 (a) 110°
 (b) 121°
 (c) 142°
 (d) 108°

55. Which of the following is not correct
 (a) Two circles of same radii are congruent
 (b) Two squares of same sides are congruent
 (c) In a triangle; angle opposite to larger side is smaller
 (d) Sum of any two sides of a triangle is greater than the third side



56. In a figure $\angle PQR = 100^\circ$ where, P, Q, R are points on a circle with centre O . The $\angle OPR$ is
 (a) 30°
 (b) 45°
 (c) 10°
 (d) 60°

57. ABCD is a cyclic quadrilateral whose diagonals intersect at a point E. If $\angle DSC = 70^\circ$, $\angle BAC = 30^\circ$. Find $\angle BCD$
 (a) 80°
 (b) 90°
 (c) 70°
 (d) 60°

58. The sides of a triangular plot are in ratio 3 : 5 : 7 and its perimeter is 300 m. If its area in sq. m is

- (a) 3000
 (b) 1580
 (c) $1500\sqrt{3}$
 (d) $1600\sqrt{2}$

59. A field is in the shape of a trapezium whose parallel sides are 25 m and 10 m. The non parallel sides are 14 m and 13 m. The area of field in sq. m. is

- (a) 120
 (b) 142
 (c) 180
 (d) 196

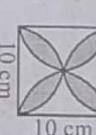
60. The diameter of a roller is 84 cm and its length is 120 cm. It takes 500 complete revolutions to move once over to a playground, the area of playground in sq. m is

- (a) 1482
 (b) 1584
 (c) 1678
 (d) 1614

61. The curved surface area of a cone is 308 cm^2 and its slant height is 14 cm. The total surface area of cone in sq. cm. is
 (a) 312
 (b) 412
 (c) 363
 (d) 462

62. Twenty seven solid iron spheres each of radius r and surface area S_1 are melted to form a sphere

- with surface area S_2 . The ratio of S_1 and S_2 is
 (a) $\frac{1}{9}$ (b) $\frac{1}{6}$ (c) $\frac{1}{4}$ (d) $\frac{1}{3}$
63. In a mathematics test given to 15 students, the following marks (out of 100) are recorded 41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60. The median of the data is
 (a) 46 (b) 52 (c) 54 (d) 60
64. Eleven bags of wheat flour; each marked 5 kg actually contained the following weights of flour (in kg) 4.97, 5.05, 5.08, 5.03, 5.00, 5.06, 5.08, 4.98, 5.04, 5.07, 5.00
 The probability that any of these bags chosen at random contains more than 5 kg of flour is
 (a) $\frac{9}{11}$ (b) $\frac{8}{11}$ (c) $\frac{7}{11}$ (d) $\frac{6}{11}$
65. The L.C.M. of 6, 72 and 120 is 360, their HCF is
 (a) 120 (b) 6 (c) 72 (d) None of these
66. On dividing $x^3 - 3x^2 + x + 2$ by a polynomial $g(x)$, the quotient and remainder are $x - 2$ and $-2x + 4$ respectively. The $g(x)$ is
 (a) $x^2 + x + 1$ (b) $x^2 - x + 1$ (c) $x^2 + x - 1$ (d) $x^2 - x - 1$
67. Five years hence, the age of William will be three times that of his son. Five years ago, William's age was seven times that of his son. The present age of William in years is
 (a) 50 (b) 45 (c) 40 (d) 35
68. The sum and product of two numbers is 27 and 182 respectively. One of these is
 (a) 8 (b) 10 (c) 12 (d) 14
69. Sum of the areas of two squares is 468 m². The difference of their perimeters is 24 m. The side of the larger square is
 (a) 18 m (b) 16 m (c) 14 m (d) 12 m
70. The sum of first 51 terms of an AP whose second and third terms are 14 and 18 respectively, is
 (a) 5212 (b) 5458 (c) 5610 (d) 5646
71. Three points A(2, 3), B(4, k) and C(6, -3) are collinear. The value of k is
 (a) 3 (b) 2 (c) 1 (d) 0
72. In a triangle ABC, right angled at B, if $\tan A = \frac{1}{\sqrt{3}}$, the value of $\cos A \cos C - \sin A \sin C$ will be
 (a) -1 (b) 0 (c) +1 (d) $-\frac{1}{2}$
73. The shadow of a tower standing on a level ground is found to be 40 m longer when Sun's altitude is 30° than when it is 60° , the height of tower in m is
 (a) $20\sqrt{3}$ m (b) 20 m (c) $\frac{20}{\sqrt{3}}$ m (d) 10 m
74. PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangents at P and Q intersect at a point T. The length TP in cm is
 (a) 20 (b) $20\sqrt{3}$ (c) $20\sqrt{3}$ (d) 10

