



THE RADIANT[®] ACADEMY

STAR (STUDENT TALENT ACADEMIC REWARD)

CLASS -X

SAMPLE PAPER

Time: 90 Min.

Max. Marks: 90

GENERAL INSTRUCTIONS

TEST PATTERN					
Time	Total No. of Questions	Subject/Question Segregation	Type	Total Marks : 90	
				Correct	Negative
90 Minutes	1-90	Physics (1-10) Chemistry (11-20) Biology (21-30) Mathematics (31-55) Social Science (56-65) Mental Ability (66-80) English (81-90)	Objective Question	1 Mark	0.25 Mark

1. A student has to write his/her answers in the OMR sheet by darkening the appropriate bubble with the help Of Ball pen only as the correct answer(s) of the question attempted.
2. Blank papers, clip boards, log tables, slide rule, calculators, mobile or any other electronic gadgets in any form is not allowed.
3. Write your **Name & Roll No.** in the space provided in the bottom of this booklet.
4. Before answering the paper, fill up the required details in the blank space provided in the OMR sheet.
5. **In case of any dispute, the answer sheet available with the institute shall be final.**
6. **In case of tie the younger in age will get top rank**

NAME OF THE CANDIDATE : ROLL NO. :

I have read all the instructions
and shall abide by them

I have verified the identity, name and roll number
of the candidate.

Signature of the Candidate

Signature of the Invigilator

THE RADIANT ACADEMY

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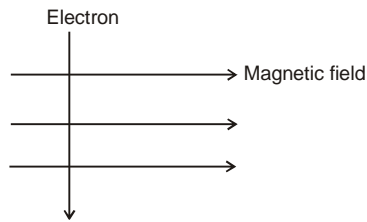
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1. PHYSICS

Straight Objective

This section contains 10 questions. Each question has 4 choices (A), (B), (C) and (D) for its answer, out of which **ONLY ONE** is correct.

1. An electron enters a magnetic field at right angles to it, as shown in the figure below. The direction of force acting on the electron will be



- (A) to the right (B) to the left (C) out of the page (D) into the page
2. A magnet is brought towards a coil (i) speedily (ii) slowly then the induced e.m.f will be
(A) More in first case (B) More in first case
(C) Less in first case (D) Less in first case
3. The current in the adjoining circuit will be
(A) $\frac{1}{45}$ ampere
(B) $\frac{1}{15}$ ampere
(C) $\frac{1}{10}$ ampere
(D) $\frac{1}{5}$ ampere
-
- The circuit diagram shows a 2V battery on the left. A wire goes up from the positive terminal, then right, then down to a junction. From this junction, one wire goes down to a 30Ω resistor, and another goes right to another junction. From this second junction, one wire goes up to a 30Ω resistor, and another goes right to a third junction. From this third junction, one wire goes down to a 30Ω resistor, and another goes left to the negative terminal of the battery. The current is labeled 'i' on the top wire.
4. Three resistances of magnitude 2, 3 and 5 ohm are connected in parallel to a battery of 10 volts and of negligible resistance. The potential difference across 3Ω resistance will be
(A) 2 volts (B) 3 volts (C) 5 volts (D) 10 volts
5. 62.5×10^{18} electrons per second are flowing through a wire of area of cross-section 0.1 m^2 , the value of current flowing will be
(A) 1 A (B) 0.1 A (C) 10 A (D) 0.11 A
6. The refractive index of water with respect to air is $\frac{5}{3}$ and the refractive index of air with respect to glass is $\frac{2}{3}$. The refractive index of water with respect to glass is
(A) $\frac{9}{10}$ (B) $\frac{10}{9}$ (C) $\frac{3}{2}$ (D) $\frac{2}{3}$
7. A good fuel is one that possesses:
(A) High calorific value and low ignition temperature
(B) Low calorific value and low ignition temperature
(C) High calorific value and moderate ignition temperature
(D) Low calorific value and moderate ignition temperature
8. In a hydroelectric power plant more electrical power can be generated if water falls from a greater height because:
(A) Its temperature increases.
(B) Larger amount of potential energy is converted into kinetic energy.
(C) The electricity content water increases with height.
(D) More water molecules dissociate into ions
9. The focal length of a concave mirror is 30cm. Where an object be placed so that its image is erect.
(A) 75 cm (B) 40 cm (C) 20 cm (D) 60 cm
10. Light enter from a medium of RI $\frac{5}{3}$ to a medium of RI $\frac{4}{3}$, what is the value of critical angle for these mediums.
(A) 37° (B) 45° (C) 53° (D) 60°

2. CHEMISTRY

Straight Objective Type

This section contains 10 questions. Each question has 4 choices (A), (B), (C) and (D) for its answer, out of which **ONLY ONE** is correct.

