



**SHARADA VIDYANIKETHANA PUBLIC SCHOOL
&
PU COLLEGE**

PRATIBHA PRAVEENA SCHOLARSHIP EXAMINATION

INSTRUCTIONS

1. The booklet is your Question Paper. Do not break the seal of this booklet before being instructed to do so by the invigilator.
2. The question paper Series CODE is printed on the right hand top corner of this sheet.
3. Blank spaces and blank pages are provided in the question paper for your rough work. No additional sheets will be provided for your rough work.
4. Blank papers, clipboards, log tables, slide rules, calculators, camera, cellular phones, papers and electronic gadgets are **NOT** allowed inside the examination hall.
5. Write your name and Form number in the space provided on the back cover of this booklet.
6. The answer sheet, a machine – readable Optical Mark Recognition (OMR), is provided separately.
7. **DO NOT TAMPER WITH/MUTILATE THE OMR OR THE BOOKLET**
8. On breaking the seal of the booklet check that it contains 8 pages and all the 90 questions and corresponding answer choices are legible.
9. A candidate has to write his/ her answer in the OMR sheet by appropriate bubble with the help of **Black/Blue ball point pen** as the correct answer (s) of the question attempted.
10. Write all information and sign in the box provided on part of the **OMR**.
11. The duration of test is **2 Hours** and question paper contains **90 questions**. The **Max marks are 360**. Question Paper consists of 4 parts (Physics, Chemistry, Mathematics and Biology). Physics, Chemistry , Biology consists of 20 questions and Mathematics consists of 30 questions.
12. All questions are multiple choice questions. Each question has four choices **(a), (b), (c) and (d)** out of which **ONLY ONE** is correct.

13. Each correct answer carries 4 Mark, while 1 mark will be deducted for every wrong answer. [Guessing of answer is harmful]

SHARADA VIDYANIKETHANA PUBLIC SCHOOL & PU COLLEGE

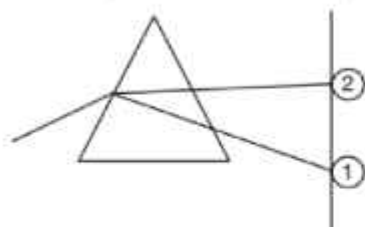
Devinagara, Talapady, Mangaluru - 23

PRATIBHA PRAVEENA EXAM 2022 - 23



- If a vertically projected body takes 3s to reach the maximum height, then what will be the time (in seconds) taken to reach half of the maximum height?
a. 0.88 b. 1.52 c. 2.15 d. 3.27
- What will be the acceleration (in ms^{-2}) of a body which is initially moving with a velocity of 10 ms^{-1} and attains a velocity of 20 ms^{-1} in 2s?
a. 2 b. 10 c. 5 d. 1
- It takes 5 minutes to boil water in an electric kettle. If the length of the coil in the kettle is changed to half of its original length, then what will be the time taken to boil the same amount of water, with the same power supply?
a. 2.5 min b. 5 min c. 10 min d. 20 min
- A car of mass 1,500 kg takes a turn along a curved road of radius of curvature 20 m, with a speed of 36 kmh^{-1} . Determine the static friction acting on it if the road is not banked.
a. 3,200 N b. 4,840 N c. 7500 N d. 8,500 N
- Calculate the work done by the gravity when an object of mass 50 kg is lifted upwards through a distance 20m.
a. 10^4 J b. -10^4 J c. 10^2 J d. -10^2 J
- A block of mass ' m ' is projected with a velocity v towards a spring of spring constant ' k '; which fixed on a rigid support. Determine the maximum compression of the spring [The surface is frictionless]
a. mvk b. $\sqrt{\frac{mv}{k}}$ c. $\sqrt{\frac{m}{k}} v$ d. $\sqrt{\frac{v}{mk}}$
- A weighing machine is placed in a lift which is descending with a uniform acceleration 3 ms^{-2} . If a body of mass 50 kg is placed on the weighing machine, then what will be the reading shown by it? (take $g = 10 \text{ ms}^{-2}$)
a. 350 N b. 650 N c. 500 N d. 250 N

8. When a light ray is passed through a prism, two different colours are seen on a screen as shown below. If μ_1, μ_2 and V_1 and V_2 are the refractive indices and velocities of these colours 1 and 2 respectively. Arrange the following steps to compare their refractive indices and velocity of light in the prism.
- Use the relation between refractive index and velocity of light.
 - Use the fact that higher the angle of deviation higher is the refractive index.
 - Compare the angle of deviation of the two colours.
 - Compare the velocity of light

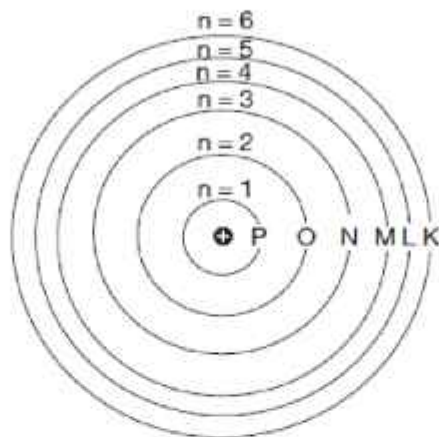


- ACBD
 - CBAD
 - ADBE
 - CDAB
9. A light ray of frequency 5×10^{14} Hz is travelling through water. If the refractive index of water is $\frac{4}{3}$. Then determine the wavelength?
- 450 nm
 - 500 nm
 - 700 nm
 - 600 nm
10. Which of the following will the focal length of a convex lens be maximum for?
- red light
 - yellow light
 - green light
 - blue light
11. A scooterist moves away from a wall with a speed of 54 kmh^{-1} . He blows horn when he is at a distance of 100 m from the wall. Determine the time after which he hears the echo of the horn. The velocity of sound in air is 340 ms^{-1} .
- 0.6 s
 - 0.9 s
 - 2.5 s
 - 3.45 s
12. The velocity of wave through a string is 15 ms^{-1} . If the string is held with a tension of 200 N and the mass of the string is 50 g, determine the length of the string.
- 62.5 cm
 - 5.6 cm
 - 16.3 cm
 - 22.5 cm
13. Two coils A and B are connected parallel to a battery. If the resistance of the coil A and B are 60Ω and 100Ω respectively and the heat developed in the coil B is 420 J in 20 s, then how much heat (in J) is produced in the coil A is 60s
- 4200
 - 2100
 - 1640
 - 1540
14. A force F is applied on a lawn mover at an angle of 60° with the horizontal. If it moves through a distance x then work done by force is
- $\frac{Fx}{2}$
 - $\frac{F}{2x}$
 - $2fx$
 - $\frac{2x}{f}$

15. The magnetic fields at two points P_1 and P_2 , which are at distances of r_1 and r_2 from a long straight current carrying conductor are 25 T and 5 T respectively. Write the following steps in sequence to find the ratio of r_1 to r_2
- Let the magnetic field be B_1 and B_2 at distances r_1 and r_2 respectively
 - Divide the two expressions to obtain the relation $\frac{B_1}{B_2} = \frac{r_2}{r_1}$; because i is the same.
 - Write the expressions for B_1 and B_2 at two points using $B = \frac{\mu_0 C}{2\pi r}$
 - Substitute the values of B_1 and B_2 to get the ratio of r_1 and r_2 .
- a. A C B D b. A D C B c. C B A D d. C B D A
16. The maximum horizontal range of a projectile on the earth is R . Then for the same velocity of projection, its maximum range on another planet $\frac{5R}{4}$. Then ratio of acceleration to gravity on that planet and on the earth is
- a. 5 : 4 b. 4 : 5 c. 25 : 16 d. 16 : 25
17. A particle is moving at uniform speed 2ms^{-1} along a circle of radius 0.5 m. The centripetal acceleration of particle is
- a. 1ms^{-2} b. 2ms^{-2} c. 4ms^{-2} d. 8ms^{-2}
18. An object is projected vertically upward with a velocity of 19.6ms^{-1} . Arrange the following physical quantities measured in the SI unit in the increasing order of their magnitudes at the end of 4s.
- distance travelled
 - displacement
 - acceleration
 - velocity
- a. ii , iv , iii , i b. i , iv , iii , ii c. iv , iii , ii , i d. ii , iii , iv , i
19. Which among the following is not a periodic motion?
- Motion of the pendulum of a clock
 - Motion of a load attached to a spring
 - Motion of molecules of a substance
 - Motion of a particle in the atmosphere
20. A stone is just dropped from the window of a train moving along a horizontal straight track with uniform speed. The path of the stone is
- A parabola for an observer standing by the side of the track
 - A horizontal straight line for an observer inside the train
 - Both a and b are true
 - a is true but b is false
21. Identify the set of three elements which can obey the Law of triads.
- Na, K, Rb
 - Be, Mg, Ca
 - F, Cl, Br
 - C, Si, Ge
22. Out of these, which is able to control fires?
- NH_3
 - H_2
 - CO_2
 - F_2

23. A sample of nitrogen pentoxide contains 4.2×10^{22} atoms. Calculate the number of moles of N_2O_5 in the above sample.
- a. 0.7 b. 0.1 c. 0.07 d. 0.01
24. The valence electronic configuration of four elements is given below. Which element has the highest ionization energy among the following?
- a. $2s^2 2p^3$ b. $2s^2$ c. $2s^2 2p^4$ d. $2s^2 2p^1$
25. During the formation of which of the following molecules, does hydrogen gain an electron?
- a. NH_3 b. HI c. H_2O d. NaH
26. Addition of which of the following electrolytes increases the conductance of water to the maximum extent?
- a. CH_3COOH b. H_2CO_3 c. NH_4OH d. $NaOH$
27. Which among the following gases possesses maximum density at a given temperature and pressure?
- a. Oxygen b. Carbon dioxide c. Nitrogen d. Sulphur dioxide
28. Burning coal in a closed room will produce
- a. Carbon monoxide b. Carbon dioxide
c. Oxygen d. Nitrogen oxides
29. Which of the following methods of separation is used in the refining of petroleum?
- a. Fractional evaporation b. Fractional distillation
c. Fractional crystallization d. Solvent extraction
30. The presence of impurities _____ of a liquid.
- a. Increases the boiling point b. Decreases the boiling point
c. Cannot alter the boiling point d. Increases the freezing point
31. Which of the following reactions will not take place ?
- a. $Zn + MgSO_4 \rightarrow ZnSO_4 + Mg$ b. $2KBr + Cl_2 \rightarrow 2KCl + Br_2$
c. $Zn + CuSO_4 \rightarrow ZnSO_3 + Cu$ d. $Mg + FeSO_4 \rightarrow MgSO_4 + Fe$
32. When green coloured ferrous sulphate crystals are heated, the colour of the crystal changes because
- a. It is decomposed to ferric oxide b. It forms SO_2
c. It loses water of crystallisation d. It forms SO_3
33. When SO_2 gas is passed through saturated solution of H_2S , which of the following reaction occurs?
- a. $SO_2 + H_2S \rightarrow H_2O + S$ b. $SO_2 + 2H_2S \rightarrow H_2O + 3S$
c. $SO_2 + 2H_2S \rightarrow 2H_2O + 3S$ d. $SO_2 + H_2O \rightarrow SO_3 + H_2$

34. The electrical conductivity of water is due to _____.
- The presence of dissolved salts
 - Low dielectric constant
 - High specific heat
 - High latent heat of vaporisation
35. Which among the following is a balanced chemical equation?
- $3\text{CuO} + 2\text{NH}_3 \rightarrow \text{Cu} + \text{N}_2 + 3\text{H}_2\text{O}$
 - $2\text{NH}_3 + \text{O}_2 \rightarrow 2\text{NO} + 3\text{H}_2\text{O}$
 - $2\text{Ca}_3(\text{PO}_4)_2 + 2\text{SiO}_2 \rightarrow 6\text{CaSiO}_3 + \text{P}_4\text{O}_{10}$
 - $\text{S} + 2\text{H}_2\text{SO}_4 \rightarrow 3\text{SO}_2 + 2\text{H}_2\text{O}$
36. Observe the following figure and identify the one which is in contradiction to the established facts.



- Distance between the orbits is not uniform.
 - Size of the nucleus is not in proportion to the size of the atom.
 - Naming of orbits is in the reverse order.
 - Nucleus is at the centre.
37. Arrange the carbonate, sulphate, chlorite, and hydroxide radicals in the order of number of oxygen atoms.
- Chlorite > carbonate > sulphate > hydroxide
 - Carbonate > hydroxide > chlorite > sulphate
 - Hydroxide < chlorite < carbonate < sulphate
 - Sulphate > chlorite > carbonate > hydroxide
38. A compound 'X' is an ionic compound. Which of the following is not the characteristic feature of X?
- X is soluble in water.
 - X is a good electrical conductor in solid state.
 - X melts at high temperature.
 - X is formed by transfer of electron(s).