75. From a solid cylinder whose height is 2.4 cm and diameter 1.4 cm, a conical cavity of the same height and same diameter is hollowed out. The total surface area of remaining solid in cm² is
 (a) 17.6 (b) 20 (c) 10 (d) 8.6
76. The length of the minute hand of a clock is 14 cm. The area swept by the minute hand in 5 minutes in cm² is
 (a) $154\frac{1}{3}$ (b) $190\frac{1}{3}$ (c) 120 (d) 69
77. The area of the shaded region in cm² where ABCD is a square of side 10 cm with semicircles drawn on each side of the square as diameter, is
 (a) $300\frac{1}{7}$ (b) $400\frac{1}{7}$

 (c) 50 (d) $250\frac{1}{7}$
78. Two cubes each of volume 64 cm³ are joined end to end. The surface area of resulting cuboid in cm² is
 (a) 140 (b) 150 (c) 160 (d) 170
79. A cone of height 24 cm and radius of base 6 cm is made up of modelling clay. It is reshaped in form of a sphere. The radius of sphere in cm is
 (a) 6 (b) 8 (c) 7 (d) 5
80. A 20 m deep well with diameter 7 m is dug and earth from digging is evenly spread out to form a platform 22m \times 14m, the height of platform is
 (a) 4 m (b) 3.5 m (c) 3 m (d) 2.5 m
81. The Man Booker prize this year has been won by
 (a) Richard Flanagan (b) Jerome Peter (c) A.C. Greyling (d) P. Guildhall
82. Ashraf Ghani is the
 (a) Prime Minister of Tunisia (b) President of Afghanistan
 (c) Secretary General of W.H.O. (d) Famous poet of Pakistan
83. If President of India has to resign, he has to address his resignation letter to the
 (a) Prime Minister (b) Speaker (c) Vice-President (d) Chief Justice
84. Who among the following is known as the 'Blade Runner'?
 (a) Oscar Pistorius (b) Milkha Singh (c) Usain Bolt (d) Kobe Bryant
85. 38th parallel is the boundary line between
 (a) USA and Canada (b) Turkey and Cyprus
 (c) Pakistan and Afghanistan (d) North and South Korea
86. MI-5 is the secret agency of
 (a) U.S.A. (b) Israel (c) U.K. (d) France
87. Who is the Chief Economic Adviser of the Prime Minister?
 (a) Arvind Subramanian (b) Rajiv Mehrishi
 (c) D.S. Rawat (d) Rajan Pillai
88. Which of the following is the world's highest dam?
 (a) Nurek (b) Guri (c) Rogun (d) Tehri

89. How many countries participated in the first modern Olympics in 1896?
 (a) 10 (b) 12 (c) 13 (d) 15
90. Which of these is not a desert?
 (a) Steppe (b) Kolahari (c) Sahara (d) Patagonia

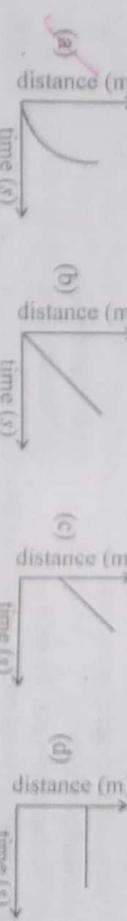
91. Annual fair held during Pre-Islamic was called
 (a) Suq (b) Ukar (c) Haj (d) Bait
92. Abraha who led an expedition to Ka'abah was ruler of
 (a) Makkah (b) Habshi (c) Taif (d) Yathrib

93. Who was the foster mother of Prophet Muhammad (PBUH)
 (a) Aamnah (b) Halima Saadiyah (c) Thurayyah (d) Umm-e-Kulsoom
94. Who become the guardian of Prophet Muhammad (PBUH) after the death of his grandfather?
 (a) Abu Lathab (b) Abu Jahl (c) Abdul Muttalib (d) Abu Talib

95. Who is referred as al-Ruhul-Ameen?
 (a) Jibril (b) Miskal (c) Israfil (d) Iblis
96. The Holy Quran is the Book of?
 (a) Allah (b) Prophet Muhammad (PBUH) (c) Hazrat Abu Bakr (RA) (d) Hazrat Ali (RA)