11. Neutralization reaction is an example of
(A) Exothermic reaction (B) Endothermic reaction
(C) Oxidation reaction (D) None of these
12. The reaction in which two compounds exchange their ions to form two new compound is
(A) Displacement reaction (B) Decomposition reaction
(C) Addition reaction (D) Double displacement
13. In the reaction $\text{Mg} + \text{Cl}_2 \longrightarrow \text{MgCl}_2$ chlorine may be regarded as
(A) Oxidising agent (B) reducing agent (C) A catalyst (D) Providing an inert medium
14. Oxidation is a process which involves
(A) Addition of oxygen (B) Removal of hydrogen
(C) Loss of electron (D) All of above
15. Modern periodic law was proposed by
(A) Mendeleev (B) Henry mosley (C) Warner (D) Bohr and Burry
16. Which of the following pairs of elements belong to the same period of the periodic table
(A) C, Mg (B) N, Ar (C) Ca, Cl (D) K, Cu
17. Which of the following is the most reactive halogen?
(A) F (B) Cl (C) Br (D) I
18. Which of the following is the weakest base?
(A) NaOH (B) NH_4OH (C) KOH (D) $\text{Ca}(\text{OH})_2$
19. Nature of methyl orange is
(A) Acidic (B) Basic (C) Neutral (D) None of these
20. Which of the following is/are oxide ore(s)?
(A) Buxite (B) Cuprite (C) Haematite (D) All of these

3. BIOLOGY

Straight Objective Type

This section contains 10 questions. Each question has 4 choices (A), (B), (C) and (D) for its answer, out of which **ONLY ONE** is correct.

21. The dark reaction in photosynthesis is called so because it
(A) Cannot occur during day time (B) Is light dependent
(C) Is light independent (D) Occurs rapidly at night
22. For the process of photosynthesis all except one of the following items are essential. Point out the exception
(A) CO_2 , optimum temperature (B) Glucose and oxygen
(C) Water and minerals (D) Light and chlorophyll
23. Dental formula of an adult man is
(A) $\frac{2,1,2,3}{2,1,2,3}$ (B) $\frac{2,1,2,3}{2,1,2,2}$ (C) $\frac{2,1,2,3}{2,1,2,4}$ (D) $\frac{2,1,3,2}{2,1,3,2}$
24. Bilirubin and bilivirdin are found in
(A) Blood (B) Bile (C) Saliva (D) None of these

25. Rate of respiration is directly affected by
 (A) CO₂ concentration (B) O₂ in trachea (C) Concentration of O₂ (D) Diaphragm expansion
26. When CO₂ concentration in blood increases, breathing becomes
 (A) Slow and deep (B) Faster and deeper
 (C) Shallower and slow (D) There is no effect on breathing
27. A respiratory pigment is absent in
 (A) Bird (B) Frog (C) Rabbit (D) Cockroach
28. The basic functional unit of human kidney is
 (A) Henle's loop (B) Nephron (C) Nephridia (D) Pyramid
29. All veins have deoxygenated blood except
 (A) Renal artery (B) Hepatic vein (C) Hepatic portal vein (D) Pulmonary veins
30. Residual air mostly occurs in
 (A) Alveoli (B) Bronchus (C) Nostrils (D) Trachea

4. MATHEMATICS

Straight Objective Type

This section contains 25 questions. Each question has 4 choices (A), (B), (C) and (D) for its answer, out of which **ONLY ONE** is correct.