39. Assertion (A): An ion is more stable than an atom.
Reason (R): An ion is a charged particle.
- Both A and R are true and R is the correct explanation of A.
 - Both A and R are true, but R is not the correct explanation of A.
 - A is true and R is false.
 - A is false and R is true.
40. A non-metal can occupy _____.
- The left portion of the periodic table
 - The right portion of the periodic table
 - The middle portion of the periodic table
 - Any place in the periodic table depending on its atomic number
41. If distances of a point from X-axis and Y-axis are 7 and 2 respectively, then the possible coordinates of the point may be :
- (-2, 7)
 - (-7, 2)
 - (2, 0)
 - (0, -7)
42. If 20 workers working 8 hours a day can make 150 articles in 10 days, how many days will it take to make 200 articles by 10 workers working 12 hours a day?
- $\frac{80}{9}$
 - $\frac{40}{3}$
 - $\frac{160}{9}$
 - $\frac{200}{9}$
43. If (3, 6), (2, -2), and (4, 3) are three vertices of a parallelogram taken in order, the fourth vertex is :
- (-1, 8)
 - (5, 11)
 - (1, -8)
 - (-5, -11)
44. HCF and LCM of $4x^2y^3$, $6x^3y^2$, $8x^2y$ are _____ and _____ respectively.
- $2x^2y$, $24x^3y^3$
 - $2xy$, $48x^3y^3$
 - $2x^2y$, $24x^4y^3$
 - $2x^2y$, $192x^7y^6$
45. If the sum of the first n terms of an A.P. is equal to $\frac{3n^2-n}{2}$ then its 25th term is equal to :
- 73
 - 75
 - 77
 - 79
46. The ratio of radii of two right circular cones is 5:6 and that of their altitudes is 3:4, then the ratio of their volumes is equal to :
- $\frac{23}{48}$
 - $\frac{25}{48}$
 - $\frac{9}{16}$
 - $\frac{5}{8}$
47. A solid cylinder of radius 6 cm and height 20 cm is melted to form solid spherical beads of diameter 5 mm. Number of beads formed is equal to :
- 86400
 - 172800
 - 345600
 - 691200
48. ABCD is a cyclic quadrilateral. If $\angle BDC = 35^\circ$ and $\angle CAD = 60^\circ$, then $\angle BCD =$ _____
- 95°
 - 90°
 - 85°
 - 80°
49. The value of the expression $\cos^2(2\theta + 50^\circ) + \cos^2(40^\circ - 2\theta)$ is equal to :

- changed so that expenditure on petrol increases by 15% ?
- a. 10 % decrease b. 8 % decrease c. 10 % increase d. 8 % increase
63. In $\triangle ABC$, AD, BE and CF are medians which are concurrent at G. If area of $\triangle ABC$ is 48 square units, area of $\triangle GAB$ and $\triangle GDC$ are respectively are :
- a. 32 & 16 b. 20 & 10 c. 24 & 12 d. 16 & 8
64. Bisectors of $\angle A$, $\angle B$ and $\angle C$ meet BC, AC and AB in M, N and L respectively. These bisectors meet at I. If $\angle AIC = 125^\circ$, then $\angle B =$ _____
- a. 70° b. 55° c. 62.5° d. 35°
65. In $\triangle ABC$, perpendicular bisectors of AB, BC and AC meet BC, AC and AB meet in P. If $\angle A = 50$, then $\angle BPC =$ _____
- a. 115° b. 130° c. 100° d. 140°
66. If $(x + 2)$ is a factor of the polynomial $P(x) = x^4 + kx^3 - 13x^2 - 14x + 24$, then $k =$ _____
- a. 2 b. - 13 c. - 14 d. 24
67. The angle between the minute hand and the hour hand of at 11:20 O'clock is :
- a. 105° b. 135° c. 140° d. 155°
68. The sum of all numbers between 500 and 900 that are divisible by 7 is equal to :
- a. 59500 b. 79100 c. 39900 d. 20300
69. If $(x - 2)^2 + (y + 3)^2 + (z - 4)^2 = 0$ then the value of $x^2 + y^2 + z^2$ is equal to :
- a. 29 b. 26
c. 9 d. Cannot be determined
70. The missing number in the series 2, 10, 30, _____, 130, 222, is
- a. 60 b. 68
c. 72 d. Cannot be determined
71. The new individual grows out of the parent's body in:
- a. Hydra b. Amoeba c. Paramecium d. Plasmodium
72. Which of the following regions of the alimentary canal of human beings does not secrete a digestive enzyme?
- a. Oesophagus b. Stomach c. Duodenum d. Buccal cavity
73. Klinostat is employed in the study of
- a. Osmosis b. Growth movements c. Photosynthesis d. Respiration
74. Nissl's granules are seen in?
- a. Synapse b. Cyton c. Axon d. Dendron
75. The most intelligent ape is:
- a. Gibbon b. Orangutan c. Gorilla d. Chimpanzee
76. Which of the following called as amphibians of plant group?
- a. Algae b. Mosses c. Ferns d. Pine

77. A healthy person eats the following diet 5 gm raw sugar 4 gm albumin, 10 gm pure buffalo ghee adulterated with 2 gm vegetable ghee and 5 gm lignin. How many calories he is likely to get?
- a. 126 b. 164 c. 112 d. 144
78. In humans, the brain reaches its adult size at about _____.
- a. 1 year b. 2 year c. 4 year d. 6 year
79. What is the total number of muscles in the human body?
- a. 256 muscles b. 639 muscles c. 400 muscles d. 421 muscles
80. Insectivorous plants catch insects for obtaining
- a. Na – K b. Taste c. Phosphorus d. Nitrogen
81. How many kinds of cells are found in islet of Langerhans?
- a. 1 b. 2 c. 4 d. 5
82. In the human body, which of the following organs is the blood bank?
- a. Heart b. Lungs c. Spleen d. Liver
83. Choose the correct answer from the alternatives given. Blood flows through blood vessels because of:
- a. Its viscosity b. Establishment of a pressure gradient
c. Elasticity of the veins d. Length of the blood vessels
84. Extinction of a species in a food chain is compensated in:
- a. Ecological pyramid b. Food web
c. Food chain d. Energy pyramid
85. The process of accumulation of harmful chemical substances like pesticides, in the body of living organisms at each trophic level of a food chain is known as:
- a. Biological magnification b. Biological accumulation
c. Chemical magnification d. Chemical accumulation
86. Read the following five statements (i) to (v) regarding left cerebral hemisphere and select the option that correctly states the true (T) and false (F) statements.
- i. It receives most modalities of sensory information from the right side of the body.
ii. It is usually larger than the right cerebral hemisphere.
iii. It is the dominant cerebral hemisphere in most individuals.
iv. It is connected to the right cerebral hemisphere by the corpus callosum.
v. It contains the main areas for the understanding and production of speech in most individuals.
- a. (i) - T, (ii) - T, (iii) - F, (iv) - F, (v) - F b. (i) - T, (ii) - F, (iii) - T, (iv) - T, (v) - T

87. What is the PAR range?
- a. 200 nm – 80 Lenticels
 - b. 400 nm – 700 nm
 - c. 350 nm – 550 nm
 - d. 600 nm – 100 nm
88. Which one is not a difference between Prokaryotic and Eukaryotic cell?
- a. Number of chromosomes
 - b. Presence of cell wall
 - c. Presence of nuclear membrane
 - d. Presence of membrane bounded organelles
89. A group of laboratory mice having tails are bred together and their progeny is studied. The progeny had tails. However, scientist surgically removed the tails of the progeny and again bred them for four successive generations. What do you think would be the nature of the new progeny?
- a. All mice born will have tails.
 - b. All mice born will have no tails.
 - c. The ratio of tail-less to tailed mice will be 1:3.
 - d. The ratio of tail less to tailed mice will be 1:4.
90. Why sugars are not as good as fats as a source of energy for cellular respiration?
- a. Produce toxic amino groups when broken down.
 - b. Contain more hydrogen.
 - c. Usually bypass glycolysis and the Krebs cycle.
 - d. Contain fewer hydrogen atoms and electrons.

😊😊😊😊😊 **Best of Luck** 😊😊😊😊😊



**SHARADA VIDYANIKETHANA PUBLIC SCHOOL
&
PU COLLEGE**

PRATIBHA PRAVEENA SCHOLARSHIP EXAMINATION

INSTRUCTIONS

1. The booklet is your Question Paper. Do not break the seal of this booklet before being instructed to do so by the invigilator.
2. The question paper Series CODE is printed on the right hand top corner of this sheet.
3. Blank spaces and blank pages are provided in the question paper for your rough work. No additional sheets will be provided for your rough work.
4. Blank papers, clipboards, log tables, slide rules, calculators, camera, cellular phones, papers and electronic gadgets are **NOT** allowed inside the examination hall.
5. Write your name and Form number in the space provided on the back cover of this booklet.
6. The answer sheet, a machine – readable Optical Mark Recognition (OMR), is provided separately.
7. **DO NOT TAMPER WITH/MUTILATE THE OMR OR THE BOOKLET**
8. On breaking the seal of the booklet check that it contains 8 pages and all the 90 questions and corresponding answer choices are legible.
9. A candidate has to write his/ her answer in the OMR sheet by appropriate bubble with the help of **Black/Blue ball point pen** as the correct answer (s) of the question attempted.
10. Write all information and sign in the box provided on part of the **OMR**.
11. The duration of test is **2 Hours** and question paper contains **90 questions**. The **Max marks are 360**. Question Paper consists of 4 parts (Physics, Chemistry, Mathematics and Biology). Physics, Chemistry , Biology consists of 20 questions and Mathematics consists of 30 questions.
12. All questions are multiple choice questions. Each question has four choices **(a), (b), (c) and (d)** out of which **ONLY ONE** is correct.

13. Each correct answer carries 4 Mark, while 1 mark will be deducted for every wrong answer. [Guessing of answer is harmful]

SHARADA VIDYANIKETHANA PUBLIC SCHOOL & PU COLLEGE

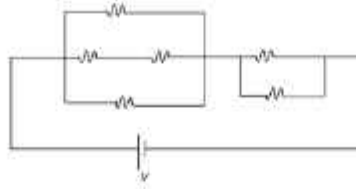
Devinagara, Talapady, Mangaluru - 23

PRATIBHA PRAVEENA EXAM 2022 - 23

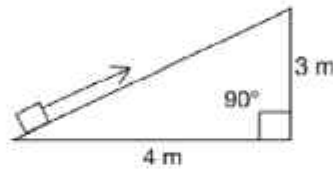


1. A car moving with 120 km/hr. On seeing the speed breaker, the driver applies the brakes and stops the car in 4s. What is the value of the deceleration produced in the car in ms^{-2} ?
a. $\frac{-175}{5}$ b. $\frac{25}{3}$ c. $\frac{-3}{25}$ d. $\frac{-25}{3}$
2. A cyclist moves the first half of the distance with 10 km/hr speed and the second half of the distance with speed V km/hr. If the average speed of the cycle is 15 km/hr, then the value of V is _____ km/hrs.
a. 5 b. 15 c. 20 d. 30
3. A constant force 100 N acts on a body for 8s for changing its momentum. What is the change of momentum of the body (in Ns)?
a. 400 b. 800 c. 200 d. 100
4. The time period of a pendulum of length 'l' and mass of the bob 'm' is T. The time period of a pendulum with mass of the bob 2m and length l is
a. T b. 2T c. 3T d. 4T
5. A sound wave is travelling from air to water. The velocity of the sound waves in air 340 m/s and wavelength is 2m. If the wave length of the sound wave in water is 1050 cm, then its velocity of wave in water is
a. 1785 m/s b. 1.785 m/s c. 1.785 pm/s d. 1585 m/s
6. What is the number of images formed when the angles between two mirror is 72° ?
a. 4 b. 5 c. 6 d. 3
7. A electric fan consumes 1500 J of electrical energy in half minute. The power of the fan is
a. 50 watt b. 150 J s^{-1} c. 45 watt d. 200 J s^{-1}
8. Consider a bar magnet of pole strength m and with effective length 2l. If the bar magnet is made into two pieces along its equatorial line, then its magnetic moment is
a. lm b. $\frac{lm}{2}$ c. 2lm d. $\frac{lm}{4}$

9. SI unit of an electric charge is
 a. volt b. ampere c. coulomb d. farady
10. Six identical bulbs B_1, B_2, B_3, B_4, B_5 and B_6 are connected to a cell in the following manner. If $V = 20V$ and the resistance of the each bulb is $= 2 \Omega$, then the total current in the given circuit is



- a. 40 A b. 4.11 A c. 16.6 A d. 1.6 A
11. A car of mass 1500 kg moving at a speed of 90 kmh^{-1} collides with another car at rest. After collision both have a common velocity of 50 kmh^{-1} . The mass of the car which is initially at rest is _____ kg.
 a. 1100 b. 1200 c. 1300 d. 1400
12. If a body of mass 5 kg dragged along the frictionless inclined plane with constant velocity as shown in the figure, then effort (P) required to drag the body is _____ ($g = 10 \text{ ms}^{-2}$)



- a. $30 \times 10^2 \text{ N}$ b. 30 N c. 300 N d. 500 N
13. The pressure at the bottom of a container filled with a liquid of density 5 gcm^{-3} is _____ Pa at the depth 20 cm from the surface (Take the atmospheric pressure as 10^5 Pa)
 a. 1.1×10^5 b. 2.1×10^5 c. 8×10^4 d. 7×10^4
14. A body of mass 20 gm is moving with a certain velocity. It collides with another body of mass 80 gm at rest. The collision is perfectly inelastic. The ratio of the kinetic energies before and after collision of the system is
 a. 2 : 1 b. 4 : 1 c. 5 : 1 d. 8 : 2
15. Three uniform spheres each of mass m and diameter D are kept in such a way that each touches the other two, then magnitude of the gravitational force on any one sphere due to the other two is
 a. $\frac{3 Gm^2}{D^2}$ b. $\frac{2\sqrt{3} Gm^2}{D^2}$ c. $\frac{\sqrt{3} Gm^2}{4 D^2}$ d. $\frac{\sqrt{3} Gm^2}{D^2}$
16. If l_1, l_2 and r_1 and r_2 are the length and radius of cross section of two wires made of the same material and $\frac{l_1 r_2^2}{l_2 r_1^2} = \frac{1}{4}$, then the ratio of resistance of two wires is
 a. 4 : 1 b. 1 : 16 c. 1 : 4 d. 16 : 1

17. If the length of a seconds pendulum is increased by 2% then in a day the pendulum
- loses 100 min
 - gains 1747 min
 - gains 764 s
 - loses 844 s
18. What is the period of a geostationary satellite?
- 24 min
 - 30 hr
 - 48 hr
 - one mean solar day
19. What happens when magnet is broken into two parts?
- The smaller part acts like the north pole
 - The bigger part acts like north pole
 - Both the parts will have the both poles
 - Polarity of each part depends upon the material
20. Assertion : The work done by the gravity on an ascending body is negative.
Reason : The displacement and gravitational force are opposite in direction.
- Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 - Assertion is true but Reason is false
 - Both Assertion and Reason are false
21. Pressure cooker reduces the cooking time. Choose the correct reason from given options.
- Pressure inside the cooker is more, so boiling point of water decreases.
 - Pressure inside the cooker is less, so boiling point of water decreases.
 - Pressure inside the cooker is more, so boiling point of water increases.
 - Generally, cookers are made up of aluminium metal, which is a good conductor of heat.
22. A and B are two gases taken in two different cylinders at 45°C. Their critical temperatures are 40°C and 50°C, respectively. Which of the following statements is correct?
- Only gas A can be liquefied by applying pressure at that temperature.
 - Only gas B can be liquefied by applying pressure at that temperature.
 - Both the gases can be liquefied by applying pressure at that temperature.
 - None of the gases can be liquefied by applying pressure at that temperature.
23. The following are the four salts along with their characteristic reactions. Identify the incorrect match.
- Sodium potassium carbonate + BaCl_2 solution \rightarrow White precipitate
 - Bleaching powder + $\text{NaOH} \rightarrow$ Milky white precipitate
 - Mohr's salt + $\text{NaOH} \rightarrow$ Dirty green precipitate
 - Potassium ferricyanide + $\text{NaOH} \rightarrow$ Reddish brown precipitate
24. According to Rutherford's atomic model, _____.
- Protons are the lightest positively charged particles
 - Electrons rotate in the opposite spin to the rotation of protons
 - Electrons revolve around the nucleus in certain fixed paths

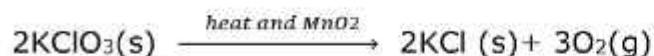
d. Electrons revolve around the nucleus with high velocity

25. Assertion(A): Atoms of the same element possess the same number of total fundamental particles.

Reason(R): Atomic number is the characteristic of an element.

