



**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 9 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]

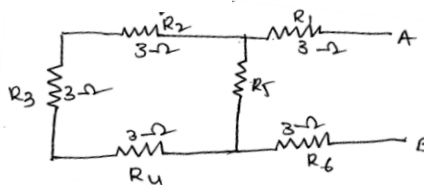
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Devinagara, Talapady , Mangaluru - 23

PRATIBHA PRAVEENA EXAM 2017 - 18



- A body of mass 1.50 kg is dropped from a height of 12 m. What is the force acting on it during its fall ($g = 9.8 \text{ m/s}^2$)
 - 147 N
 - 1.47 N
 - 14.7 N
 - 0.147 N
- The energy of an electron is $4 \times 10^{-19} \text{ J}$. Express it in eV
 - 2.5
 - 25
 - 250
 - 0.25
- A space craft of mass M moving with velocity ' V ' in space explodes and breaks into two pieces. After the explosion a mass ' m ' of the space craft is left stationary. The velocity of the other part is
 - $\frac{mV}{M-m}$
 - $\frac{mV}{M+m}$
 - $\frac{M+m}{M}$
 - $\frac{MV}{M}$
- An engine accelerates a car of mass 800 kg to a speed of 72 kmph. If the frictional force is 10 N per ton. The power developed by the engine is
 - 10 K W
 - 15 K W
 - 20 K W
 - 5 K W
- A ball of mass 0.20 kg is thrown vertically upwards with an initial velocity of 20 m/s. The maximum potential energy it gains as it goes up
 - 40 J
 - 400 J
 - 0.4 J
 - 0.004 J
- The tension in a wire is decreases by 19 %. The percentage decrease in frequency will be
 - 19 %
 - 10 %
 - 0.19 %
 - None of these
- A tuning fork of frequency 256 Hz will resonate frequency
 - 128 Hz
 - 256 Hz
 - 384 Hz
 - 512 Hz
- The slope of the straight line on $V - I$ graph gives
 - Conductance
 - Resistance
 - Resistivity
 - Conductivity
- For the combination of resistors shown in the following figure. The equivalent resistance between A and B is
 - 8.25 Ω
 - 0825 Ω
 - 82.5 Ω
 - None of these



10. When the main switch of the house circuit is put off, it disconnects the
- Live wire only
 - Neutral wire only
 - Earth wire only
 - Both the live and neutral wires
11. A thin double convex lens has radii of curvature each of magnitude 40 cm and is made of glass with $n = 1.65$. The focal length of the lens is nearly
- 30 cm
 - 31 cm
 - 40 cm
 - 41 cm
12. The refractive index of water is $\frac{4}{3}$. It means that
- Light travels in water $\frac{4}{3}$ times faster than in air
 - Light travels in water $\frac{3}{4}$ times slower than in air
 - Light travels in air and in water with same speed
 - None of these
13. A ray of light incident on a lens parallel to its principal axis, after refraction passes through
- Its first focus
 - Its optical centre
 - Its second focus
 - The centre of curvature of its second surface
14. A cube of ice of mass 30 g at 0°C is dropped into 200 g of water at 30°C the final temperature of water when the whole ice cube has melted is (Given : Specific latent heat of ice = 80 cal g^{-1} and specific heat capacity of water = $1\text{ cal g}^{-1}\text{ }^\circ\text{C}^{-1}$)
- 16.15°C
 - 15.65°C
 - 14.65°C
 - 16.75°C
15. When a bimetallic strip is heated it
- Does not bend at all
 - Gets twisted in the form of an helix
 - Bend in the form of an arc with the more expandable metal out side
 - Bend in the form of an arc with the more expandable metal inside
16. An electron moving with K.E $6 \times 10^{-16}\text{ J}$ enters a field of magnetic induction $6 \times 10^{-3}\text{ Wb/m}^2$ at right angles to its motion. The radius of its path is
- 3.42 cm
 - 4.23 cm
 - 6.17 cm
 - 7.7 cm
17. An electron and a proton enter a magnetic field perpendicularly. Both have same kinetic energy. Which of the following is true?
- Trajectory of electron is less curved
 - Trajectory of proton is less curved
 - Both trajectory are equally curved
 - Both move on straight line path
18. A cylindrical bar magnet is kept along the axis of circular coil. The magnet is rotated about its axis such that north pole faces the coil. The induced current in the coil is
- Zero
 - Is clock – wise from magnet side
 - May be clock wise or anti clock wise
 - Is anti clock wise from magnet side