31. For any two positive integers a and b, there exist unique integer q and r such that $a = bq + r$. If $b = 4$ then which is not the value of r ?
 (A) 1 (B) 2 (C) 3 (D) 4
32. If $f(x) = x^3 + px + q$ is divisible by $x^2 + x - 2$, then the remainder when $f(x)$ is divided by $(x + 1)$
 (A) 4 (B) 3 (C) -4 (D) 1
33. Which of the following is a trinomial ?
 (A) $x^2 + 2x + x$ (B) $3x^3 + 2x^2 - x^2$ (C) $(x + 2)^2 - x^2$ (D) $x^2 + x + 1$
34. Two numbers are in the ratio of 9 : 5. If their LCM is 900, then HCF is :
 (A) 30 (B) 20 (C) 15 (D) 60
35. If $abx^2 = (a - b)^2(x + 1)$, then the value of $1 + \frac{4}{x} + \frac{4}{x^2}$ is :
 (A) $\left(\frac{a-b}{a+b}\right)^2$ (B) $\left(\frac{a+b}{a-b}\right)^2$ (C) $\left(\frac{a}{a+b}\right)^2$ (D) $\left(\frac{b}{a+b}\right)^2$
36. If 1 is a zero of the polynomial $p(x) = ax^2 - 3(a - 1)x - 1$, then the value of a is
 (A) 0 (B) 1 (C) 2 (D) 3
37. Zeroes of which quadratic polynomial are 4 and 3.
 (A) $x^2 + 7x + 12$ (B) $x^2 - 7x + 12$ (C) $x^2 + 7x - 12$ (D) $x^2 - 7x - 12$
38. If two zeroes of the polynomial $x^4 + x^3 - 9x^2 - 3x + 18$ are $\sqrt{3}$ and $-\sqrt{3}$, then the other zeroes are
 (A) -3, 2 (B) -3, -2 (C) 3, 2 (D) -2, 3
39. If P(A) denotes the probability of an event then:
 (A) $P(A) < 0$ (B) $P(A) > 0$ (C) $0 \leq P(A) \leq 1$ (D) $-1 \leq P(A) \leq 0$
40. The probability that a non-leap year selected at random will contain 53 Sundays is:
 (A) $\frac{1}{7}$ (B) $\frac{2}{7}$ (C) $\frac{3}{7}$ (D) $\frac{5}{7}$
41. When a die is thrown, the probability of getting an odd number less than 3 is:
 (A) $\frac{1}{6}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) 0

42. 5.2463636363.....is
 (A) An integer (B) A rational number (C) An irrational (D) None of these

43. The decimal expansion of the rational number $\frac{31}{2^2 \times 5}$ will terminate after
 (A) One decimal place (B) Two decimal places
 (C) Three decimal places (D) More than three decimal places

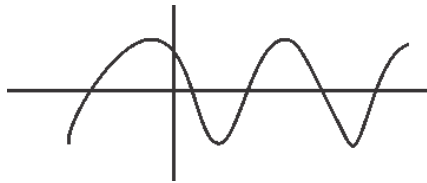
44. Raj wanted to type 200 natural numbers, how many times does he have to press the keys
 (A) 489 (B) 492 (C) 400 (D) 365

45. If α, β, γ are the zeroes of $x^3 - 5x^2 + 6x - 1$, then value of $\alpha^3 + \beta^3 + \gamma^3 = ?$
 (A) 38 (B) -38 (C) 19 (D) -19

46. Find the other zero of the polynomial $x^3 + 3x^3 - 2x - 6$, if two of its zeroes are $-\sqrt{2}$ and $\sqrt{2}$.
 (A) -3 (B) 3 (C) 2 (D) None of these

47. If α, β are the zeroes of $x^2 - 6x + k = 0$, what is the value of k if $3\alpha + 2\beta = 20$
 (A) -16 (B) 8 (C) -2 (D) -8

48. The number of zeroes for the curve



(A) 5 (B) 4 (C) 3 (D) 2

49. The quadratic equation whose one rational root is $3 + \sqrt{2}$ is
 (A) $x^2 - 7x + 5 = 0$ (B) $x^2 + 7x + 6 = 0$ (C) $x^2 - 7x + 6 = 0$ (D) $x^2 - 6x + 7 = 0$

50. If the system of equations $kx + 3y - (k - 3) = 0$, $12x + ky - k = 0$ has infinitely many solutions, then K = ?
 (A) 6 (B) -6 (C) 0 (D) None of these.