97. Prophet hood is sealed after Prophet _____
 (a) Hazrat Ibrahim (b) Hazrat Ismail (c) Hazrat Ishaq (d) Prophet Muhammad (PBUH)
98. Al-Qutubul Sitta (Six) are the collections of?
 (a) Fiqah (b) Tassawuf (c) Quran (d) Hadith

99. The term "Tassawuf" means
 (a) Sufi Movement (b) Islamic Law (c) Sayings, doings and deeds of the Prophet Muhammad (PBUH) (d) Various aspects of Islam
100. Who is known as Toot-Hind?
 (a) Hazrat Nizamuddin (b) Amir Khusrow (c) Baba Farid Ganj-e-Shakar (d) Nasiruddin Chiragh Dehlawi



1. The nature of the distance-time graph for a car moving with non-uniform speed is

- (a) 18 km (b) 36 km (c) 0.0375 km (d) 37.5 km

3. When a sailor jumps from a boat in forward direction, the direction of the boat will be

- (a) Forward (b) Backward (c) Twisted (d) None of these

4. The momentum of an object of mass ' m' , moving with a velocity ' v' is

- (a) $(mv)^2$ (b) mv^2 (c) mv (d) $\frac{1}{2}mv^2$

5. If mass of an object is 10 kg, its weight on the earth is

- (a) 10 N (b) 9.8 N (c) 98 N (d) 10 kg

6. When a body is immersed fully or partially in a fluid, it experiences an upward force that is equal to the

- (a) Weight of the body (b) Weight of the fluid

- (c) Half the weight of the body (d) Half the weight of the fluid

7. If the velocity of the car of mass 1500 kg is increased from 30 km/h to 60 km/h, the work done will be (in kJ)?

- (a) 156.4 (b) 160 (c) 52.5 (d) 203.4

8. An electric bulb of 60 W is used for 6 hours per day. The units of energy consumed in one day by the bulb are

- (a) 0.6 (b) 0.36 (c) 6 (d) 360

9. Stethoscope is used to

- (a) Determine the depth of sea (b) Determine the sound waves (c) Listen sound within the body (d) Listen the sound in water

10. Sound waves with frequencies below the suitable range are termed as

- (a) Ultrasonic (b) Infrasonic (c) Noise (d) Pleasant sound

11. In the given figure, where the image can be seen



12. Find the power of concave lens of focal length 2 m.
 (a) +0.5 (b) -0.5 (c) -0.2 (d) +0.2
13. The splitting of light into its component colours is called?
 (a) Dispersion (b) Splitting (c) Refraction (d) Tyndall
14. A person with myopia can see only
 (a) Nearby objects (b) Distant objects (c) Neither nearby nor distant objects (d) None of these
15. The symbol of closed switch in circuit diagram is
 (a) (b) (c) (d)

16. Which of the following term represent electrical power in a circuit

- (a) IR^2 (b) $P\dot{R}$ (c) $\mathcal{V}I$ (d) $\frac{V^2}{R}$

17. Device used for producing electric current is called
 (a) Galvanometer (b) Ammeter (c) Generator (d) Motor

18. A generator converts
 (a) Kinetic energy into mechanical energy (b) Mechanical energy into electrical energy
 (c) Mechanical energy into kinetic energy (d) Electrical energy into kinetic energy

19. Which of the following is not an example of bio-mass energy source

- (a) Wood (b) Gobar gas (c) Nuclear energy (d) Coal

20. Which of the following is used for making solar cell
 (a) Copper (b) Silicon (c) Iron (d) Steel

21. Kinetic energy is maximum in
 (a) Solid (b) Liquid (c) Gas (d) Same in all

22. On increasing the temperature of solids
 (a) Kinetic energy increases (b) Kinetic energy decreases
 (c) Kinetic energy remains constant (d) Kinetic energy first increases then decreases

23. Which of the following will show Tyndall effect?

- (a) Salt solution (b) Milk
 (c) Copper sulphate solution (d) Starch solution

24. If the dispersed phase is liquid and dispersed medium is solid then the type of colloid will be

- (a) Aerosol (b) Gel
 (c) Foam (d) Emulsion

25. Which of the following is selected as standard reference for measuring atomic masses?

26. Formula for ammonium sulphate is
 (a) NH_3SO_4 (b) NH_4SO_4 (c) $(\text{NH}_3)_2\text{SO}_4$ (d) $(\text{NH}_4)_2\text{SO}_4$