19. The flux linked with a coil at any instant ' t ' given by $\phi = 10 t^2 - 50 t + 250$. Then induced emf at $t = 3$ sec is
- 10 V
 - 10 V
 - 190 V
 - 190 V
20. The induced emf of a generator when the flux of poles is doubled and speed is doubled. Then emf
- Becomes half
 - Remains same
 - Becomes double
 - Becomes 4 times
21. If 6.537 g of zinc reacts with exactly 7.0906 g of chlorine to form the only compound of chlorine and zinc, how much zinc will react with 14.18g of chlorine?
- 11.06 g
 - 14.90 g
 - 13.07 g
 - 12.89 g
22. If 2 L of solution contains 4.5 mol of solute, what is the molarity of the solution?
- 2.50M
 - 2.75M
 - 2.25M
 - 2.00M
23. Calculate the oxygen pressure in a mixture of 0.500 mol of oxygen and 0.750 mol of nitrogen with a total pressure of 40.0kPa
- 15.0kPa
 - 16.0kPa
 - 15.5kPa
 - 16.5kPa
24. The highest average translational kinetic energy occurs in which state of matter?
- Gas
 - Solid
 - Liquid
 - Gas and liquid
25. Brass contains how many percent copper?
- 80 %
 - 70 %
 - 75 %
 - 65 %
26. Which of the following is a property of high carbon steel?
- Malleable
 - Brittle
 - Ductile
 - All of the choices
27. Duralumin is an allow of aluminum, copper magnesium and manganese. How many percent of duralumin is manganese?
- 2
 - 1
 - 3
 - 4
28. The chalcogens are elements in what group in the periodic table?
- Group VA
 - Group VIA
 - Group VIIA
 - Group IVA
29. A solution of KCl in water is 35 % (m/V). The density of the solution is 1.2 g mL^{-1} . Then the concentration of the solution in % (m/m) is
- 29.16 %
 - 58.32 %
 - 15 %
 - 17.5 %
30. As the elements of period '2' are considered from left to right, there is generally a decrease in
- Ionization energy
 - Electronegativity
 - Metallic character
 - Non – metallic character
31. Dead organisms are transformed into petroleum and natural gas
- Absence of air
 - Presence of air
 - Presence of sunlight
 - None of these
32. What happens when Zinc is placed in aqs Copper (II) sulphate ?
- Copper atoms are oxidized
 - Zinc atoms are oxidized
 - Copper ions are oxidized
 - Zinc ions are oxidized

33. Match the following

- | | |
|------------------------------|------------------------------|
| i. Fatty acid | 1. Better alkali |
| ii. Potassium hydroxide | 2. Process to make detergent |
| iii. Non – ionic surfactants | 3. Process of make soap |
| iv. Neutralization | 4. Oil and fats |

	i	ii	iii	iv
a.	3	4	2	1
b.	1	2	3	4
c.	4	1	2	3
d.	2	3	4	1

34. The atom having the valence electronic configuration $4s^2 4p^2$ would be in

- | | |
|---------------------------|---------------------------|
| a. Group IIA and period 3 | c. Group IVA and period 4 |
| b. Group IIB and period 4 | d. Group IVA and period 3 |

35. $1s^2 2s^2 2p^5$; this electronic configuration represents

- | | | | |
|----------|--------------|--------------|------------------------|
| a. Metal | b. Non-metal | c. metalloid | d. Radioactive element |
|----------|--------------|--------------|------------------------|

36. The process of heating an ore in the absence of air below its melting point is known as

- | | | | |
|----------------|-------------|-------------|-----------|
| a. Calcination | b. Roasting | c. Smelting | d. Poling |
|----------------|-------------|-------------|-----------|

37. The total number of atomic orbitals in the fourth energy level of an atom is

- | | | | |
|------|------|-------|-------|
| a. 4 | b. 8 | c. 16 | d. 32 |
|------|------|-------|-------|

38. All halogens have how many electrons in the outer shell of the atom?

- | | | | |
|------|------|------|------|
| a. 5 | b. 6 | c. 7 | d. 8 |
|------|------|------|------|

39. Calculate the number of aluminium ions present in 0.51 g of aluminium oxide

- | | | | |
|--------------------------|---------------------------|---------------------------|---------------------------|
| a. 6.23×10^{20} | b. 6.023×10^{21} | c. 62.23×10^{21} | d. 6.023×10^{23} |
|--------------------------|---------------------------|---------------------------|---------------------------|

40. Of the following which one is classified as a polyester polymer

- | | | | |
|----------------|-------------|-------------|-------------|
| a. Nylon – 6,6 | b. Terylene | c. Bakelite | d. Melamine |
|----------------|-------------|-------------|-------------|