51. Ved travels 600 km to his home partly by train and partly by car . He takes 8 hours if he travels 120 km by train and the rest by car . He takes 20 minutes longer if he travels 200 km by train and rest by car . Find the speed of train and that of the car ?
 (A) 60,80 (B) 100,80 (C) 100,60 (D) 80,100

52. The equation $2x^2 + kx + 3 = 0$ has two equal roots, then the value of k is
 (A) $\pm\sqrt{6}$ (B) ± 4 (C) $\pm 3\sqrt{2}$ (D) $\pm 2\sqrt{6}$

53. The roots of the quadratic equation $2x^2 - 2\sqrt{2}x + 1 = 0$ are
 (A) $\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}$ (B) $\sqrt{2}, \sqrt{2}$ (C) $\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}$ (D) $\sqrt{2}, -\frac{1}{\sqrt{2}}$

54. A 6 feet tall man finds that the angle of elevation of a 24 feet high pillar and the angle of depression of its base are complementary angles. The distance of man from the pillar is:
 (A) $4\sqrt{3}$ feet (B) $6\sqrt{3}$ feet (C) $8\sqrt{3}$ feet (D) $10\sqrt{3}$ feet

55. The angle of elevation of the top of a tower from a point P on the ground is α . After walking a distance d towards the foot of the tower, angle of elevation is found to be β . Then
 (A) $\alpha < \beta$ (B) $\alpha > \beta$ (C) $\alpha = \beta$ (D) None of these

5. SOCIAL SCIENCE

Straight Objective Type

This section contains 10 questions. Each question has 4 choices (A), (B), (C) and (D) for its answer, out of which **ONLY ONE** is correct.

56. The store-house of minerals in India is
(A) Deccan plateau. (B) Northern plains (C) Himalayan mountains. (D) Thar desert.
57. The land left without cultivation is
(A) gross cropped area (B) fallow land (C) barren land (D) net sown area
58. The state with black soil is
(A) Rajasthan. (B) Gujrat. (C) Bihar. (D) Delhi
59. In Belgium, 40% people living in the Wallonia region speaks
(A) French language (B) German language (C) English language (D) Dutch language
60. Which one of the following latitudinal extent is relevant for the extent of India's area ?
(A) $8^{\circ}41'N - 35^{\circ}7'N$ (B) $8^{\circ}4'N - 35^{\circ}6'N$ (C) $8^{\circ}4'N - 37^{\circ}6'N$ (D) $6^{\circ}45'N - 37^{\circ}6'N$
61. Which one of the following countries is larger in area than India ?
(A) China (B) France (C) Egypt (D) Iran
62. Which one of the following countries shares the longest land frontier with India ?
(A) Bangladesh (B) Pakistan (C) China (D) Myanmar
63. The Anai Mudi is located in the
(A) Western Ghats. (B) Central Highlands. (C) Chotanagpur Plateau. (D) Eastern Ghats.
64. Rajasthan receives scanty rainfall because
(A) it has lot of sanddunes.
(B) it is far away from bay of Bengal.
(C) it is closer to tropic of cancer.
(D) the moisture laden winds from the Arabian sea blows parallel to the Aravallis and hence do not shed their moisture over Rajasthan.
65. The temperature decreases from
(A) east to west. (B) west to north. (C) north to south. (D) south to north.

6. MENTAL ABILITY

Straight Objective Type

This section contains 15 questions. Each question has 4 choices (A), (B), (C) and (D) for its answer, out of which **ONLY ONE** is correct.

66. Which name will come at 3rd place in a telephone directory from the following given names:
(A) AMIT (B) AMINA (C) ALOK (D) ABHIMAN
67. If the following scrambled letters are rearranged to form the name of a city, which letter will appear in the middle?
WILGARO
(A) R (B) I (C) L (D) W
68. Find the missing number.
1, 2, 2, 4, 16, ?, 65536
(A) 276 (B) 256 (C) 198 (D) 64
69. In the alphabet series which letter is midway between 22nd letter from the left and 21st letter from the right?
(A) L (B) M (C) O (D) None of these

70. How many pairs of letters in the word BRIGHTER have as many letters between them in the word as in the alphabet series?
(A) 2 (B) 3 (C) 4 (D) more than 4

Directions : (71 to 72) Find the missing term.