27. Which of the following is used in the treatment of cancer?
 (a) Isotope of cobalt (b) Isotope of uranium (c) Isotope of iodine (d) Isotope of oxygen

28. Number of valence electron in Cl^- ion are
 (a) 16 (b) 8 (c) 17 (d) 18

29. Calculate the number of particles in 46 g of Na atoms (number from mass)
 (a) 6.023×10^{23} (b) 12.044×10^{23} (c) 6.023×10^{22} (d) 1.51×10^{23}

30. Rutherford's alpha-particles scattering experiment was responsible for the discovery of
 (a) Atomic nucleus (b) Electron (c) Proton (d) Neutron

31. The chemical formula for marble is
 (a) Ca_2O_3 (b) CaCO_3 (c) Marble has no formula (d) $\text{Ca}(\text{OH})_2$

32. The products of respiration process are
 (a) $6\text{CO}_2 + \text{H}_2\text{O} + \text{energy}$ (b) $4\text{CO}_2 + 2\text{H}_2\text{O} + \text{energy}$
 (c) $9\text{CO}_2 + 3\text{H}_2\text{O} + \text{energy}$ (d) $6\text{CO}_2 + 6\text{H}_2\text{O} + \text{energy}$

33. The colour of litmus solution is
 (a) Red (b) Blue (c) Purple (d) Green

34. The bleaching powder is represented as
 (a) CaOCl_2 (b) $\text{Ca}(\text{OH})_2$ (c) NaHCO_3 (d) NaCO_3

35. The good conductor of electricity is
 (a) Plastic (b) Graphite (c) Glass (d) Carbon

36. Which of the following pairs will give the displacement reaction?
 (a) NaCl solution and copper metal (b) MgCl_2 solution and aluminium metal
 (c) FeSO_4 solution and silver metal (d) AgNO_3 solution and copper metal

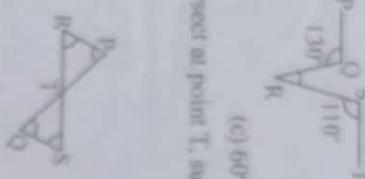
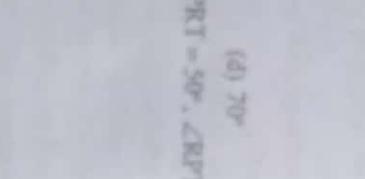
37. Ethane with the molecular formula C_2H_6 has
 (a) 6 covalent bonds (b) 7 covalent bonds (c) 8 covalent bonds (d) 9 covalent bonds

38. Butanone is a four carbon compound with functional group of
 (a) Carboxylic acid (b) Aldehyde (c) Ketone (d) Alcohol

39. The maximum number of electron that can be accommodated in a shell depends on the formula
 (a) n^2 (b) $2n$ (c) $2n^2$ (d) $4n^2$

40. The atomic radius along a period
 (a) Decreases in moving from left to right (b) Increases in moving from left to right
 (c) Decreases in moving from right to left (d) Increases in moving from right to left

41. The solution of $7\frac{1}{3}$ is
 (a) Ammonium sulphate (b) Ammonium chloride (c) Ammonium nitrate (d) $\text{Ammonium hydroxide}$

- (a) $\frac{2}{7}\text{i}$ (b) $\frac{1}{7}\text{i}$ (c) $\frac{-2}{7}\text{i}$ (d) $\frac{-1}{7}\text{i}$
42. How many rational numbers lie between any two given rational numbers?
 (a) 2 (b) 5 (c) Finite (d) Infinite
43. Which of the following statement is true?
 (a) Every whole number is a natural number
 (b) Every integer is a rational number
 (c) Every rational number is an integer
 (d) Both (a) and (c)
44. The expanded form of $(4a - 3b - 2c)^2$ is
 (a) $16a^2 + 9b^2 + 4c^2 - 24ab + 12bc - 16ac$
 (c) $16a^2 + 9b^2 + 4c^2 - 24ab - 12bc - 16ac$
 (b) $16a^2 + 9b^2 + 4c^2 - 24ab - 12bc + 16ac$
 (d) $16a^2 + 9b^2 + 4c^2 - 24ab + 12bc - 16ac$
45. Expanded form of $(996)^4$ by using suitable identities is
 (a) 997002999 (b) 994011992 (c) 994011990 (d) 994001992
46. The linear equation that converts temperature in Fahrenheit (F) to Celsius (C) is
 (a) $F = \left(\frac{5}{9}\right)C + 32$ (b) $F = \left(\frac{5}{9}\right)C - 32$ (c) $F = \left(\frac{9}{5}\right)C - 32$ (d) $F = \left(\frac{9}{5}\right)C + 32$
47. In the given figure, if $PQ \parallel ST$, $\angle PQR = 130^\circ$ and $\angle RST = 110^\circ$, then $\angle QRS$ is

