

Section - I
MATHEMATICS

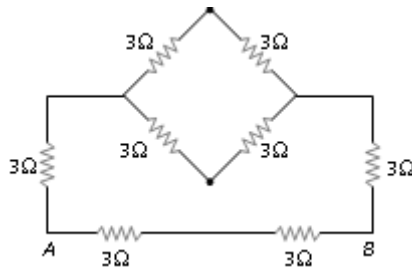
1. $2022^3 - 2021 \times 2022 \times 2023 =$ _____
 (a) 2021 (b) 2022
 (c) 1 (d) 0
2. Real numbers a, b, c satisfying the equations $a + b + c = 26$ and $\frac{1}{a} + \frac{1}{b} + \frac{1}{c} = 28$ then the value of $\frac{a}{b} + \frac{b}{c} + \frac{c}{a} + \frac{a}{c} + \frac{c}{b} + \frac{b}{a} =$
 (a) 746 (b) 625
 (c) 728 (d) 725
3. Given 3 different prime numbers p, q, r such that $p + q + r = 100$ and $p < q < r$. If r is the largest possible value then the value of $(-1)^{p-1}(p-1) + (-1)^q(q) + (-1)^{r+1}(r+1)$ is
 (a) 77 (b) 60
 (c) 82 (d) 75
4. If $a^b = 125$, where a & b are prime, then the value of $(a - b)^{a+b-4}$ is
 (a) 16 (b) 18
 (c) 25 (d) 9
5. If $A(-2, -1)$, $B(a, 0)$, $C(4, b)$ and $D(1, 2)$ are the vertices of a parallelogram, then $a + b =$
 (a) 2 (b) - 2
 (c) 4 (d) - 4
6. The units digit of $(1+9+9^2+9^3+9^4 \dots + 9^{2022})$ is
 (a) 0 (b) 1
 (c) 9 (d) 3
7. If 3, 5, x are the sides of an integer sided obtuse angle triangle, the number of such triangles is
 (a) 0 (b) 3
 (c) 4 (d) infinite
8. If $f(x) = x^4 + x^3 + x^2 + x + 1$, then the remainder when $f(x^{11})$ is divided by $f(x)$ is
 (a) 0 (b) x
 (c) $x + 1$ (d) $x^2 + 2x + 1$
9. If $\left(x + \frac{1}{x}\right) = 3$, then $\left(x^5 + \frac{1}{x^5}\right)$ is equal to
 (a) 192 (b) 198
 (c) 195 (d) 243

10. In $\triangle ABC$, $BC = a$, $CA = b$, $AB = c$. and h_a, h_b, h_c are the heights from A, B, C to the opposite sides BC, CA, AB respectively. If $\frac{2}{h_b} = \frac{1}{h_a} + \frac{1}{h_c}$ then the value of $\frac{(a-b)^2 + (b-c)^2}{(a-c)^2}$ is

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

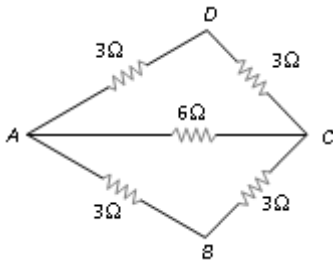
Section - II
PHYSICS

11. Equivalent resistance between A and B will be -



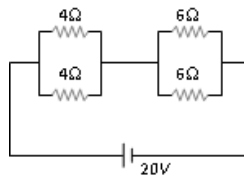
- (a) 2 ohm (b) 18 ohm
 (c) 6 ohm (d) 3.6 ohm

12. The effective resistance between the points A and B in the figure is -



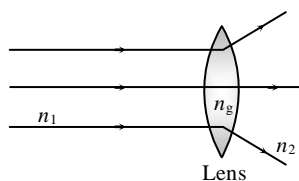
- (a) 5 Ω (b) 2 Ω
 (c) 3 Ω (d) 4 Ω

13. Four resistances are connected in a circuit in the given figure. The electric current flowing through 4 ohm and 6 ohm resistance is respectively -



- (a) 2 amp and 4 amp (b) 3 amp and 2 amp
 (c) 1 amp and 1 amp (d) 2 amp and 2 amp