41. Roots of $3^x + 3^{-x} = 10/3$ are-

- | | | | |
|--------|----------|----------|------------------|
| a. 0,1 | b. 1, -1 | c. 0, -1 | d. None of these |
|--------|----------|----------|------------------|

42. If α, β are roots of the equation $2x^2 - 5x + 3 = 0$, then $\alpha^2\beta + \beta^2\alpha$ is equal to-

- | | | | |
|-----------|------------|-----------|------------|
| a. $15/2$ | b. $-15/4$ | c. $15/4$ | d. $-15/2$ |
|-----------|------------|-----------|------------|

43. If α and β are the roots of $ax^2 + bx + c = 0$, then the value of $\left\{ \frac{1}{a\alpha + b} + \frac{1}{a\beta + b} \right\}$ is-

- | | | | |
|-------------------|-------------------|-------------------|------------------|
| a. $\frac{a}{bc}$ | b. $\frac{b}{ca}$ | c. $\frac{c}{ab}$ | d. None of these |
|-------------------|-------------------|-------------------|------------------|

44. The quadratic equation with one root $2i$ is-
- a. $x^2 + 4 = 0$ b. $x^2 - 4 = 0$ c. $x^2 + 2 = 0$ d. $x^2 - 2 = 0$
45. If m^{th} terms of the series $63 + 65 + 67 + 69 + \dots$ and $3 + 10 + 17 + 24 + \dots$ be equal, then $m =$
- a. 11 b. 12 c. 13 d. 15
46. If third term of a G.P is 4, then product of first 5 term is-
- a. 4^3 b. 4^4 c. 4^5 d. None of these
47. The coefficient of x^5 in the expansion of $(2 + 3x)^{12}$ is-
- a. ${}^{12}C_5 2^5 \cdot 3^7$ b. ${}^{12}C_6 2^6 \cdot 3^6$ c. ${}^{12}C_5 2^7 \cdot 3^5$ d. None of these
48. The number of terms in $(x + a)^{100} + (x - a)^{100}$ after solving the expansion is -
- a. 202 b. 51 c. 101 d. None of these
49. Find the total number of ways of answering 5 objective type questions, each question having 4 choices.
- a. 4^6 b. 5^4 c. 6^3 d. 4^5
50. If ${}^{28}C_{2r} : {}^{24}C_{2r-4} = 225:11$ then the value of r is-
- a. 14 b. 8 c. 5 d. 7
51. The set $\{x : x \in \mathbb{N}, x \text{ is prime and } 3 < x < 5\}$ is-
- a. $\{4\}$ b. $\{3, 5\}$ c. Void d. Non – Void
52. Two finite sets have m and n elements respectively. The total number of subsets of first set is 56 more than the total number of subsets of the second set. The values of m and n respectively are -
- a. 7,6 b. 6,3 c. 5,1 d. 8,7
53. If for three disjoint sets A, B, C ; $n(A) = 10$, $n(B) = 6$ and $n(C) = 5$, then $n(A \cup B \cup C)$ is equal to-
- a. 21 b. 11 c. 1 d. 9
54. The set $(A \cap B)^c \cup (B \cap C)$ is equal to -
- a. $A \cup B \cup C$ b. $A^c \cup B$ c. $A^c \cup B^c$ d. none
55. Following table shows the weight of 12 students:

Weight (in kgs.)	67	70	72	73	75
No. of students	4	3	2	2	1

then mean weight is-

- a. 70.25 kg. b. 70.50 kg. c. 70.75 kg. d. None of these
56. A factory employs 100 workers of whom 60 work in the first shift and 40 work in the second shift. The average wage of all the 100 workers is Rs.38. If the average wage of 60 workers of the first shift is Rs.40, then the average wage of the remaining 40 workers of the second shift is-
- a. 35 b. 40 c. 45 d. None of these