- Both A and R are true and R is the correct explanation of A.
- Both A and R are true, but R is not the correct explanation of A.
- A is true and R is false.
- A is false and R is true.

26. The following reaction is used for the preparation of oxygen gas in the laboratory



Which of the following statement(s) is (are) correct about the reaction ?

- It is a combination reaction
- It is a decomposition reaction and endothermic in nature
- It is a decomposition reaction and accompanied by release of heat
- It is a photochemical decomposition reaction and exothermic in nature

27. Which one of the following processes involve chemical reactions ?

- Storing of oxygen gas under pressure in a gas cylinder
- Heating copper wire in presence of air at high temperature
- Keeping petrol in a china dish in the open
- Liquefaction of air

28. Identify the true statement regarding oxygen.

- O_2 is highly soluble in water.
- O_2 is insoluble in water.
- O_2 is slightly soluble in water.
- O_2 is lighter than air.

29. On converting 25°C , 38°C and 66°C to Kevlin scale, the correct sequence of temperature will be.....

- 273 K, 278 K and 543 K
- 298 K, 300 K and 338 K
- 298 K, 311 K and 339 K
- 298 K, 310 K and 338 K

30. The property of flow is unique to fluids. Which one of the following statements is correct?

- Only gases behave like fluids
- Gases and solids behave like fluids
- Only liquids are fluids
- Gases and liquids behave like fluids

31. Which of the following reactions takes place at the anode when aqueous solution of CuSO_4 is electrolysed using platinum as anode?

- Hydroxyl ions get reduced to hydrogen
- Hydroxyl ions get oxidized to oxygen
- Copper metal gets oxidized
- Copper ions gets reduced

32. Which of the following is the correct electronic configuration of an element with atomic

number 29?

- a. 2, 8, 18, 1 b. 2, 8, 17, 2 c. 2, 9, 16, 2 d. 2, 18, 9

33. Which of the following molecules is non-polar?

- a. NH_3 b. ClF_3 c. BF_3 d. PCl_3

34. Arrange the following compounds and their corresponding names are mismatching.

(I) $\text{CH}_3\text{CH}_2\text{OH}$ - Ethanol

(II) CH_3CHO - Ethanal

(III) CH_3COCH_3 - Methoxyethane

(IV) $\text{CH}_3\text{-O-C}_2\text{H}_5$ - Propanone

- a. III,IV b. I,II c. II,III d. I,IV

35. $2\text{AgI(s)} \xrightarrow{\text{sun light}} 2\text{Ag(s)} + \text{I}_2\text{(s)}$. The colour of iodine is

- a. green b. brown c. purple d. pink

36. If 'a' is the number of electrons in a dispositive ion and it has three neutrons more than the number of protons, identify the atomic number and mass number.

- a. $a + 2, a + 5$ b. $a + 2, 2a + 7$ c. $a + 5, 2a + 7$ d. $a + 5, 2a + 5$

37. Which of the following species has the largest radius?

- a. O^{2-} b. F^- c. Na^+ d. Mg^{+2}

38. Identify the molecule in which the central atom is said to possess expanded octet.

- a. CF_4 b. BF_3 c. PCl_5 d. SCl_2

39. Which of the following statements about the given reaction are correct ?



- i. Iron metal is getting oxidized
ii. Water is getting reduced
iii. Water is acting as reducing agent
iv. Water is acting as an oxidising agent

- a. (i), (ii) and (iii) b. (i), (ii) and (iv) c. (iii) and (iv) d. (ii) and (iv)

40. Passing excess CO_2 through milky lime water makes it clear due to the formation of _____.

- a. CaCO_3 b. Na_2CO_3 c. NaHCO_3 d. $\text{Ca}(\text{HCO}_3)_2$

41. If 20 workers working 8 hours a day can make 150 articles in 10 days, how many articles can be made by 15 workers working 10 hours a day in 12 days?

- a. $\frac{675}{4}$ b. $\frac{225}{2}$ c. $\frac{425}{4}$ d. 75

42. ABCD is a cyclic quadrilateral. If $\angle \text{BDC} = 40^\circ$ and $\angle \text{CAD} = 50^\circ$, then $\angle \text{BCD} =$ _____

- a. 95° b. 90° c. 85° d. 80°

43. If $73x + 37y = 82$ and $37x + 73y = 28$, then (x, y) is equal to :

- a. $(\frac{50}{40}, -\frac{10}{40})$ b. $(\frac{50}{20}, -\frac{10}{20})$ c. $(\frac{10}{40}, -\frac{50}{40})$ d. $(-\frac{10}{40}, \frac{50}{40})$

44. If $a + \frac{1}{a} = 4$ then $a^6 + \frac{1}{a^6} =$ _____

- a. 2696 b. 2699 c. 2702 d. 2705

45. The sum of all numbers between 300 and 1100 that are divisible by 7 is equal to :
- a. 59500 b. 79100 c. 39900 d. 80500
46. ABCD is a parallelogram. DC is produced to E such that $DE = 5CE$ and AE meets BC in F. If the area of ΔABF is 24 square units, then the area of ΔFCE is equal to :
- a. 6 b. 4.5 c. 3 d. 1.5
47. If distances of a point from X-axis and Y-axis are 5 and 2 respectively, then the possible coordinates of the point may be :
- a. $(-2, 0)$ b. $(0, -5)$ c. $(5, -2)$ d. $(2, -5)$
48. The smallest number not smaller than 7000 that leaves equal remainder 9 every time when divided by 12, 18 or 28 is :
- a. 7065 b. 7060 c. 7050 d. 7055
49. In ΔABC , $\angle B = 90^\circ$. M and N are points on AB and AC respectively. If $AB = 4$, $BC = 6$, $AN = 6$ and $CM = 7$, then $MN =$ _____
- a. $\sqrt{35}$ b. 6 c. $\sqrt{33}$ d. $4\sqrt{2}$
50. If $(x + 2)$ is a factor of the polynomial $P(x) = x^4 + 2x^3 + kx^2 - 14x + 24$, then $k =$ _____
- a. 2 b. -13 c. -14 d. 24
51. If $(2, 5)$, $(1, 0)$, and $(1, 3)$ are three vertices of a parallelogram taken in order, the fourth vertex is :
- a. $(1, 2)$ b. $(0, 8)$ c. $(3, 8)$ d. $(3, 0)$
52. In a family every boy has $\frac{5}{3}$ times as many sisters as brothers and every girl has as many brothers as sisters. How many children are there in the family?
- a. 9 b. 11 c. 13 d. 15
53. If $\cos\theta = \frac{12}{13}$, then the value of the expression $\frac{1-\sin\theta}{\cos\theta}$ is :
- a. $\frac{2}{3}$ b. $\frac{3}{4}$ c. $\frac{3}{2}$ d. $\frac{4}{3}$
54. If $P_1, P_2, P_3, \dots, P_9$ divide the join of the points $(14, 13)$ and $(4, 3)$ into 10 equal parts, then coordinates of P_7 are _____
- a. $(7, 6)$ b. $(6, 7)$ c. $(\frac{15}{2}, \frac{11}{2})$ d. $(\frac{11}{2}, \frac{15}{2})$
55. In ΔABC , AD, BE and CF are medians which are concurrent at G. If area of ΔABC is 72 square units, area of ΔGAB and ΔGDC are respectively are :
- a. 32 & 16 b. 20 & 10 c. 24 & 12 d. 16 & 8
56. The angle between the minute hand and the hour hand of at 1:30 O'clock is :
- a. 105° b. 135° c. 140° d. 155°
57. If HCF of $156x + 91y$ is equal to $156x + 91y$, then (x, y) is equal to :
- a. $(5, -3)$ b. $(-5, 3)$ c. $(-3, 5)$ d. $(3, -5)$

58. If the sum of the first n terms of an A.P. is equal to $\frac{3n^2+n}{2}$ then its 30th is equal to :
- a. 83 b. 85 c. 87 d. 89
59. Two chords AB and CD of a circle meet in a point P inside the circle. If PA = 8, PB = 5 and CD = 14, then PC = _____
- a. 4 or 10 b. 16 or 2.5 c. 2 or 20 d. 6 or 7
60. Bisectors of $\angle A$, $\angle B$ and $\angle C$ meet BC, AC and AB in M, N and L respectively. These bisectors meet at I. If $\angle AIC = 135^\circ$, then $\angle B =$ _____
- a. 60° b. 75° c. 90° d. 45°
61. The ratio of radii of two right circular cones is 3:4 and that of their altitudes is 5:6, then the ratio of their volumes is equal to :
- a. $\frac{15}{32}$ b. $\frac{18}{32}$ c. $\frac{30}{32}$ d. $\frac{36}{32}$
62. Reflex of Supplementary of complimentary of $(80 - 2x)$ is :
- a. $190 + 2x$ b. $200 + 2x$ c. $210 + 2x$ d. $220 + 2x$
63. In $\triangle ABC$, perpendicular bisectors of AB, BC and AC meet BC, AC and AB meet in P. If $\angle A = 60^\circ$, then $\angle BPC =$ _____
- a. 120° b. 130° c. 100° d. 140°
64. A solid cylinder of radius 6 cm and height 20 cm is melted to form solid spherical beads of diameter 4 mm. Number of beads formed is equal to :
- a. 67500 b. 33750 c. 22500 d. 15,000
65. The value of the expression $\sin^2(3\theta + 10^\circ) + \sin^2(80^\circ - 3\theta)$ is equal to :
- a. 0 b. 1 c. 2 d. None of these
66. HCF and LCM of $10x^2y^3$, $25x^3y^2$, $40x^2y$ are _____ and _____ respectively.
- a. $5x^2y$, $200x^3y^2$ b. $5xy$, $200x^3y^3$ c. $5x^2y$, $40x^3y^3$ d. $5x^2y$, $10000x^7y^6$
67. If α and β are roots of the equation $2x^2 + 7x + 2 = 0$, then the equation, roots of which are $\frac{1}{3\alpha}$, $\frac{1}{3\beta}$ is :
- a. $18x^2 - 21x + 7 = 0$ b. $18x^2 + 21x + 7 = 0$
c. $18x^2 - 21x + 2 = 0$ d. $18x^2 + 21x + 2 = 0$
68. If price of petrol increases by 20%, by what per cent should the consumption of petrol be changed so that expenditure on petrol increases by 26% ?
- a. 5% decrease b. 6% decrease
c. 5% increase d. 6% increase
69. If $(x - 2)^2 + (y + 3)^2 + (z - 4)^2 = 0$ then the value of $xy + yz + zx$ is equal to :
- a. - 29 b. - 26
c. - 10 d. Cannot be determined
70. The missing number in the series 0, 6, 24, 60, _____, 210 is

a. 80

b. 100

c. 120

d. Cannot be determined

71. The water lost by transpiration is:

a. Pure water

b. Rich in dissolved salts

c. Rich dissolved minerals

d. Rich in carbohydrates

72. More concentration of auxin in horizontally placed plants, under the influence of gravity, occurs in

a. Upper side

b. Lower side

c. Both upper and lower side

d. None of these

73. Secondary treatment in sewage treatment plant involves:

a. Biological treatment

b. Physical treatment like sedimentation

c. Chemical treatment

d. Passing ultraviolet radiations

74. Choose the wrong enzymatic reaction.

a. $Sucrose \xrightarrow{Invertase} Glucose + Fructose$

b. $Lactose \xrightarrow{Lactase} Glucose + Fructose$

c. $Pepsinogen \xrightarrow{HCl} Pepsin$

d. $Maltose \xrightarrow{Maltase} Glucose + Glucose$

75. What does the half-leaf experiment prove?

a. light is essential for photosynthesis

b. CO_2 is essential for photosynthesis

c. O_2 is released during photosynthesis

d. chlorophyll is essential for photosynthesis

76. During the early stages of alcoholic fermentation there is a high rate of yeast growth. After some time the rate decreases. Which of the following conditions in the culture medium is least likely to have caused this?

a. Depletion of glucose

b. Depletion of oxygen

c. Depletion of mineral salts

d. Accumulation of waste products

77. In hydrophytes, stomata are

a. Not required

b. Seen only on the upper epidermis

c. Absent or rudimentary

d. Seen only on the lower epidermis

78. The parents contain two alleles. During gamete formation, the factors or alleles of a pair separate from each other such that a gamete receives only one of the two factors. This process is called

a. Dominance

b. Co-dominance

c. Segregation

d. Independent assortment

79. Aakash has a swollen neck. He is losing his weight from last few months drastically. When checked, the heart rate also seems to be increased. He claims that he is not able to sleep properly and he feels restless. What can be the probable diagnosis of this situation?

a. Hyperthyroidism

b. Hypothyroidism

c. Diabetes Mellitus

d. Insomnia

80. In humans, which is the joint found between the sternum and the ribs?

a. Angular joint

b. Fibrous joint

c. Cartilaginous joint

d. Gliding joint

81. Which of the following leads to occurrence of 'Minamata' disease in Japan??

a. Air pollution

b. Soil pollution

c. Water pollution

d. Noise pollution

82. Consider the following statements:

(a) Wastes are of two types, biodegradable and non-biodegradable.

(b) Biodegradable wastes should be separated and kept in blue colour bins for garbage collectors.

(c) Ozone is formed in stratosphere by action of ultraviolet radiations on oxygen.

Which of the above statements are correct?

a. (a) and (b)

b. (b) and (c)

c. (a) and (c)

d. None of these

83. A brown-eyed couple has a blue-eyed child. The trait of brown eye (B) is dominant over that of blue-eyed (b). What is the genotype of the couple?

a. Bb x Bb

b. BB x BB

c. BB x Bb

d. BB x bb

84. How much time does the cardiac cycle in man take?

a. 0.5 seconds

b. 1.0 second

c. 1.2 seconds

d. 0.8 seconds

85. Characters that are transmitted from parents to offspring during reproduction show:

a. Only similarities with the parents

b. Only variations with the parents

c. Both similarities and variations with parents

d. Neither similarities nor variations

86. Testes in mammals descend into scrotum because

a. Scrotum acts as a passage for the transportation of sperms

b. Scrotum provides nutritional material to the sperm

c. Scrotum acts as the climate control system for testes

d. Scrotum provides a disease prone medium to the sperm outside the body.