- (a) 40° (b) 50° (c) 60° (d) 70°
48. In Figure, if lines PQ and RS intersect at point T, such that $\angle PRT = 50^\circ$, $\angle RPT = 90^\circ$ and $\angle TSQ = 75^\circ$ then $\angle SQT$ is

- (a) 40° (b) 50° (c) 60° (d) 70°
49. If any two pairs of angles and one pair of corresponding sides of a triangle are equal then it is said to be
 (a) AAS congruence rule
 (b) ASA congruence rule
 (c) SAS congruence rule
 (d) SSA congruence rule
50. If the angles of quadrilateral are in the ratio of $4 : 3 : 9 : 12$ then the angles of quadrilateral are
 (a) $30^\circ, 60^\circ, 150^\circ$ (b) $48^\circ, 60^\circ, 150^\circ$ (c) $48^\circ, 60^\circ, 108^\circ, 144^\circ$ (d) $36^\circ, 72^\circ, 108^\circ, 144^\circ$
51. Which of the following statement is true?
 (a) 0 to 1 (b) 0 to 10 (c) 0 to 100 (d) 0 to infinite
52. If the sum of a pair of opposite angles of a quadrilateral is 180° , the quadrilateral is
 (a) Cyclic (b) Parallelogram (c) Rectangular (d) Square
53. Sides of a triangle are in the ratio of $12 : 17 : 25$ and its perimeter is 240 cm . The area of triangle is
 (a) 8000 cm^2 (b) 8500 cm^2 (c) 9000 cm^2 (d) 9500 cm^2
54. An umbrella is made by stitching 10 triangular pieces, each piece measuring $25\text{ cm}, 50\text{ cm}$ and 50 cm . How much cloth is required for the umbrella?
 (a) 5898.98 cm^2 (b) 4898.98 cm^2 (c) 4590 cm^2 (d) 4990 cm^2
55. The floor of a rectangular hall has a perimeter of 250 m . If the cost of painting the four walls at the rate of Rs. 10 per m^2 is Rs. 15000 , the height of the wall is
 (a) 5 m (b) 3 m (c) 6 m (d) 7 m
56. A metal pipe is 77 cm long. The inner diameter of a cross section is 4 cm , the outer diameter being 4.5 cm . The total curved surface area of the pipe is
 (a) 2057 cm^2 (b) 2012 cm^2 (c) 2123 cm^2 (d) 2218 cm^2
57. A hemispherical bowl made up of steel is 0.5 cm thick. The inner radius of the bowl is 5 cm , the outer curved surface area of the bowl (in cm^2) is
 (a) 173.25 (b) 69.14 (c) 157.14 (d) 190.14
58. A joker's cap is in the form of right circular of base radius 5 cm and height 12 cm . The area of the sheet required to make 5 such caps (in cm^2) is
 (a) 1021.43 (b) 1216.35 (c) 1431.87 (d) 1806.92
59. A river 3 m deep and 40 m wide is flowing at the rate of 2 km per hour . How much water will fall into the sea in a minute?
 (a) 240 m^3 (b) 240000 m^3 (c) 4000 m^3 (d) 1440 m^3
60. In a room of dimensions $5\text{m} \times 4\text{m} \times 3\text{m}$, how many boxes of size $25\text{cm} \times 20\text{cm} \times 15\text{cm}$ can be kept?
 (a) 7500 (b) 8000 (c) 8500 (d) 9000
61. If the diameter of a sphere is decreased by 25% , then the curved surface area is decreased by
 (a) 25% (b) 50% (c) 56.25% (d) 43.75%
62. The mode of the following data is
 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, 18
 (a) 14 (b) 12 (c) 17.5 (d) 18.75
63. The following observations have been arranged in ascending order
 $29, 32, 48, 50, X, X+2, 72, 78, 84, 95$. If the median of the data is 63 , the value of X is
 (a) 63 (b) 64 (c) 61 (d) 62
64. The probability of an event lies between
 (a) 0 to 1 (b) 0 to 10 (c) 0 to 100 (d) 0 to infinite
65. Eleven bags of wheat flour, each marked 5 kg , actually contained the following weights of flour (in

- kg) 4.97, 5.05, 5.08, 5.03, 5.00, 5.06, 5.08, 4.98, 5.04, 5.07, 5.00. Find the probability that any of these bags chosen at random contains less than 5 kg of flour.