71. 6C7, 8F10, 11J14, 15O19, ?
(A) 19U24 (B) 20U25 (C) 19U25 (D) 20U24
72. CGJL, FJMO, IMPR, LPSU, ?
(A) ORUW (B) OSVX (C) JMPR (D) KORS
73. BYCXA, EVFUD, HSIRG, KPLOJ, ?
(A) MNLOL (B) NMOLM (C) QJRIP (D) PKQJO
74. UTRQU, QPNMT, MLJIS, IHFER, ?
(A) EDCAQ (B) EDBAQ (C) IHFGP (D) KJHGP
75. ?, DBGI, ZXCE, VTYA, RPUW
(A) HFMK (B) JMO (C) HFKM (D) QTOQ
76. BZCY, FVGU, JRKQ, NNOM, ?
(A) RJSI (B) OMPL (C) HTIS (D) QKRJ
77. If A is the brother of B; B is the sister of C; and C is the father of D, how D is related to A?
(A) Brother (B) Sister (C) Nephew (D) Cannot be determined
78. If A + B means A is the brother of B; A - B means A is the sister of B and A x B means A is the father of B. Which of the following means that C is the son of M?
(A) M - N x C + F (B) F - C + N x M (C) N + M - F x C (D) M x N - C + F
79. A boy rode his bicycle northwards, then turned left and rode one km and again turned left and rode 2 km. He found himself exactly one km west of his starting point. How far did he ride northwards initially
(A) 1 km (B) 2 km (C) 3 km (D) 5 km
80. Six students are sitting in a row. K is sitting between V and R. V is sitting next to M. M is sitting next to B who is sitting on the extreme left and Q is sitting next to R. Who are sitting adjacent to V ?
(A) R and Q (B) B and M (C) K and R (D) M and K

7. ENGLISH

Straight Objective Type

This section contains 10 questions. Each question has 4 choices (A), (B), (C) and (D) for its answer, out of which **ONLY ONE** is correct.

Fill in the blanks with the correct answer selecting from the given options.

81. Ludhiana on the bank of the Sutlaj.
(A) stand (B) stands (C) stood (D) standing
82. When the siren goes off, he at this machine for four hours at a stretch.
(A) will be working (B) will have been working
(C) will work (D) was working
83. At the foot of the mountain two enormous vineyards, both owned by the same woman.
(A) is (B) are (C) was (D) were

84. Here the papers you required.
(A) is (B) are (C) was (D) were
85. You can give me pen you can spare.
(A) any (B) some (C) few (D) little
86. His body was the water.
(A) below (B) upon (C) into (D) over
87. You catch cold if you go out in the rain.
(A) would (B) must (C) will (D) should
88. I swim across this channel in ten minutes..
(A) could (B) does not (C) may (D) can
89. The trainer said to the athletes, "Run as fast as you can."
(A) The trainer told the athletes that run as fast as you can."
(B) The trainer asked the athletes to run as fast as they can.
(C) The trainer ordered the athletes to run as fast as they could.
(D) The trainer requested the athletes to run as fast as they could.
90. Manav said to Manan, "We can study together if you wish. "
(A) Manav asked Manan if they could study together if they wishes.
(B) Manav told Manan that they can study together if they wish.
(C) Manav told Manan that they could study together if they wished.
(D) Manav told Manan that they could study together if he wished.



CLASS : X
SAMPLE PAPER

ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	D	B	C	B	C	B	C	B	C	C	A	D	A	D	B
Ques.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	D	A	B	B	D	B	B	B	A	B	C	A	D	C	C
Ques.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	D	A	D	B	B	B	B	A	C	A	A	B	B	B	A
Ques.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	A	A	A	D	A	A	D	A	B	A	A	B	B	A	C
Ques.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ans.	A	A	A	D	D	B	C	B	D	B	B	B	B	B	C
Ques.	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Ans.	A	D	D	B	D	B	B	D	B	A	A	C	D	C	D