87. The number of nephrons in a kidney is equal to

a. The sum of Bowman's capsule and malpighian bodies

b. The number of Bowman's capsules

c. The sum of Bowman's capsules and glomeruli

d. Double the number of Bowman's capsules

88. Which one of the following can be considered as an example of secondary consumer?
- A fish that feeds on algae.
 - A hawk that feeds on a mouse that feeds on an insect.
 - A plant that is parasitic on another plant.
 - A lion that eats a gazelle that feeds on grass.
89. An investigator places an isolated neuron in a calcium-free medium, gives the neuron a suprathreshold stimulus and then performs an assay to test whether neurotransmitter is released into the medium. Which of the following outcomes would you predict?
- No neurotransmitter is detected since influx of calcium into the synaptic knob is required for neurotransmitter release.
 - No neurotransmitter is detected since influx of calcium is required in order for the neuron to conduct an action potential.
 - Neurotransmitter is detected since calcium is not required for action potential conduction and the initial stimulus was suprathreshold.
 - We cannot predict the outcome without knowing whether the neuron was myelinated or non-myelinated.
90. Abhi conducted an experiment to investigate what would happen when different cell organelles of a balsam plant leaf are removed. The results are recorded in the table given. Identify the cell parts P, Q, R and S.

Cell parts	Out comes
P	The cell cannot function properly
Q	Iodine solution remains yellowish brown
R	The cell cannot control the entry and exit of the substances
S	The cell loses its regular shape

	P	Q	R	S
a.	Nucleus	Chloroplast	Cell wall	Cytoplasm
b.	Cytoplasm	Chloroplast	Nucleus	Cell membrane
c.	Nucleus	Chloroplast	Cell membrane	Cell wall
d.	Nucleus	Chloroplast	Cell wall	Cell membrane

😊😊😊😊😊 **Best of Luck** 😊😊😊😊😊



**SHARADA VIDYANIKETHANA PUBLIC SCHOOL
&
PU COLLEGE**

PRATIBHA PRAVEENA SCHOLARSHIP EXAMINATION

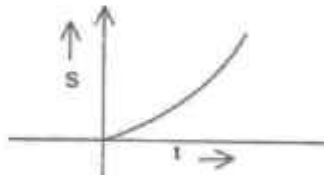
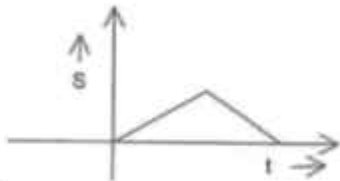
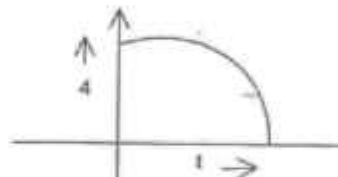
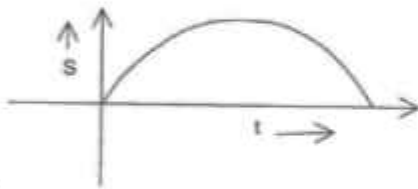
INSTRUCTIONS

1. The booklet is your Question Paper. Do not break the seal of this booklet before being instructed to do so by the invigilator.
2. The question paper Series CODE is printed on the right hand top corner of this sheet.
3. Blank spaces and blank pages are provided in the question paper for your rough work. No additional sheets will be provided for your rough work.
4. Blank papers, clipboards, log tables, slide rules, calculators, camera, cellular phones, papers and electronic gadgets are **NOT** allowed inside the examination hall.
5. Write your name and Form number in the space provided on the back cover of this booklet.
6. The answer sheet, a machine – readable Optical Mark Recognition (OMR), is provided separately.
7. **DO NOT TAMPER WITH/MUTILATE THE OMR OR THE BOOKLET**
8. On breaking the seal of the booklet check that it contains 8 pages and all the 90 questions and corresponding answer choices are legible.
9. A candidate has to write his/ her answer in the OMR sheet by appropriate bubble with the help of **Black/Blue ball point pen** as the correct answer (s) of the question attempted.
10. Write all information and sign in the box provided on part of the **OMR**.
11. The duration of test is **2 Hours** and the question paper contains **90 questions**. The **Max marks allotted is 360**. Question Paper consists of 5 sections (Physics, Chemistry, Mathematics , Biology & General Ability). Physics,Chemistry,Mathematics,Biology section consists 20 questions each and General Ability section consists 10 questions.
12. All questions are multiple choice questions. Each question has four choices (a), (b), (c) and (d) out of which **ONLY ONE** is correct.
13. Each correct answer carries **4 Mark**, while **1 mark will be deducted for every wrong answer**. [Guessing of answer is harmful]


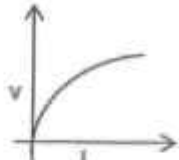
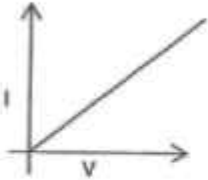
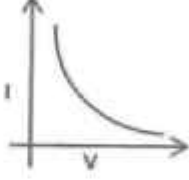
PRATIBHA PRAVEENA EXAM 2023 - 24



1. A transformer works with
 - a. AC voltage only
 - b. DC voltage only
 - c. Both a and b
 - d. None of these
2. If the radiations from a radioactive substance, in the presence of an electric field, deflect towards the anode, the rays are
 - a. α - rays
 - b. β - rays
 - c. γ - rays
 - d. X - rays
3. The displacement - time graph for a body thrown vertically up and falling back to the point of projection is _____



4. An object is released from a balloon rising up with a constant speed of 2 ms^{-1} . Its magnitude of velocity after 1 s is _____ ms^{-1} .
 - a. 5.3
 - b. 7.8
 - c. 2.8
 - d. 6.4
5. The momentum of a body of mass 0.5 kg dropped from a certain height (h), when it reaches the ground is 10 N s. The value h is _____ m. (take $g = 10 \text{ ms}^{-2}$)
 - a. 20
 - b. 40
 - c. 10
 - d. 80
6. The ratio of frequencies of 1st and 2nd overtones produced in the vibrating stretched strings which is fixed at both ends is _____
 - a. 1:3
 - b. 3:2
 - c. 2:3
 - d. 1:2

7. A body is floating in a given liquid with half of its volume above the surface of the liquid. If the body is slightly pushed into the liquid, then the body
- Sinks in the liquid and settles at the bottom
 - Come back to its position after some time
 - Starts oscillating in vertical direction with constant amplitude
 - It jumps into the air and falls on the liquid
8. Which of the following graphs represents a ohmic conductor?
- 
 - 
 - 
 - 
9. A ball is thrown with velocity 60 ms^{-1} making an angle 60° with the horizontal. Determine the ratio of horizontal displacement in the 1st, 2nd and 3rd seconds.
- 4 : 3 : 1
 - 3 : 2 : 1
 - 1 : 1 : 1
 - 1 : 2 : 3
10. The ratio of the length of the two wires made of the same material is 1:3 and their volumes are in the ratio of 2:3. What is the ratio of their resistances?
- 1:3
 - 3:2
 - 1:4
 - 1:6
11. A bulb is rated $60 \text{ W} - 230 \text{ V}$. How much will be the current (in A) flowing through it, when connected to 115 V ?
- 0.5
 - 0.23
 - 0.023
 - 0.13
12. The kinetic energy of a body of mass 5 kg is 200 J . Calculate the momentum (in kg ms^{-1}) of the body.
- $20\sqrt{5}$
 - $\sqrt{125}$
 - $\sqrt{175}$
 - $\sqrt{200}$
13. A current of 20 A is passed through the primary coil of a transformer. The ratio of the number of turns in the primary to that in the secondary coil of the transformer is 1:5. Determine the output current.
- 10 A
 - 4 A
 - 8 A
 - 16 A
14. Choose the incorrect statement
- Velocity of sound is least in solids
 - When sound travels through air, the temperature of air is constant
 - When sound travels through air the air molecules vibrate longitudinally
 - Under similar conditions of temperature and pressure the velocity of sound in hydrogen is greater than that in oxygen.

15. Assertion (A) : The wall of a dam is made thicker at the bottom compared to that at the top.
- Reason (R) : The pressure exerted by the water decreases with depth.
- A and R are true and R is the correct explanation of A.
 - A and R are true but R is not the correct explanation of A
 - A is true but R is false.
 - Both A and R are false
16. Which of the following is not a unit of energy
- $W \cdot s$
 - $kg \cdot m / sec$
 - $N \cdot m$
 - Joule
17. An object of height 1.5 cm is placed on the axis of a convex lens of focal length 25 cm. A real image is formed at a distance of 75 cm from the lens. The size of the image will be
- 4.5 cm
 - 3.0 cm
 - 0.75 cm
 - 0.5 cm
18. Which of the following is a scalar quantity
- Displacement
 - Electric field
 - Acceleration
 - Work
19. A 20 kg block is initially at rest. A 75 N force is required to set the block in motion. After the motion, a force of 60 N is applied to keep the block moving with constant speed. The coefficient of static friction is-
- 0.6
 - 0.52
 - 0.44
 - 0.375
20. The area of cross – sections of three metal rods of the equal length and made of the same materials are A_1, A_2 and A_3 respectively. When heated through the same change in temperature their linear expansions are found to be l_1, l_2 and l_3 respectively. Which among the following is the correct relation between l_1, l_2 and l_3 ?
- $l_1 = l_2 = l_3$
 - $l_1 > l_2 > l_3$
 - $l_1 < l_2 < l_3$
 - $l_1 = l_2 < l_3$
21. The element capable of gaining and losing of electrons
- Hg
 - Ca
 - Ag
 - H
22. Which of the following is the correct order of the atomic radii of the element's oxygen, fluorine, and nitrogen?
- $O < F < N$
 - $N < F < O$
 - $O < N < F$
 - $F < O < N$
23. Which of the following is not a chemical change characteristic?
- Change in colour
 - Change in state
 - Production of sound
 - Change in smell
24. $CuSO_4 \cdot 5H_2O$: In this Compound, the water molecule is called
- Pure water
 - Water of crystallisation
 - Soda water
 - None of these

25. Which substance is used to remove acidity of soil?
- Zinc Hydroxide
 - Slaked lime
 - Calcium hydroxide
 - Magnesium hydroxide
26. Valency of an atom increases only up to
- Group 12
 - Group 14
 - Group 13
 - Group 15
27. During redox reaction the electropositive atom undergoes
- Oxidation
 - Reduction
 - Both
 - None of these
28. Chemical formula for sulphurous acid is _____
- H₂SO₃
 - H₂SO₄
 - H₂SO₂
 - NaHSO₄
29. Gas evolved during reaction of action metals with acids is _____
- O₂
 - N₂
 - H₂
 - CO₂
30. Which of the following has the strongest inter molecular force of attraction between its particle at room temperature
- Nitrogen gas
 - Mercury
 - Iron
 - Chalk
31. Drying of wet clothes in an open terrace takes place due to the phenomenon of
- Evaporation
 - Diffusion
 - Sublimation
 - Decomposition
32. Triple point is
- All the three phases can exist together at particular temperature
 - All the three phases can exist together at particular pressure
 - All the three phases can exist together at particular temperature but not at constant pressure
 - All the three phases can exist together at particular temperature and pressure
33. The below image represents a chemical reaction where ethanol is oxidised using potassium dichromate and sulphuric acid.
- $$\begin{array}{ccc} \text{CH}_3\text{CH}_2\text{OH} & \xrightarrow{\text{K}_2\text{Cr}_2\text{O}_7 / \text{H}_2\text{SO}_4} & \text{X} \\ \text{Ethanol} & & \end{array}$$
- Which of the following option represents the product "X"?
- CH₂O
 - CH₃CHO
 - CH₃H₂O
 - CH₃COOH
34. Which of the following is the molecular formula of cyclobutane?
- C₄H₁₀
 - C₄H₆
 - C₄H₈
 - C₄H₄
35. How many electrons are occupied in the M shell?
- 8
 - 16
 - 18
 - 32
36. According to Avogadro's law _____
- V ∝ 1P
 - V ∝ n
 - V ∝ T
 - All of these

37. Two atoms are said to be Isobars if _____
- They have same atomic number but different mass number
 - They have same number of electrons but different number of neutrons
 - They have the same number of neutrons but different numbers of electrons.
 - None of the above
38. Which One will have Maximum Numbers of Water Molecules?
- 18 molecules of water
 - 18 grams of water
 - 1.8 grams of water
 - 18 moles of water
39. The arrangement for Copper, Tin, Lead and Mercury, according to the reactivity series, is:
- Tin > Lead > Copper > Mercury
 - Lead > Copper > Mercury > Tin
 - Copper > Mercury > Tin > Lead
 - Mercury > Tin > Lead > Copper
40. An alpha particle contains
- 4 positive charge and 2 mass unit
 - 2 positive charge and 4 mass unit
 - 2 positive charge and 2 mass unit
 - 4 positive charge and 4 mass unit
41. In $\triangle ABC$, sides BA and BC are extended to X and Y respectively. Bisectors of $\angle XAC$ and $\angle YCA$ meet in Z. If $\angle ABC = 120^\circ$, measurement of $\angle AZC$ is _____
- 30°
 - 35°
 - 40°
 - 45°
42. Two circles with radii 6 cm and 4 cm are in the same plane such that distance between their centres is 12 cm. The length of the common tangent is
- $\sqrt{92}$
 - $\sqrt{140}$
 - $\sqrt{148}$
 - $\sqrt{44}$
43. Lengths of the three sides of a triangle are 9 cm, 12 cm and 15 cm respectively. Radius of incircle of the triangle is equal to
- 2 cm
 - 2.5 cm
 - 3 cm
 - 4 cm
44. Point A is in the exterior of a circle. Through A, a diameter cuts the circle into P and Q, P being closer to A. Also, a tangent through A meets the circle in T. If $\angle TQP = 30^\circ$, $\angle TAP =$
- 30°
 - 40°
 - 50°
 - 60°
45. If a value changes to 7 times itself, the percentage change is equal to _____ % increase.
- 500 %
 - 600 %
 - 700 %
 - None of these
46. If 5 units are sold at the cost price of 6 units, the percentage profit is _____ .
- $\frac{50}{3}$ %
 - 40 %
 - 30 %
 - 20 %
47. If $(\sqrt{2x})^{2x} = (2x)^{\sqrt{2x}}$ then $x =$
- 2
 - 3
 - $\sqrt{2}$
 - $\sqrt{3}$