66. Two coins are tossed simultaneously 100 times and we get two heads = 25 times, one head = 50 times and no head = 15 times, the sum of probabilities of occurrence of these events will be

 - $\frac{7}{11}$
 - $\frac{2}{11}$
 - $\frac{9}{11}$
 - 1

67. If α, β, γ are the zeroes of the cubic polynomial $ax^3 + bx^2 + cx + d = 0$, then $\alpha\beta + \beta\gamma + \gamma\alpha$ is

 - $-\frac{b}{a}$
 - $\frac{c}{a}$
 - $-\frac{d}{a}$
 - None of these

68. The sum of the digits of a two digit number is 9. Nine times this number is twice the number obtained by reversing the order of the digits. The number is

 - 81
 - 72
 - 36
 - 18

69. A boy can swim 20 km in downstream in 2 hours and 4 km in upstream in 2 hours. The speed of current in kmph is

 - 2
 - 3
 - 4
 - 5

70. If the roots of equation $2x^2 + kx + 3 = 0$ are equal, then k is

 - $\pm\sqrt{24}$
 - +6
 - 6
 - $\pm\sqrt{12}$

71. The 20th term from the last term of the AP 3, 8, 13, 253 is

 - 158
 - 98
 - 168
 - 163

72. ABC and BDE are two equivalent triangles such that D is the mid point of ABC. The ratio of the areas of triangles ABC and BDE is

 - 2 : 1
 - 1 : 2
 - 4 : 1
 - 1 : 4

73. The ratio in which the y-axis divides the line segment joining the points (5, -6) and (-1, -4) is

 - 4 : 1
 - 5 : 1
 - 6 : 1
 - 2 : 3

74. The value of $\tan 48^\circ \tan 23^\circ \tan 42^\circ \tan 67^\circ$ is

 - 1
 - $-\frac{1}{2}$
 - $\frac{1}{2}$
 - 1

75. The value of $\frac{\sin^2 63^\circ + \sin^2 27^\circ}{\cos^2 17^\circ + \cos^2 73^\circ}$ is

 - $+\frac{1}{2}$
 - 0
 - 1
 - $-\frac{1}{2}$

76. The angle of elevation of the top of tower from a point on the ground which is 30 m away from the foot of the tower is 30° . The height of the tower is

 - $10\sqrt{3}$ m
 - 10 m
 - 15 m
 - $\frac{10}{\sqrt{3}}$ m

77. If tangents PA and PB from a point P to a circle with centre O are inclined to each other at an angle of 80° , then $\angle POA$ is equal to

78. The wheels of a car are of diameter 80 cm each. When the car is travelling at a speed of 66 km/h, in 10 minutes, the number of complete revolutions each wheel makes is

 - 4200
 - 4375
 - 4300
 - 1275

79. A hemispherical tank full of water is emptied by a pipe at the rate of $3^{\frac{4}{4}}$ liters per second. If the diameter of the tank is 3 m, the time taken to empty half the tank in minutes is

 - 12
 - 20
 - 15
 - 16.5

80. A card is drawn from a well shuffled deck of 52 cards. The probability that the card will not be an ace is

 - $\frac{1}{13}$
 - $\frac{4}{13}$
 - $\frac{12}{13}$
 - $\frac{9}{13}$

81. How many Sajda Aayat are there in Quran?

 - 114
 - 130
 - 14
 - 7

82. How many times one prayer at ordinary place is equal to the one offered at Masjid e Haram

 - 50,000
 - 1,00,000
 - 25,000
 - 1,000

83. Which holy book was revealed upon Hazrat Isa?

 - Injeel
 - Zaboor
 - Taurait
 - Saheefah

84. Who is founder of Madarsa Darul Uloom Deoband?

 - Maulana Mehmoodul Hasan
 - Maulana Qasim Nananavvi
 - Maulana Ashraf Ali Thanvi
 - Maulana Ilyas