57. If the mean of numbers 27, 31, 89, 107, 156 is 82, then the mean of 130, 126, 68, 50, 1 is-
- a. 75 b. 157 c. 82 d. 80
58. If $5 \tan \theta = 4$, then $\frac{5 \sin \theta - 3 \cos \theta}{\sin \theta + 2 \cos \theta} =$
- a. 5/9 b. 14/5 c. 9/5 d. 5/14
59. If $\sin \theta + \operatorname{cosec} \theta = 2$ then the value of $\sin^8 \theta + \operatorname{cosec}^8 \theta$ is equal to-
- a. 2 b. 2^8 c. 2^4 d. None of these
60. $x = y \cos \frac{2\pi}{3} = z \cos \frac{4\pi}{3}$, then $xy + yz + zx =$
- a. -1 b. 0 c. 1 d. 2
61. $\sqrt{2 + \sqrt{2 + 2 \cos 4\theta}}$; $\forall 0 < \theta < \pi/4$ is
- a. $\cos \theta$ b. $\sin \theta$ c. $2 \cos \theta$ d. $2 \sin \theta$
62. A kite is flying with the string inclined at 60° to the horizon. The height of the kite above the ground, when the string is 20 mts. long, is-
- a. 15 m b. $15\sqrt{3}$ m c. 10 m d. $10\sqrt{3}$ m
63. If the angle of depression of a point A on the ground from the top of a tower be 30° , then the angle of elevation of the top of the tower from the point A will be-
- a. 60° b. 45° c. 30° d. None of these
64. A flag staff on the top of the tower 80 meter high, subtends an angle $\tan^{-1}\left(\frac{1}{9}\right)$ at a point on the ground 100 meters from the foot of the tower. Find the height of the flag- staff.
- a. 20 m b. 30 m c. 25 m d. 35 m
65. The coordinates of a point are (0, 1) and the ordinate of another point is -3. If the distance between the two points is 5 then the abscissa of another point is -
- a. -3 b. 3 c. ± 3 d. 1
66. The correct statement for any event A is-
- a. $0 \geq P(A) \geq 1$ b. $0 \leq P(A) \leq 1$ c. $P(A) = 1$ d. $P(A) < 0$
67. The probability of drawing a black king from a pack of 52 cards is-
- a. 1/13 b. 1/26 c. 2/13 d. 4/13
68. If a matrix B is obtained by multiplying each element of a matrix A of order 2×2 by 3, then relation between A and B is-
- a. $A = 3B$ b. $3A = B$ c. $9A = B$ d. $A = 9B$

69. A matrix $A = (a_{ij})$ $m \times n$ is said to be a square matrix if-
- $m = n$
 - $m \leq n$
 - $m \geq n$
 - $m < n$
70. Which of the following is a statement-
- May you live long!
 - May God bless you!
 - The sun is a star
 - Hurrah! we have won the match
71. Which of the following pigment is soluble in water?
- Carotene
 - Anthocyanin
 - Xanthophyll
 - Chlorophyll
72. Stomata of CAM plants
- Are always open
 - Open during the day & close at night
 - Open during the night & close during the day
 - Never open
73. Solution concentration is higher in the external solution. The solution is
- Hypotonic
 - Hypertonic
 - Isotonic
 - None of these
74. The world Biodiversity day is celebrated annually on
- 22nd May
 - 16th September
 - 5th June
 - 29th December
75. Which of the following is an amphibious plant?
- Lohes
 - Vallisneria
 - Typha
 - Trapa
76. Fossils are now dated by
- Stratigraphic period
 - Studying their association with other mammals
 - Amount of calcium present in residue
 - Radioactive carbon content
77. Which of the following is used for determining the rate of transpiration in plants?
- Tensiometer
 - Auxanometer
 - Porometer
 - Photometer
78. Different forms of a gene are called
- Complementary genes
 - Supplementary genes
 - Heterozygotes
 - Alleles
79. The distal part of the stomach that opens into duodenum is called
- Fundus
 - Pylorus
 - Omentum
 - Jejunum
80. Emulsification of fat occurs by
- Bile salts
 - Bile pigments
 - Pancreatic juice
 - Succus entericus
81. Ornithine cycle occurs in the
- Hepatocytes
 - Adipocytes
 - Osteocytes
 - Histiocytes
82. Urinary bladder opens to exterior through
- Ureter
 - Urethra
 - Nephron
 - Glomerulus

83. Haemopoiesis is the process of formation of _____ in bone marrow
- a. Red blood corpuscle
 - b. White blood corpuscles
 - c. Blood platelets
 - d. All of these
84. The heart is covered by
- a. Epicardium
 - b. Pericardium
 - c. Supracardium
 - d. Endocardium
85. Pulse is a direct measure of
- a. Blood pressure
 - b. Stroke volume
 - c. Cardiac output
 - d. Heart rate
86. Urea is synthesized in the
- a. Mesenteries
 - b. Liver
 - c. Stomach
 - d. Intestine
87. Colour blindness is due to defect in
- a. Cones
 - b. Rods
 - c. Rods and cones
 - d. None of these
88. Which is a gastrointestinal hormone?
- a. Prolactin
 - b. Enterokinase
 - c. Cholinesterase
 - d. Secretin
89. The Islets of Langerhans are found in
- a. Pancrease
 - b. Liver
 - c. Alimentary canal
 - d. Spleen
90. Fertilization occurs in the following region of the uterus
- a. Endometrium
 - b. Ampullary – isthmic junction
 - c. Ovary
 - d. Cervix

😊😊😊😊😊 **Best of Luck** 😊😊😊😊😊