48. A garden is rectangular with a breadth of 20 meter and length of 30 meter. A walkway of uniform width of area equal to 336 square meter is prepared along the periphery of the garden on the inner side. The width of walkway is :
- a. 2 meter b. 3 meter c. 4 meter d. 6 meter
49. If $x = -1 + \sqrt{3}$, then $x^4 + 2x^3 + 5x^2 - 4x + 4 =$
- a. $35 - 18\sqrt{3}$ b. $36 - 18\sqrt{3}$ c. $37 - 18\sqrt{3}$ d. $38 - 18\sqrt{3}$
50. In a test of hundred marks was conducted for class, the average marks obtained by boys was 86 and that of girls was 78. If the average of the entire class was 80, the ratio of number of boys to that of girls was :
- a. 1:3 b. 2:3 c. 3:1 d. 3:2
51. In a family of previous years, every girl had as many brothers as many sisters while every boy had thrice as many sisters as many brothers. The number of siblings in that family was
- a. 4 b. 5 c. 6 d. 7
52. If $2\cos\theta + 5\sin\theta = 4$ then $5\cos\theta - 2\sin\theta = ?$
- a. $\sqrt{12}$ b. $\sqrt{13}$ c. $\sqrt{18}$ d. $\sqrt{20}$
53. The angle of elevation of the top of a 45 m high tower changes from 30° to 60° in $2\sqrt{3}$ seconds for a motorcyclist approaching the tower. The speed of the motorcyclist is _____
- a. 54 km/hr b. 48 km/hr c. 36 km/hr d. 60 km/hr
54. $\angle B = 90^\circ$ in ΔABC . M and N are on BC and AB respectively. If $AB = 6$, $BC = 8$, $AM = 7$ and $CN = 9$, then $MN =$ _____
- a. $\sqrt{27}$ b. $\sqrt{30}$ c. $\sqrt{33}$ d. $\sqrt{39}$
55. Radii of the smaller and the larger circular surfaces of a frustum are a and $2a$ respectively. If the slant height of the frustum is a then the ratio of its volume and curved surface area is
- a. $\frac{7\sqrt{3}a}{27}$ b. $\frac{7\sqrt{3}a}{9}$ c. $\frac{7\sqrt{3}a}{18}$ d. $\frac{7\sqrt{3}a}{12}$
56. $\frac{x^2-x-2}{x^2+7x+12} \div \left(\frac{x^2-2x-3}{x^2+4x+3} \div \frac{x^2+x-12}{x^2-4x+4} \right) =$
- a. $\frac{x-1}{x+2}$ b. $\frac{x+2}{x-1}$ c. $\frac{x-2}{x+1}$ d. $\frac{x+1}{x-2}$
57. If the roots of the equation $ax^2 + bx + c = 0$ are in a ratio 2:3, then _____
- a. $36b^2 = 25ac$ b. $6b^2 = 5ac$ c. $6b^2 = 25ac$ d. $36b^2 = 5ac$
58. Length of each side of a rhombus is 7 cm. If one diagonal is of length 6 cm, area of the rhombus is :
- a. $\sqrt{95}$ b. $2\sqrt{95}$ c. $3\sqrt{95}$ d. $4\sqrt{95}$
59. m^{th} term of an A.P. is $\frac{1}{3n}$ and n^{th} term of the same A.P. is $\frac{1}{3m}$. The $(m+n)^{\text{th}}$ term is :
- a. $\frac{3(m+n)}{mn}$ b. $\frac{m+n}{9mn}$ c. $\frac{m+n}{3mn}$ d. $\frac{9(m+n)}{mn}$

60. If α and β are roots of the equation $x^2 + 5x + 3 = 0$ then the equation with roots as

$\frac{\alpha+2}{\alpha-2}$ and $\frac{\beta+2}{\beta-2}$ is :

a. $17x^2 + 2x - 3 = 0$

b. $17x^2 + 2x + 3 = 0$

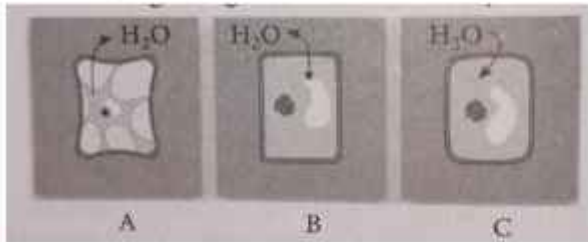
c. $7x^2 + 12x + 17 = 0$

d. $7x^2 - 12x - 3 = 0$

61. Which of the statements is correct?

- a. About 30% water reaching leaves is transpired
- b. About 80% water reaching leaves is transpired
- c. About 90% water reaching leaves is transpired
- d. About 99% water reaching leaves is transpired

62. In the diagram given below, identify A, B, C.



- a. turgid, (B) plasmolysed, (C) flaccid
- b. normal cell, (B) plasmolysed, (C) flaccid
- c. plasmolysed, (B) flaccid, (C) turgid
- d. None of these

63. A plant is exposed to very bright light. What is correct in this environmental condition?

- a. The accessory pigments promote light absorption.
- b. Chlorophylls are subjected to photooxidation.
- c. Accessory pigments absorb less light and transfer to chl a.
- d. Chlorophylls absorb light and transfer to accessory pigments.

64. In adjacent agricultural lands of nearly equal dimensions, two farmers A and B had cultivated crops of their choice and observed standard practices. A pathogen attacked the crops and destroyed it in the land belonging to farmer A, as a result of which he suffered complete loss. Although the pathogen attacked the adjacent land belonging to farmer B, he was able to earn some money by selling the yield. The possible explanation for the above is:

- a. Farmer A must have cultivated only one crop whereas farmer B must have cultivated two crops.
- b. Farmers A and B must have cultivated the same crop with a fence between the two agricultural lands.
- c. Farmer A over irrigated the crop due to which it attracted the pathogen.
- d. Farmer B removed weeds from the cultivated land.

65. An artificial pacemaker is implanted subcutaneously and connected to the heart in patients
- Having 90% blockage of the three main coronary arteries.
 - Having very high blood pressure.
 - With irregularity in the heart rhythm.
 - Suffering from arteriosclerosis.
66. For storage of seeds
- Dehydration is important
 - Dormancy is important
 - Neither dehydration nor dormancy is needed
 - Both dehydration and dormancy are crucial
67. Which of the following statements is are true of palaeontology?
- It provides indirect evidence in favour of organic evolution
 - It does not help us to compare the 'past' with the 'present'
 - It helps us to know the exact period of the formation of a species
 - All of the above
68. Tubectomy is a method of sterilisation in which
- Small part of the Fallopian tube is removed or tied up
 - Ovaries are removed surgically
 - Small part of vas deferens is removed or tied up
 - Uterus is removed surgically
69. A bottle filled with previously moistened mustard seeds and water was screw capped tightly and kept in a corner. It blew up suddenly after about half an hour. The phenomenon involved is
- diffusion
 - imbibition
 - osmosis
 - DPD
70. Which one of the following phytohormones is produced under water deficient condition and plays an important role in the tolerance response of plants to drought?
- Abscisic acid
 - Ethylene
 - Cytokinin
 - Gibberellin
71. A few normal seedlings of tomato were kept in a dark room. After a few days they were found to have become white – coloured like albinos.
- Which of the following terms will you use to describe them?
- Mutated
 - Embolised
 - Etiolated
 - Defoliated
72. The normal value of GFR is approximately
- 650 ml/min
 - 180 ml/min
 - 180 ml/day
 - 125 ml/min
73. When breast feeding is replaced by less nutritive food low in proteins and calories; the infants below the age of one year are likely to suffer from
- marasmus
 - rickets
 - kwashiorkor
 - pellagra

74. In a highly pesticide polluted pond. Which of the following aquatic organisms will have the maximum amount of pesticide per gram of body mass?
- a. Lotus b. Fishes c. Spirogyra d. Zooplanktons
75. Bicuspid valve / mitral valve is found between
- a. Left atrium and left ventricle b. Right atrium and left ventricle
c. Right atrium and right ventricle d. Left atrium and right ventricle
76. An individual with genotype AaBbCcddEe is crossed with another individual with genotype AabbCcDdEe. Assuming Mendelian pattern of inheritance, predict the proportion of aabbccdde among the progeny of this cross?
- a. 1/32 b. 1/64 c. 1/128 d. 1/256
77. A squirrel was eating a fruit on the ground. Suddenly, it was attacked by a dog. The squirrel rushed to the tree immediately and saved itself from the dangerous attack. What immediate changes are most likely to have taken place in the body of the squirrel?
- A. Blood flows to the stomach for rapid digestion.
B. Adrenaline was secreted in the blood by the adrenal glands.
C. Heart beat becomes faster and pumps more blood so that muscles get more oxygen.
D. Adrenocorticotrophic hormone is secreted in the blood and blood flows more towards the vital organs.
- Select the correct combination of options given below:
- a. A and B b. B and C c. A and C d. C and D
78. Consider the following statements.
- (A) Axons carry impulse away from the cell body.
(B) The synaptic knob of axons are found in contact with neuro-muscular junctions.
- Select the correct option.
- a. A is true, B is false b. Both A and B are false
c. Both A and B are true d. A is false, B is true
79. Which nerves transmit impulses from the central nervous system towards muscle cells?
- a. Sensory nerves b. Motor nerves c. Relay nerves d. Cranial nerves
80. Movements of leaves of the sensitive plant, *Mimosa pudica* are due to
- a. seismonasty b. chemonasty c. thermonasty d. hydrotropism
81. The cyclonic storm occurring over the caribbean sea is known as
- a. Typhoon b. Willy – Willy c. Hurricane d. Cyclone
82. Meaning of Knave
- a. Simple b. Loyal c. Aloof d. Dishonest
83. Purusha Sukta is part of
- a. Rigveda b. Yoga Sukta c. Ramayana d. Bhagvadgita

84. The chairman of Rajyasabha is
- Nominated by the President
 - Elected by the two houses of Parliament
 - Elected by parliament and the legislatures of states jointly
 - Elected by the members of Rajya Sabha
85. Which foot baller won the Golden Boot award in the FIFA World Cup 2022?
- Lioned Messi
 - Kylian M bappe
 - Emiliano Martinez
 - Angel di Maria
86. Ctrl , Shift and Alt are called _____ keys.
- Modifier
 - Function
 - Alphanumeric
 - Adjustment
87. Who wrote the book "India Wins Freedom"?
- Akhilesh Tilotia
 - Amitav Ghosh
 - Abdul Kalam Azad
 - A.B. Vajapeyi
88. Ravana was a devotee of whom among the following God?
- Vishnu
 - Brahma
 - Shiva
 - Ganesha
89. Which planet rotates on its axis from East to West?
- Earth
 - Moon
 - Venus
 - Mercury
90. Rice cultivation is associated with Harappa site of
- Kalibangan
 - Harappa
 - Ropar
 - Lothal

😊😊😊😊😊 **Best of Luck** 😊😊😊😊😊



**SHARADA VIDYANIKETHANA PUBLIC SCHOOL
&
PU COLLEGE**

PRATIBHA PRAVEENA SCHOLARSHIP EXAMINATION

INSTRUCTIONS

1. The booklet is your Question Paper. Do not break the seal of this booklet before being instructed to do so by the invigilator.
2. The question paper Series CODE is printed on the right hand top corner of this sheet.
3. Blank spaces and blank pages are provided in the question paper for your rough work. No additional sheets will be provided for your rough work.
4. Blank papers, clipboards, log tables, slide rules, calculators, camera, cellular phones, papers and electronic gadgets are **NOT** allowed inside the examination hall.
5. Write your name and Form number in the space provided on the back cover of this booklet.
6. The answer sheet, a machine – readable Optical Mark Recognition (OMR), is provided separately.
7. **DO NOT TAMPER WITH/MUTILATE THE OMR OR THE BOOKLET**
8. On breaking the seal of the booklet check that it contains 8 pages and all the 90 questions and corresponding answer choices are legible.
9. A candidate has to write his/ her answer in the OMR sheet by appropriate bubble with the help of **Black/Blue ball point pen** as the correct answer (s) of the question attempted.
10. Write all information and sign in the box provided on part of the **OMR**.
11. The duration of test is **2 Hours** and the question paper contains **90 questions**. The **Max marks allotted is 360**. Question Paper consists of 5 sections (Physics, Chemistry, Mathematics , Biology & General Ability). Physics, Chemistry, Mathematics, Biology section consists 20 questions each and General Ability section consists 10 questions.
12. All questions are multiple choice questions. Each question has four choices **(a), (b), (c) and (d)** out of which **ONLY ONE** is correct.

13. Each correct answer carries 4 Mark, while 1 mark will be deducted for every wrong answer. [Guessing of answer is harmful]

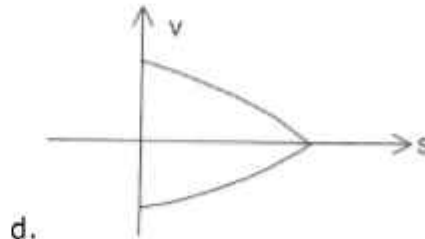
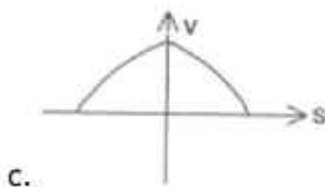
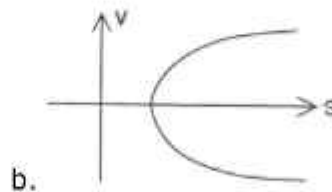
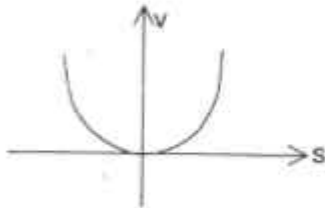
SHARADA VIDYANIKETHANA PUBLIC SCHOOL & PU COLLEGE

Devinagara, Talapady, Mangaluru - 23

PRATIBHA PRAVEENA EXAM 2023 - 24

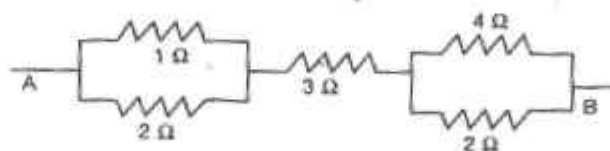


- Which of the following statements is correct? In the process of electromagnetic induction, the magnitude of the induced emf depends on _____.
 - The resistance of the coil
 - The magnetic flux linked with the coil
 - The rate of change of magnetic flux linked with the coil
 - Area of the coil
- A body projected vertically up has displacement of 16m in the first n seconds while it was moving up. Its magnitude of displacement in the last n second while falling down is
 - 8 m
 - 4 m
 - 16 m
 - 2 m
- The graph of velocity versus displacement of a body which is thrown vertically up and falling back to the point of projection is _____



- The gravitational force of attraction between two bodies at a certain distance is 10 N. If the distance between them is doubled, the force of attraction _____.
 - decreases by 50%
 - decreases by 75%
 - increases by 50%
 - increases by 75%

5. A metre scale is suspended at 50 cm mark to a rigid support with a weight of 150 g attached at 5 cm mark. To balance the scale, a weight of 450 g should be attached at _____ cm mark.
- a. 65 b. 90 c. 95 d. 100
6. If the speed of light in medium - 1 and medium - 2 are $2.5 \times 10^8 \text{ ms}^{-1}$ and $2 \times 10^8 \text{ ms}^{-1}$ respectively, then the refractive index of medium - 1 with respect to medium - 2 is _____
- a. $\frac{3}{2.5}$ b. $\frac{2}{2.5}$ c. $\frac{2.5}{3}$ d. $\frac{2.5}{2}$
7. If the tension in a string is doubled and its linear density is halved, then the velocity of the wave in the string
- a. is quadrupled b. is halved c. remains constant d. is doubled
8. In a parallel circuit of bulbs
- a. Same current exists in all the bulbs
b. Voltage across each bulb remains the same
c. Failure of any bulb leads to a break in the circuit
d. All the above
9. An object is projected vertically upwards with a velocity of 19.6 ms^{-1} . Arrange the following physical quantities measured in the SI unit in the increasing order of their magnitudes at the end of 4 s.
- i) Distance travelled ii) displacement iii) acceleration iv) velocity
- a. ii, iv, iii, i b. i, iv, iii, ii c. iv, iii, ii, i d. ii, iii, iv, i
10. Study the circuit given below and determine the effective resistance (in Ω) between A and B.