85. Road built by Sher Shah Suri is called

 - Jopling Road
 - Beck Road
 - Grand Trunk Road
 - None of these

86. In which country Baitul Maqdas is located

 - Egypt
 - Iraq
 - Syria
 - Palestine

87. In how many years was complete Quran revealed?

 - 10
 - 13
 - 23
 - 40

88. Where was first 'Wahi' revealed to Prophet Muhammad (PBUH)?

 - Masjide Haram
 - Masjide Nabavi
 - Ghaare Hira
 - Ghare Soor

89. In which state Konark Temple is located

 - Uttar Pradesh
 - Bihar
 - Madhya Pradesh
 - Odissa

90. Which king built Jama Masjid of Delhi?

 - Shah Jahan
 - Akbar
 - Haider Ali
 - Babar

91. Which of these awards is not given in sports?

 - Ajuna
 - Rajiv Gandhi Khel Ratna
 - Phalke
 - Dhyan Chand

92. Jawahar Lal Nehru Award is conferred in which field?

 - Music
 - Film
 - Sports
 - International understanding

ANSWER SHEET**THE CONCEPTUM**

26-d	27-b	28-c	29-c	30-c	16-b	17-b	18-d	19-b	20-d
31-c	32-a	33-c	34-b	35-d	21-b	22-c	23-d	24-c	25-c
36-b	37-d	38-b	39-d	40-c	26-b	27-c	28-a	29-b	30-c
41-c	42-b	43-b	44-d	45-b	31-b	32-a	33-b	34-d	35-a
46-a	47-c	48-c	49-a	50-a	36-a	37-a	38-c	39-b	40-c
51-b	52-d	53-a	54-a	55-c	41-a	42-d	43-a	44-a	45-b
56-a	57-b	58-b	59-b	60-a	46-d	47-b	48-d	49-d	50-c
61-b	62-c	63-b	64-d	65-b	51-a	52-b	53-c	54-d	55-a
66-c	67-d	68-a	69-b	70-d	56-b	57-c	58-d	59-a	60-b
71-d	72-a,d	73-a	74-b	75-b	61-c	62-b	63-c	64-a	65-d
76-d	77-c	78-a	79-b	80-c	66-b	67-a	68-a	69-b	70-a
81-a	82-c	83-b	84-a	85-a	71-a	72-d	73-a	74-c	75-a
86-d	87-b	88-b	89-b	90-c	76-d	77-c	78-b	79-a	80-c
91-d	92-b	93-c	94-d	95-a	81-a	82-b	83-d	84-d	85-d
96-d	97-b	98-d	99-c	100-a	91-c	92-a	93-c	94-a	95-b
96-b	97-c	98-b	99-c	100-a	96-b	97-d	98-b	99-c	100-a

A.M.U. PAPER : 2006-2007**A.M.U. PAPER : 2008-2009****A.M.U. PAPER : 2010-2011****A.M.U. PAPER : 2012-2013**

1-d	2-b	3-b	4-a	5-a	1-c	2-c	3-d	4-a	5-a
6-c	7-d	8-a	9-d	10-c	6-d	7-c	8-c	9-a	10-d
11-c	12-d	13-c	14-c	15-c	11-b	12-d	13-b	14-b	15-d
16-a	17-b	18-b	19-b	20-a	21-a	22-d	23-c	24-a	25-b
21-b	22-d	23-c	24-b	25-b	16-c	17-c	18-c	19-c	20-b
26-c	27-b	28-c	29-a	30-b	21-b	22-d	23-c	24-a	25-b
31-c	32-d	33-b	34-a	35-c	26-b	27-a	28-d	29-c	30-b
36-a	37-a	38-b	39-d	40-b	31-b	32-a	33-d	34-a	35-a
41-a	42-c	43-d	44-b	45-a	36-a	37-d	38-b	39-d	40-d
46-c	47-b	48-b	49-b	50-d	41-a	42-d	43-b	44-c	45-d
51-c	52-a	53-a	54-a	55-a	46-c	47-a	48-b	49-d	50-c
56-c	57-b	58-a	59-a	60-d	51-c	52-b	53-a	54-a	55-c
61-c	62-b	63-a	64-d	65-b	56-b	57-c	58-d	59-d	60-d
66-c	67-a	68-d	69-c	70-a	61-b	62-c	63-d	64-d	65-c
71-a	72-c	73-c	74-b	75-d	61-d	62-b	63-b	64-c	65-c
76-c	77-d	78-c	79-a	80-c	66-a	67-c	68-b	69-a	70-c
81-c	82-c	83-d	84-c	85-b	71-d	72-b	73-d	74-a	75-b
86-b	87-d	88-a	89-d	90-b	76-d	77-b	78-b	79-b	80-a
91-b	92-c	93-a	94-b	95-c	81-c	82-b	83-a	84-d	85-c
96-b	97-c	98-b	99-c	100-b	96-c	97-d	98-c	99-b	100-b