- a. 5 b. 10 c. 15 d. 20
11. When a pendulum of length 50 cm is set into oscillation, the maximum change in potential energy is found to be 4J. If the mass of the bob is 200g, determine the tension in the string when it is at the mean position.
- a. 16 N b. 18 N c. 32 N d. 56 N
12. Assertion (A) : A person in a satellite experiences weightlessness.
Reason (B) : No gravitational force acts on the person
- a. A and R are true and R is the correct explanation of A.
b. A and R are true but R is not the correct explanation of A

- c. A is true but R is false.
d. Both A and R are false

13. A person on the top of a coconut tree of height 10 m looks at the bottom of a swimming pool of depth 2 m. Determine the apparent position of the bottom of the pool viewed by the person (Refractive index of water = $\frac{4}{3}$).

- a. $\frac{80}{3}$ m b. $\frac{4}{3}$ m c. $\frac{23}{2}$ m d. $\frac{30}{7}$ m

14. Which of the following is/are the units of electric field?

- a. N m^{-1} b. N C^{-1} c. V m^{-1} d. Both b and c

15. The pressure at the bottom of a swimming pool is 2.1×10^5 Pa. If the atmospheric pressure is 10^5 Pa, then calculate the depth (in m) of the swimming pool.

- a. 5 b. 11 c. 15 d. 20

16. Assertion (A) : When the bob of a pendulum is set into oscillations, the oscillations cease after some time.

Reason (R) : The energy given to the bob is used to do work against air friction.

- a. A and R are true and R is the correct explanation of A.
b. A and R are true but R is not the correct explanation of A
c. A is true but R is false.
d. Both A and R are false

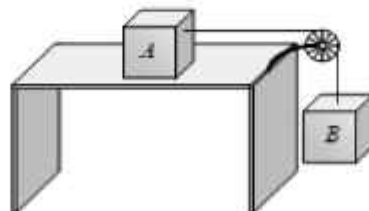
17. 'Mirage' is a phenomenon due to

- a. Reflection of light b. Total internal reflection of light
c. Total internal diffraction of light d. Diffraction of light

18. Two forces, each of magnitude F have a resultant of the same magnitude F . The angle between the two forces is

- a. 45° b. 120° c. 150° d. 60°

19. A block A of mass 7 kg is placed on a frictionless table. A thread tied to it passes over a frictionless pulley and carries a body B of mass 3 kg at the other end. The acceleration of the system is (given $g = 10 \text{ ms}^{-2}$)



- a. 100 ms^{-2} b. 3 ms^{-2} c. 10 ms^{-2} d. 30 ms^{-2}

20. The colour of a green leaf, when white light passing through a yellow filter is incident on it, is _____.

a. black b. yellow c. red d. green

21. The pH of a solution of HCl is 4. This shows that the molarity of the solution is
a. 4.0M b. 0.4M c. 0.0001M d. 0.001M
22. The difference of molecules of water in gypsum and POP is
a. $5/2$ b. 2b c. $3/2$ d. $1/2$
23. Which of the following gases can be used for storage of fresh sample of an oil for a long time?
a. Carbon dioxide or oxygen b. Nitrogen or helium
c. Helium or oxygen d. Nitrogen or oxygen
24. The reaction in which two compound exchange their ions to form two new compounds is called
a. Displacement reaction b. Combination reaction
c. Double displacement reaction d. Redox reaction
25. The substance not responsible for the hardness of water is
a. Sodium nitrate b. Calcium hydrogen carbonate
c. Calcium carbonate d. Magnesium carbonate
26. A greenish coating develops on copper utensils due to formation of
a. CuCO_3 b. $\text{Cu}(\text{OH})_2$ c. $\text{Cu}(\text{OH})_2 \cdot \text{CuCO}_3$ d. CuO
27. Cathode rays are made up of
a. Positively charged particles b. Negatively charged particles
c. Neutral particles d. None of these
28. The total number of neutrons in dipositive zinc ions with mass number 70 is
a. 34 b. 40 c. 36 d. 38
29. How many moles CO_2 are there in 88 g carbon dioxide?
a. 1 b. 2 c. 3 d. 4
30. Magnesium ribbon is rubbed before burning because it has a coating of
a. Basic magnesium carbonate b. Basic magnesium oxide
c. Basic magnesium sulphide d. Basic magnesium chloride
31. Which of the following will undergo addition reactions?
a. CH_4 b. C_3H_8 c. C_2H_6 d. C_2H_4
32. Identify 'A' in the reaction: $\text{CH}_3\text{COOH} + \text{Na}_2\text{CO}_3 \rightarrow \text{A} + \text{CO}_2 + \text{H}_2\text{O}$
a. CH_3COONa b. $\text{CH}_2(\text{Na})\text{COOH}$ c. NaOH d. NaHCO_3
33. Helium has _____ electrons in its outermost shell while other inert gases have 8 electrons in their outermost shell.

a. 1

b. 2

c. 3

d. 4

34. An atom of an element has the electronic configuration 2,8,2. To which group does it belong?

a. 4th groupb. 6th groupc. 3rd groupd. 2nd group

35. What is the change in the level of water is observed when we add a spoon full of salt to a beaker of water

a. Water level increases

b. Water level decrease

c. Remains the same

d. None of these

36. Match the following

A. Iodine

1. No definite volume and shape

B. Solid

2. definite volume and no definite shape

C. Gas

3. sublimates

D. Liquid

4. Incompressible

a. A-3, B-4, C-2, D-1

b. A-4, B-3, C-2, D-1

c. A-1, B-2, C-4, D-3

d. A-3, B-4, C-1, D-2

37. Main ore of Magnesium is _____

a. Rock salt

b. Bauxite

c. Cinnabar

d. Carnallite

38. Roasting occurs in _____

a. Presence of air

b. Absence of air

c. During both the cases

d. None of these

39. Which property of metals is used for making bells and strings of musical instruments like Sitar and Violin?

a. Sonorousness

b. Malleability

c. Ductility

d. Conductivity

40. Which metal is more reactive than hydrogen but less reactive than carbon?

a. Iron

b. Gold

c. Aluminium

d. Sodium

41. In $\triangle ABC$, sides BA and BC are extended to X and Y respectively. Bisectors of $\angle XAC$ and $\angle YCA$ meet in Z. If $\angle ABC = 50^\circ$, measurement of $\angle AZC$ is _____

a. 50° b. 55° c. 60° d. 65°

42. Two circles with radii 5 cm and 4 cm are in the same plane such that distance between their centres is 10 cm. The length of the common tangent is

a. $\sqrt{56}$ b. $\sqrt{59}$ c. $\sqrt{99}$ d. $\sqrt{101}$

43. Lengths of the three sides of a triangle are 9 cm, 40 cm and 41 cm respectively. Radius of incircle of the triangle is equal to

a. 2 cm

b. 2.5 cm

c. 3 cm

d. 4 cm

44. Point A is in the exterior of a circle. Through A, a diameter cuts the circle into P and Q, P being closer to A. Also, a tangent through A meets the circle in T. If $\angle TQP = 25^\circ$, $\angle TAP =$
- a. 30° b. 40° c. 50° d. 60°
45. If a value changes to 5 times itself, the percentage change is equal to _____ increase.
- a. 400 % b. 500 % c. 600 % d. None of these
46. If 4 units are sold at the cost price of 5 units, the percentage profit is _____ .
- a. 25 % b. 40 % c. 30 % d. 20 %
47. A garden is rectangular with a breadth of 20 meter and length of 30 meter. A walkway of uniform width of area equal to 225 square meter is prepared along the periphery of the garden on the inner side. The width of walkway is :
- a. 1.5 meter b. 2 meter c. 2.5 meter d. 3 meter
48. If $(\sqrt{3x})^{3x} = (3x)^{\sqrt{3x}}$ then $x =$
- a. 2 b. $\frac{4}{3}$ c. $\sqrt{2}$ d. $\frac{2}{\sqrt{3}}$
49. If $x = -1 + \sqrt{3}$, then $x^4 + 2x^3 + 5x^2 - 4x + 5 =$
- a. $34 - 18\sqrt{3}$ b. $35 - 18\sqrt{3}$ c. $36 - 18\sqrt{3}$ d. $37 - 18\sqrt{3}$
50. In a test of hundred marks was conducted for class, the average marks obtained by boys was 84 and that of girls was 78. If the average of the entire class was 80, the ratio of number of boys to that of girls was :
- a. 1:3 b. 1:2 c. 3:1 d. 2:1
51. In a family of previous years, every girl had twice as many brothers as many sisters while every boy had as many sisters as many brothers. The number of siblings in that family was:
- a. 4 b. 5 c. 6 d. 7
52. If $3\cos\theta + 5\sin\theta = 4$ then $5\cos\theta - 3\sin\theta = ?$
- a. $\sqrt{12}$ b. $\sqrt{13}$ c. $\sqrt{18}$ d. $\sqrt{20}$
53. The angle of elevation of the top of a $100\sqrt{3} m$ high tower changes from 30° to 60° in 10 seconds for a motorcyclist approaching the tower. The speed of the motorcyclist is _____
- a. 54 km/hr b. 60 km/hr c. 66 km/hr d. 72 km/hr
54. $\angle B = 90^\circ$ in $\triangle ABC$. M and N are on BC and AB respectively. If $AB = 7$, $BC = 24$, $AM = 8$ and $CN = 26$, then $MN =$ _____
- a. $\sqrt{23}$ b. $\sqrt{69}$ c. $\sqrt{115}$ d. $\sqrt{138}$
55. Radii of the smaller and the larger circular surfaces of a frustum are $3a$ and $4a$ respectively. If the slant height of the frustum is α then the ratio of its volume and curved surface area is

a. $\frac{37\sqrt{3}a}{30}$

b. $\frac{37\sqrt{3}a}{36}$

c. $\frac{37\sqrt{3}a}{42}$

d. $\frac{37\sqrt{3}a}{48}$

56. $\frac{x^2+6x+8}{x^2+8x+15} \div \left(\frac{x^2+x-12}{x^2+x-6} \div \frac{x^2+2x-15}{x^2-7x+10} \right) =$

a. $\frac{x-2}{x+5}$

b. $\frac{x+2}{x-5}$

c. $\frac{x+2}{x+5}$

d. $\frac{x-2}{x-5}$

57. If the roots of the equation $ax^2 + bx + c = 0$ are in a ratio 2:5, then _____

a. $10b^2 = 7ac$

b. $100b^2 = 49ac$

c. $10b^2 = 49ac$

d. $100b^2 = 7ac$

58. Length of each side of a rhombus is 4 cm. If one diagonal is of length 6 cm, area of the rhombus is :

a. $24\sqrt{7}$

b. $12\sqrt{7}$

c. $6\sqrt{7}$

d. $4\sqrt{7}$

59. m^{th} term of an A.P. is $\frac{1}{4n}$ and n^{th} term of the same A.P. is $\frac{1}{4m}$. The $(m+n)^{\text{th}}$ term is :

a. $\frac{2(m+n)}{mn}$

b. $\frac{m+n}{2mn}$

c. $\frac{m+n}{4mn}$

d. $\frac{4(m+n)}{mn}$

60. If α and β are roots of the equation $x^2 + 4x + 2 = 0$ then the equation with roots as

$\frac{\alpha+1}{\alpha-1}$ and $\frac{\beta+1}{\beta-1}$ is :

a. $3x^2 + 2x + 7 = 0$

b. $7x^2 + 30x - 14 = 0$

c. $3x^2 - 2x - 7 = 0$

d. $7x^2 - 2x - 1 = 0$

61. The given table shows properties of four cells systems A, B, C and D. The maximum rate of inward diffusion of water will be observed in which of these systems?

System	Intracellular concentration of water	Extracellular concentration of water
A	0.09 M	0.11 M
B	0.2 M	0.5 M
C	0.05 M	0.7 M
D	0.03 M	0.6 M

a. System A

b. System C

c. System B

d. System D

62. A student sets up an experiment on photosynthesis as follows:

He takes soda water in glass tumbler and adds chlorophyll extract into the contents and keeps the tumbler exposed to sunlight hoping that he has provided necessary ingredients for photosynthesis to proceed (viz., CO_2 , H_2O , chlorophyll and light). What do you think will happen after a few hours of exposure of light?

a. Photosynthesis will take place and glucose will be produced.

b. Photosynthesis will take place and starch will be produced which will turn the mixture turbid.

c. Photosynthesis will not take place because CO_2 dissolved in soda water escapes into the atmosphere.

d. Photosynthesis will not take place because intact chloroplasts are needed for the process.

63. Though vertebrates are aerobes, but their ____ (i) ____ show anaerobic respiration during ____ (ii) ____ . During this, ____ (iii) ____ of muscle fibres is broken down to release lactic acid and energy. Lactic acid, if accumulates causes muscle fatigue.

Fill up the blanks in the above paragraph and select the correct option.

(i) (ii) (iii)

- | | | |
|---------------------|----------------|----------|
| a. skeletal muscles | heavy exercise | glucose |
| b. smooth muscles | heavy exercise | glycogen |
| c. skeletal muscles | heavy exercise | glycogen |
| d. cardiac muscles | heavy exercise | glucose |

64. If a rotten fruit gets mixed with unripe fruits then it will

- | | |
|---|--|
| a. Hasten the ripening of unripe fruits | b. Retard the ripening of unripe fruits |
| c. Remain unchanged | d. Makes the fruit rotten without ripening |

65. What is to be expected if Henle's loop were absent from mammalian nephrons?

- a. There will be no urine formation
- b. There will be hardly any change in the quality and quantity of urine formed
- c. The urine will be more concentrated
- d. The urine will be more dilute

66. Lichens are sensitive to certain air pollutants and are often replaced by other plants. From the given options choose the best combination of sensitivity and replacement of lichens.

- | | |
|-----------------------------|------------------------------|
| a. Sulphur dioxide and moss | b. Sulphur dioxide and algae |
| c. Carbon dioxide and ferns | d. Sulphur dioxide and grass |

67. What organ receives only oxygenated blood?

- | | | | |
|----------|-------------|-----------|----------|
| a. Liver | b. Pancreas | c. Kidney | d. Gills |
|----------|-------------|-----------|----------|

68. The water-soluble fuels that are normally exported by the liver but overproduced during fasting or diabetes mellitus when not treated are known as

- | | | | |
|----------------|------------|------------------|----------------|
| a. fatty acids | b. glucose | c. ketone bodies | d. amino acids |
|----------------|------------|------------------|----------------|

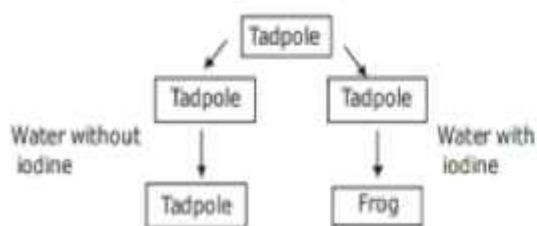
69. Among the following listed structures, knee-jerk doesn't involve

- | | | | |
|-----------------|----------------|----------------|----------|
| a. motor neuron | b. spinal cord | c. interneuron | d. brain |
|-----------------|----------------|----------------|----------|

70. Which one is odd w.r.t. significance of meiosis?

- a. Increase genetic variability in organisms
- b. Helps in restoring of original chromosome number in a sexually reproducing species.
- c. Ensure production of haploid phase
- d. Cell repair

71. Observe the flow chart below.



Which of the following best explains the observed results?

- a. Iodine helps to produce thyroxine
- b. Iodine inhibits thyroid gland activity
- c. Absence of iodine leads to starvation
- d. Iodine promotes cell growth and division

72. By making a conscious effort, which of the following options is most likely for most of us concerning breathing?

- a. One can breathe out air totally without oxygen.
- b. One can breathe out air through eustachian tubes by closing both the nose and the mouth.
- c. One can consciously breathe in and breathe out by moving the diaphragm alone, without moving the ribs at all.
- d. The lungs can be made fully empty by forcefully breathing out all air from them

73. Match the followings correctly.

Animals

- A. Earthworms
- B. Most aquatic arthropods
- C. Fishes
- D. Birds/Reptiles
- E. Insects

Respiratory Organs

- I. Lungs
- II. Trachea
- III. Gills
- IV. Moist cuticle

a. A-IV, B and C-III, D-I, E-II

b. A- IV, B - III C and D -I, E - III

c. A-II, B and C - III, D - I, E - IV

d. A-III, B and C-I, D-II, E-IV

74. From the list given below, select the character which can be acquired but not inherited.

- a. Colour of eyes
- b. Colour of skin
- c. Texture of hair
- d. Size of body

75. The form of sugar transported through phloem is

- a. Glucose
- b. Sucrose
- c. Starch
- d. Fructose

76. Cellular respiration includes the various pathways by which carbohydrates and other metabolites are broken down with the consecutive buildup of

- a. ATP b. Vitamins c. Protein d. None of these
77. The testes are situated outside the abdominal cavity within a pouch called scrotum. This is necessary as:
- The scrotum can contain lengthy ducts for the transfer of sperms
 - Scrotum helps in maintaining the low temperature of the testes necessary for spermatogenesis
 - Scrotum reduces the pressure around testes necessary for spermatogenesis
 - Scrotum can store huge amounts of sperms
78. Factors that modify geotropic responses are
- Root and shoot apices, humidity and temperature
 - Root and shoot apices, phytochrome, humidity and temperature
 - Root and shoot apices, temperature, light and atmospheric carbon dioxide
 - None of these
79. Which of the following defines 'Test Tube Baby' correctly?
- Ova and sperms are collected and mixed in test tube to form zygote.
 - Ova and sperms are centrifuged in test tube to form zygote.
 - Ova and sperms are induced to form zygote under controlled condition.
 - Embryogenesis is allowed to continue in test tube under controlled conditions.
80. Kidney of vertebrates resembles with contractile vacuole of protozoans in
- Expelling out glucose
 - Expelling out excess of water
 - Expelling out urea and uric acid
 - Expelling out salts
81. Meaning of Empathy
- Sympathy
 - Understanding
 - Emotional
 - Co – operativeness
82. In India, a tax on agricultural incomes can be levied by
- Both central and state governments
 - Only the state government
 - Neither central not state governments
 - Only the central government
83. The grass land region of South Africa is known as
- Selvas
 - Downs
 - Veldt
 - Llanos
84. Who has been announced as the winner of the 2022 Stefan Edberg Sportsmanship Award?
- Rafael Nadal
 - Novak Djocovic
 - Casper Ruud
 - Carlos Alcaraz
85. A computer cannot "boot" if it doesnot have the _____
- Compiler
 - Loader
 - Operating System
 - Assembler
86. Who wrote the book wealth of Nations?
- Raghuram Rajan
 - John Maynard
 - Adam Smith
 - None of these

87. What was the name of Lord Rama's Father?
a. Shailashuka b. Nahapana c. Rajadiraja d. Dasharatha
88. What is the currency of Japan?
a. Yen b. Euro c. Dollar d. Rupee
89. Sheikh Hasina, who recently secured a record fourth consecutive term as Prime Minister of Bangladesh, belongs to which political party?
a. Bangladesh Nationalist Party (BNP) b. Jatiya Party
c. Awami League d. Bangladesh Jamaat-e-Islami
90. *Swang* is a famous form of which art?
a. Music b. Dance c. Painting d. Embroidery

😊😊😊😊😊 **Best of Luck** 😊😊😊😊😊



**SHARADA VIDYANIKETHANA PUBLIC SCHOOL
&
PU COLLEGE**

PRATIBHA PRAVEENA SCHOLARSHIP EXAMINATION

INSTRUCTIONS

1. The booklet is your Question Paper. Do not break the seal of this booklet before being instructed to do so by the invigilator.
2. The question paper Series CODE is printed on the right hand top corner of this sheet.
3. Blank spaces and blank pages are provided in the question paper for your rough work. No additional sheets will be provided for your rough work.
4. Blank papers, clipboards, log tables, slide rules, calculators, camera, cellular phones, papers and electronic gadgets are **NOT** allowed inside the examination hall.
5. Write your name and Form number in the space provided on the back cover of this booklet.
6. The answer sheet, a machine – readable Optical Mark Recognition (OMR), is provided separately.
7. **DO NOT TAMPER WITH/MUTILATE THE OMR OR THE BOOKLET**
8. On breaking the seal of the booklet check that it contains 8 pages and all the 90 questions and corresponding answer choices are legible.
9. A candidate has to write his/ her answer in the OMR sheet by appropriate bubble with the help of **Black/Blue ball point pen** as the correct answer (s) of the question attempted.
10. Write all information and sign in the box provided on part of the **OMR**.
11. The duration of test is **2 Hours** and the question paper contains **90 questions**. The **Max marks allotted is 360**. Question Paper consists of 5 sections (Physics, Chemistry, Mathematics , Biology & General Ability). Physics, Chemistry, Mathematics, Biology section consists 20 questions each and General Ability section consists 10 questions.
12. All questions are multiple choice questions. Each question has four choices (a), (b), (c) and (d) out of which **ONLY ONE** is correct.

13. Each correct answer carries 4 Mark, while 1 mark will be deducted for every wrong answer. [Guessing of answer is harmful]

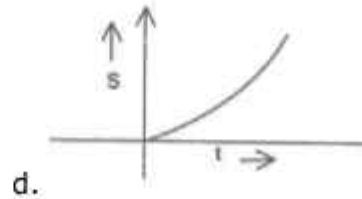
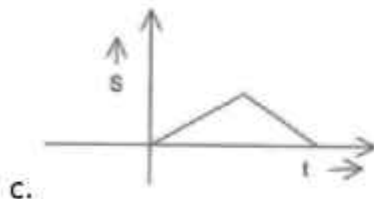
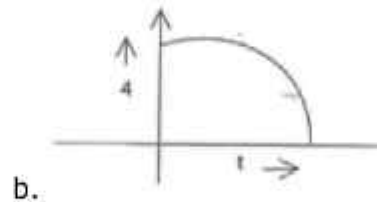
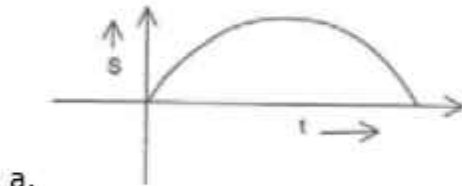
SHARADA VIDYANIKETHANA PUBLIC SCHOOL & PU COLLEGE

Devinagara, Talapady, Mangaluru - 23

PRATIBHA PRAVEENA EXAM 2023 - 24



1. Looking from one side towards the face of a coil, the current in it flows in clockwise direction. On looking from the opposite side towards the second face of the coil the current flows in
- Anti - clockwise direction and this face represents the south pole.
 - Clockwise direction and this face represents the north pole.
 - Anticlockwise direction and this face represents the north pole.
 - Clockwise direction and this face represents the south pole.
2. To convert ${}_{90}\text{Th}^{232}$ into ${}_{90}\text{Th}^{228}$, the least number of α and β particles that have to be emitted are _____ and _____ respectively.
- 1,1
 - 2,1
 - 1,2
 - 2,2
3. The displacement - time graph for a body thrown vertically up and falling back to the point of projection is _____



4. A body started with a velocity of 20 ms^{-1} and moving with an acceleration of 2 ms^{-2} . The distance travelled by the body in the 8th second is _____
- 35
 - 20
 - 120
 - 10

5. Two particles of equal mass are revolving with the same linear speed on circular paths of radii r_1 and r_2 . The ratio of the centripetal force acting on them will be _____
- a. $\frac{r_2}{r_1}$ b. $\sqrt{\frac{r_2}{r_1}}$ c. $\left(\frac{r_1}{r_2}\right)^2$ d. $\left(\frac{r_2}{r_1}\right)^2$
6. Heat gained by 1 g of water when heated from 0°C to 100°C is (Specific heat capacity of water = $1 \text{ cal g}^{-1} \text{ }^\circ\text{C}^{-1}$)
- a. 4200 cal b. 4.2 cal c. 100 cal d. 1 cal
7. If a block of wood is floating in a river water, then the apparent weight of the floating block is
- a. Equal than weight of the displaced water
b. Zero
c. Greater than the weight of the displaced water
d. Equal to the actual weight of the block
8. Hertz is the unit of
- a. Wavelength b. Amplitude c. Frequency d. None of these
9. The potential difference across a resistor of resistance 10Ω , if 10^{20} electrons is passing through it in one second is _____ V.
- a. 320 b. 400 c. 80 d. 160
10. An electric bulb marked 15 V is connected to a battery of 15 V which has a negligible resistance. If the resistance offered by the bulb is 5Ω the power of the bulb is _____ W.
- a. 225 b. 75 c. 30 d. 45
11. A force of 10 N is applied on a body of mass 1 kg. If the friction acting on it is 2N, determine the acceleration of the body.
- a. 8 ms^{-2} b. 4 ms^{-2} c. 16 ms^{-2} d. 12 ms^{-2}
12. An object of mass m is hanging from the ceiling of a cabin which is moving down with an acceleration 'a'. Calculate the tension in the string
- a. $m(g - a)$ b. $m(g + a)$ c. $m(g)$ d. ma
13. The relative permeability is the least in _____ magnetic substances.
- a. dia b. ferro c. ferri d. para
14. Assertion (A) : Velocity of sound in iron is greater than that of in water.
Reason (R) : Velocity of sound in solids is greater than that of in liquids.
- a. A and R are true and R is the correct explanation of A.
b. A and R are true but R is not the correct explanation of A
c. A is true but R is false.

d. Both A and R are false

15. Which of the following is not equal to watt
- a. Joule/second b. Ampere \times volt c. (Ampere)² \times ohm d. Ampere/volt
16. The focal length of a concave mirror is 50 cm. Where an object be placed so that its image is two times and inverted
- a. 75 cm b. 72 cm c. 63 cm d. 50 cm
17. A force of 5 N acts on a particle along a direction making an angle of 60° with vertical. Its vertical component be
- a. 10 N b. 3 N c. 4 N d. 2.5 N
18. The maximum static frictional force is
- a. Equal to twice the area of surface in contact
b. Independent of the area of surface in contact
c. Equal to the area of surface in contact
d. None of the above
19. An observer moves towards a stationary plane mirror at a speed of 4 ms⁻¹. The speed of image with respect to mirror is _____.
- a. 4 ms⁻¹ towards the mirror b. 8 ms⁻¹ towards the mirror
c. 4 ms⁻¹ away from the mirror d. 8 ms⁻¹ away from the mirror
20. In a series circuit,
- a. Current flow is same in all the resistors of the circuit
b. Potential difference across each resistor in the circuit is same
c. Both a and b
d. None of these
21. Dry ice means
- a. Solid CO₂ b. Solid SO₂ c. Solid NO₂ d. Solid CO
22. Inter molecular force of attraction is maximum in
- a. Solid b. Liquid c. Gas d. Plasma State
23. When sugar is added to glass of water the particle of sugar disappears because they
- a. Are very small
b. Get into the space between the water molecules
c. Are moving
d. all of these
24. At higher altitude
- a. The boiling point of liquid increase b. No change in the boiling point
c. The boiling point of liquid decreases d. Low pressure and low temperature