A.M.U. PAPER : 2007-2008**A.M.U. PAPER : 2009-2010**

1-c	2-b	3-b	4-c	5-d	1-c	2-a	3-b	4-c	5-d
6-d	7-a	8-b	9-a	10-c	6-d	7-c	8-b	9-a	10-c
11-b	12-a	13-c	14-a,b	15-a	11-b	12-d	13-b	14-d	15-c
16-c	17-d	18-b	19-a	20-d	16-c	17-d	18-b	19-a	20-d
21-b	22-c	23-d	24-a	25-c	21-b	22-b	23-c	24-c	25-c
26-d	27-a	28-b	29-c	30-d	26-b	27-c	28-c	29-b	30-b
31-c	32-b	33-a	34-b	35-c	26-b	27-a	28-d	29-c	30-b
36-a	37-b	38-c	39-d	40-b	31-b	32-d	33-b	34-c	35-d
41-a	42-b	43-d	44-b	45-a	36-a	37-d	38-b	39-d	40-c
46-c	47-b	48-b	49-b	50-d	41-a	42-d	43-b	44-c	45-d
51-c	52-a	53-a	54-a	55-a	46-c	47-a	48-b	49-d	50-c
56-c	57-b	58-a	59-a	60-d	51-c	52-b	53-a	54-a	55-b
61-c	62-b	63-a	64-d	65-b	56-b	57-d	58-d	59-d	60-d
66-c	67-a	68-d	69-c	70-a	61-b	62-c	63-d	64-d	65-c
71-a	72-c	73-c	74-b	75-d	61-d	62-b	63-b	64-c	65-c
76-c	77-d	78-c	79-a	80-c	66-a	67-c	68-b	69-a	70-c
81-c	82-c	83-d	84-c	85-b	71-d	72-b	73-d	74-a	75-b
86-b	87-d	88-a	89-d	90-b	76-d	77-b	78-b	79-b	80-a
91-b	92-c	93-a	94-b	95-c	81-c	82-b	83-a	84-d	85-c
96-b	97-c	98-b	99-c	100-b	96-c	97-d	98-c	99-b	100-b

ANSWER SHEET**THE CONCEPTUM****A.M.U. PAPER : 2011-2012**

6-c	7-b	8-a	9-b	10-b	1-a	2-b	3-c	4-b	5-c
11-a	12-c	13-d	14-b	15-c	16-c	17-b	18-a	19-b	20-b
21-d	22-b	23-c	24-c	25-c	21-d	22-b	23-c	24-b	25-a
26-a	27-b	28-c	29-b	30-d	26-a	27-b	28-c	29-b	30-b
31-d	32-b	33-d	34-b	35-c	31-d	32-b	33-d	34-c	35-b
36-b	37-d	38-a	39-a	40-a	36-b	37-d	38-a	39-a	40-a
41-a	42-c	43-d	44-b	45-a	41-a	42-c	43-a	44-b	45-d
46-d	47-b	48-b	49-b	50-c	46-d	47-d	48-b	49-b	50-b
51-c	52-b	53-b	54-a	55-c	51-d	52-c	53-d	54-a	55-b
56-d	57-d	58-d	59-d	60-d	56-d	57-a	58-d	59-c	60-c
61-b	62-c	63-d	64-d	65-c	61-c	62-c	63-b	64-c	65-d
66-b	67-b	68-c	69-d	70-b	66-c	67-b	68-a	69-a	70-a
71-c	72-d	73-c	74-a	75-c	71-b	72-d	73-a	74-d	75-d
76-b	77-c	78-d	79-c	80-b	76-b	77-d	78-b	79-d	80-d
81-d	82-d	83-a	84-d	85-c	81-b	82-d	83-b	84-b	85-c
86-c	87-c	88-b	89-a	90-a	86-c	87-a	88-c	89-c	90-c
91-d	92-b	93-b	94-a	95-c	91-a	92-b	93-b	94-a	95-b
96-c	97-d	98-b	99-a	100-b	96-c	97-b	98-b	99-a	100-b

ANSWER SHEET**THE CONCEPTUM****A.M.U. PAPER : 2012-2013**