25. Select the one which is not a matter
 a. Sugar solution b. Meal atom c. Nobel gas d. fear
26. Which one of the following will turn red litmus blue?
 a. Vinegar b. Baking soda solution
 c. Lemon juice d. Soft drinks
27. The function of quick lime in soda lime mixture is to
 a. Absorb moisture present in soda lime
 b. Increase the efficiency of soda lime
 c. Increase the pH of soda lime
 d. Take part in reaction with NaOH
28. Chemically rust is
 a. hydrated ferrous oxide b. only ferric oxide
 c. hydrated ferric oxide d. none of these
29. Silver article turns black when kept in the open for a few days due to formation of
 a. H_2S b. AgS c. $AgSO_4$ d. Ag_2S
30. The isomeric pair is
 a. ethane and propane b. propane and butane
 c. ethane and ethane d. butane and 2-methyl propane
31. Covalent compounds
 a. have high melting and boiling point
 b. are mostly soluble in water
 c. are formed between atoms of metals and non-metals
 d. are formed by the sharing of electrons in the bonding atoms.
32. The second most abundant metal in the earth's crust is
 a. oxygen b. silicon c. aluminium d. iron
33. An alloy of Zn and Cu is dissolved in dil. HCl. Hydrogen gas is evolved. In this evolution of gas
 a. only zinc reacts with dil. HCl b. only copper reacts with dil. HCl
 c. both zinc and copper react with dil. HCl d. only copper reacts with water
34. A tightly closed container contains 500 mL of gas. Now the gas is carefully transported into a 1000 mL container without any leakage. What is the volume of gas in the new container?
 a. 250mL b. 500mL c. 1000mL d. 1500mL
35. Which among the following is an intensive property
 a. Density b. Mass c. Volume d. All of these
36. What is Avagadro's number?
 a. 6.021×10^{21} b. 6.022×10^{22} c. 6.022×10^{23} d. 6.021×10^{21}

37. If the empirical formula is C_2H_8 and the value of n is 2 then molecular formula will be _____
- a. C_4H_8 b. C_6H_{10} c. C_4H_{16} d. C_4H_{18}
38. $ZnO + 2KOH$ _____
- a. $K_2ZnO_2 + 2H_2O$ b. $K_2ZnO + H_2O$ c. $K_2ZnO_2 + H_2O$ d. $Na_2ZnO_2 + H_2O$
39. Ammonium hydroxide is prepared by which of the following reaction?
- a. $NH_3 + H_2O \rightarrow NH_4OH$ b. $N_2 + H_2O \rightarrow NH_4OH$
c. $NH_3 + H_2O \rightarrow NH_3OH$ d. $NH_2 + H_2O \rightarrow NH_4OH$
40. Salts have _____.
- a. High melting point low boiling point b. Low melting point high boiling point
c. Low melting point low boiling point d. High melting point high boiling point
41. In $\triangle ABC$, sides BA and BC are extended to X and Y respectively. Bisectors of $\angle XAC$ and $\angle YCA$ meet in Z . If $\angle ABC = 80^\circ$, measurement of $\angle AZC$ is _____
- a. 50° b. 55° c. 60° d. 65°
42. Two circles with radii 5 cm and 3 cm are in the same plane such that distance between their centers is 10 cm. The length of the common tangent is
- a. $\sqrt{24}$ b. $\sqrt{72}$ c. $\sqrt{48}$ d. $\sqrt{96}$
43. Lengths of the three sides of a triangle are 8 cm, 15 cm and 17 cm respectively. Radius of incircle of the triangle is equal to
- a. 2 cm b. 2.5 cm c. 3 cm d. 4 cm
44. Point A is in the exterior of a circle. Through A , a diameter cuts the circle into P and Q , P being closer to A . Also, a tangent through A meets the circle in T . If $\angle TQP = 20^\circ$, $\angle TAP =$ _____
- a. 30° b. 40° c. 50° d. 60°
45. If a value changes to 6 times itself, the percentage change is equal to _____ % increase.
- a. 500 % b. 600 % c. 400 % d. None of these
46. If 5 units are sold at the cost price of 7 units, the percentage profit is _____ .
- a. $\frac{200}{7}$ % b. 40 % c. 30 % d. 20 %
47. A garden is rectangular with a breadth of 20 meter and length of 30 meter. A walkway of uniform width of area equal to 141 square meter is prepared along the periphery of the garden on the inner side. The width of walkway is:
- a. 1.5 meter b. 2 meter c. 2.5 meter d. 3 meter
48. If $(\sqrt{5x})^{5x} = (5x)^{\sqrt{5x}}$ then $x =$ _____
- a. 5 b. $\frac{4}{5}$ c. $\sqrt{5}$ d. $\frac{2}{\sqrt{5}}$
49. If $x = -1 + \sqrt{3}$, then $x^4 + 2x^3 + 5x^2 - 4x + 2 =$ _____
- a. $32 - 18\sqrt{3}$ b. $33 - 18\sqrt{3}$ c. $34 - 18\sqrt{3}$ d. $35 - 18\sqrt{3}$
50. In a family of previous years, every girl had as many brothers as many sisters while every

boy had twice as many sisters as many brothers. The number of siblings in that family was:

- a. 4 b. 5 c. 6 d. 7

51. In a test of hundred marks was conducted for class, the average marks obtained by boys was 86 and that of girls was 76. If the average of the entire class was 80, the ratio of number of boys to that of girls was :

- a. 1:3 b. 2:3 c. 3:1 d. 3:2

52. If $2\cos\theta + 5\sin\theta = 3$ then $5\cos\theta - 2\sin\theta = ?$

- a. $\sqrt{12}$ b. $\sqrt{13}$ c. $\sqrt{18}$ d. $\sqrt{20}$

53. The angle of elevation of the top of a $50\sqrt{3}m$ high tower changes from 30° to 60° in 10 seconds for a motorcyclist approaching the tower. The speed of the motorcyclist is _____

- a. 54 km/hr b. 48 km/hr c. 36 km/hr d. 60 km/hr

54. $\angle B = 90^\circ$ in ΔABC . M and N are on BC and AB respectively. If AB = 3, BC = 4, AM = 4 and CN = 6, then MN = _____

- a. $\sqrt{27}$ b. $\sqrt{30}$ c. $\sqrt{33}$ d. $\sqrt{38}$

55. Radii of the smaller and the larger circular surfaces of a frustum are $2a$ and $3a$ respectively. If the slant height of the frustum is a then the ratio of its volume and curved surface area is

- a. $\frac{19\sqrt{3}a}{30}$ b. $\frac{19\sqrt{3}a}{24}$ c. $\frac{19\sqrt{3}a}{18}$ d. $\frac{19\sqrt{3}a}{12}$

56. $\frac{x^2-x-2}{x^2+7x+12} \div \left(\frac{x^2-1}{x^2+3x-4} \div \frac{x^2+5x+6}{x^2+x-2} \right) =$ _____

- a. $\frac{x-2}{x+1}$ b. $\frac{x+2}{x-1}$ c. $\frac{x+2}{x+1}$ d. $\frac{x-2}{x-1}$

57. If the roots of the equation $ax^2 + bx + c = 0$ are in a ratio 3:4, then _____

- a. $12b^2 = 49ac$ b. $12b^2 = 7ac$ c. $144b^2 = 7ac$ d. $144b^2 = 49ac$

58. Length of each side of a rhombus is 5 cm. If one diagonal is of length 4 cm, area of the rhombus is :

- a. $\sqrt{21}$ b. $2\sqrt{21}$ c. $3\sqrt{21}$ d. $4\sqrt{21}$

59. m^{th} term of an A.P. is $\frac{1}{2n}$ and n^{th} term of the same A.P. is $\frac{1}{2m}$. The $(m+n)^{\text{th}}$ term is :

- a. $\frac{2(m+n)}{mn}$ b. $\frac{m+n}{2mn}$ c. $\frac{m+n}{4mn}$ d. $\frac{4(m+n)}{mn}$

60. If α and β are roots of the equation $x^2 + 2x + 3 = 0$ then the equation with roots as $\frac{\alpha+1}{\alpha-1}$ and $\frac{\beta+1}{\beta-1}$ is :

- a. $2x^2 - x - 3 = 0$ b. $3x^2 + x + 1 = 0$ c. $2x^2 - x + 3 = 0$ d. $3x^2 + x - 1 = 0$

61. If green plant cells are incubated with O_{18} labelled CO_2 , which of the following molecules will become radioactive when the cells are exposed to light?

- a. ATP b. Water c. Sugar d. O_2

62. The range beyond which yeasts poison themselves to death in alcohol fermentation when the

concentration of alcohol reaches to?

- a. 13% b. 15% c. 12% d. 17%

63. Which hormone plays important role in phototropism?

- a. Gibberellin b. Ethylene c. Auxins d. Cytokinin

64. Blood doping means use of banned substances by athletes that have a favorable effect on erythrocyte count by stimulating the bone marrow. The source of such a hormone can be the human:

- a. Spleen b. Heart c. Kidney d. Lungs

65. Caecum is small blind sac which hosts some symbiotic micro-organisms. From it a small finger like vestigial organ arises. This organ is called:

- a. Parotid gland b. Peyers patch c. Vermiform appendix d. Lacteals

66. According to red list (2004) No. of total extinct species in last 500 years

- a. 504 species b. 387 species c. 478 species d. 784 species

67. A bacterial cell divides every one minute. It takes 15 minutes a cup to be one-fourth full. How much time will it take to fill the cup?

- a. 30 minutes b. 45 minutes c. 60 minutes d. 17 minutes

68. Which of the following set of hormones are called gonadotropins?

- a. GH and LH b. LH and FSH c. LH and ACTH d. FSH and TSH

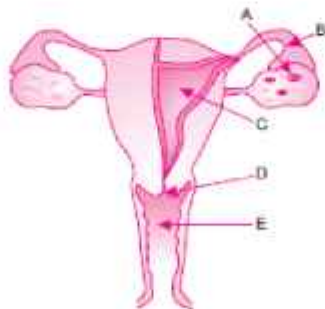
69. The program me of 'Family Planning' was initiated in the year _____.

- a. 1950 b. 1947 c. 1949 d. 1951

70. Posture and balance of the body is controlled by

- a. Pons b. Medulla oblongata c. Cerebellum d. Cerebrum

71. Based on the given diagram locate the site of fertilization in human females?



- a. E b. C c. B d. A

72. What is common between guard cells and mesophyll cell?

- a. Dumb-bell shape b. Differentially thick walls
c. Presence of chloroplasts d. Uniformly thin walls

73. A basket of vegetables contain carrot,potato,radish,tomato. Which of them represent correct homologous structure?

- a. Carrot and Potato
- c. Radish and Carrot

- b. Carrot and Tomato
- d. Radish and Potato

74. Respiration is

- a. anabolic + exergonic
- b. catabolic + exergonic
- c. catabolic + endergonic
- d. anabolic + endergonic

75. A plant with red coloured flowers is crossed with a plant having white flowers. The red and white colour of the flower is controlled by a single gene. Red is dominant over white. The F₁ progeny is self-pollinated and the flower colour in F₂ is observed. Given the above information, what is the expected phenotypic ratio of plants with different flower colours?

- a. All plants with red flowers
- b. Red white in the ratio of 3: 1
- c. Pink: white in the ratio of 3:1
- d. Red: pink white in a ratio of 1:2:1

76. Doctors use a stethoscope to hear the sounds produced during each cardiac cycle. When is the second sound heard?

- a. Ventricular wall vibrates due to gushing in of blood from atria
- b. Semilunar valves close down after the blood flows into vessels from ventricles
- c. AV node receives a signal from SA node
- d. AV valves open up

77. Stomata on the surface of the leaf, open by

- a. Decreasing the solute concentration in the guard cells
- b. Increasing the solute concentration in the guard cells
- c. Weakening of the cell walls of the guard cells to allow them to stretch
- d. Increasing the water potential in the guard cells.

78. "Double fertilization" is a complex mechanism of flowering plants that is also unique to angiosperms. Choose the most appropriate statement from the options listed below that explains this phenomenon.

- a. Fertilization in two flowers of the same plant forming endosperms.
- b. Two male gametes fertilize two eggs inside the ovule as a result the ovary gives rise to bigger fruits.
- c. Two fertilizations occur in a flower-one fertilization results in the formation of a diploid zygote and the second fertilization results in the formation of a triploid endosperm.
- d. Two pollen grains sending two pollen tubes inside the ovary, resulting in the formation of two seeds inside the fruit.

79. Which of the following would have the same O₂ content?

- a. Blood entering the lungs - blood leaving the lungs
- b. Blood entering the right side of the heart - blood leaving the right side of the heart
- c. Blood entering the right side of the heart- blood leaving the left side of the heart

d. Blood entering the tissue capillaries - blood leaving the tissue capillaries

80. Nodes of Ranvier are

- a. Granulated bodies in cytoplasm
- b. Gaps between adjacent myelin sheath on axons
- c. Modulated bodies at the ends of dendrites
- d. Vesicles at the terminal ends of axons

81. The earth rotates on its axis from

- a. West to East
- b. East to West
- c. South to North
- d. North to South

82. Meaning of Despondent

- a. Hopeful
- b. One who lost hope
- c. Desperate
- d. Faithless

83. The reference to Hindus in Article 25 of the constitution does not include

- a. Parsees
- b. Sikhs
- c. Jains
- d. Buddhists

84. Find the missing term : 6, \square , 21, 33, 48

- a. 14
- b. 20
- c. 12
- d. 18

85. The expounder of Yoga Philosophy is

- a. Patanjali
- b. Gautam
- c. Jaimini
- d. Shankaracharya

86. The equatorial rain forest is also known as

- a. Savanna
- b. Campos
- c. Selvas
- d. Llanos

87. Who has been selected as the first woman president of Indian Olympic association?

- a. Mary Kom
- b. P T Usha
- c. Anju bobby George
- d. Karnam Malleshwari

88. MS - Word is an example of _____

- a. An operating System
- b. A processing device
- c. Application Software
- d. An input device

89. Who wrote the book New Dimensions of India's Foreign Policy?

- a. Atal Bihari Vajapeyi
- b. Abdul Kalam Azad
- c. Amit Chaudri
- d. Raghuram Rajan

90. Lakshmana is considered to be the incarnation of whom?

- a. Lord Vishnu
- b. Lord Shiva
- c. Lord Brahma
- d. Sheshanaga

😊😊😊😊😊 **Best of Luck** 😊😊😊😊😊