14. An electric lamp is marked 60 W, 230 V. The cost of a 1 kWh of energy is Rs. 1.25. The cost of using this lamp 8 hrs a day for 30 day is ____.
- (a) Rs. 10 (b) Rs. 16
(c) Rs. 18 (d) Rs. 20
15. A concave mirror is used to focus the image of a flower on a nearby wall 120 cm from the flower. If a lateral magnification of 16 is desired, the distance of the flower from the mirror should be –
- (a) 8 cm (b) 12 cm
(c) 80 cm (d) 120 cm
16. Radius of curvature of concave mirror is 40 cm and the size of image is twice as that of object, then the object distance is ____.
- (a) 60 cm (b) 20 cm
(c) 40 cm (d) 30 cm
17. A point object is placed at a distance of 30 cm from a convex mirror of focal length 30cm. The image will form at
- (a) Infinity (b) Focus
(c) Pole (d) $f/2$
18. A person sees his virtual image by holding a mirror very close to the face. When he moves the mirror away from his face, the image becomes inverted. What type of mirror he is using?
- (a) Plane mirror (b) Convex mirror
(c) Concave mirror (d) None of these
19. Two lenses are placed in contact with each other and the focal length of combination is 80 cm. If the focal length of one is 20 cm, then the power of the other will be –
- (a) 1.66 D (b) 4.00 D
(c) -1.00 D (d) - 3.75 D
20. The ray diagram could be correct –
- (a) If $n_1 = n_2 = n_g$
(b) If $n_1 = n_2$ and $n_1 < n_g$
(c) If $n_1 = n_2$ and $n_1 > n_g$
(d) Under no circumstances



Section – III
CHEMISTRY

21. Which of the following is not a combination reaction?
- (a) $C + O_2 \longrightarrow CO_2$ (b) $H_2 + O_2 \longrightarrow H_2O$
(c) $CH_4 + O_2 \longrightarrow CO_2 + H_2O$ (d) All of these
22. Which will be an endothermic reaction?
- (a) $N_2 + 3H_2 \longrightarrow 2NH_3$ (b) $CaO + CO_2 \longrightarrow CaCO_3$

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- (c) $\text{SO}_3 \longrightarrow \text{SO}_2 + \text{O}_2$ (d) $\text{H}_2 + \text{O}_2 \longrightarrow \text{H}_2\text{O}$
23. Zinc sulphide heating with Aluminum phosphide gives zinc phosphide and aluminium sulphide. On balancing this reaction, the coefficient of Zinc sulphide and Aluminum phosphide, will be in the ratio
(a) 1 : 1 (b) 2 : 1
(c) 3 : 2 (d) 2 : 3
24. $\text{FeC}_2\text{O}_4 + \text{KMnO}_4 + \text{H}_2\text{SO}_4 \longrightarrow \text{Fe}_2(\text{SO}_4)_3 + \text{K}_2\text{SO}_4 + \text{MnSO}_4 + \text{CO}_2 + \text{H}_2\text{O}$
On balancing this reaction, with smallest possible whole numbers, the coefficient of CO_2 will be
(a) 2 (b) 12
(c) 24 (d) 20
25. $\text{SO}_2 + \text{O}_2 \longrightarrow \text{SO}_3$ In the above reaction
(a) Sulphur is oxidised (b) Oxygen is oxidised
(c) Oxygen is reduced (d) Both (a) and (c)
26. $\text{Fe}_2\text{O}_3 + \text{Cr} \longrightarrow \text{Cr}_2\text{O}_3 + \text{Fe}$ in the above reaction, reducing agent is
(a) Iron (b) Chromium
(c) Oxygen (d) It is not a redox reaction
27. Which of the following reaction will change the color of the solution to colourless?
(a) $\text{CuSO}_4 + \text{Fe}$ (b) $\text{FeSO}_4 + \text{Cu}$
(c) $\text{CuSO}_4 + \text{Zn}$ (d) $\text{FeSO}_4 + \text{Ag}$
28. Which among the following metals has as the least oxidising properties?
(a) Fe (b) Zn
(c) Al (d) Cu
29. The solution which turns blue litmus to red may have a pOH of
(a) 13 (b) 7
(c) 2 (d) All of these
30. The acidic salt among the following is
(a) Na_2CO_3 (b) KHCO_3
(c) NaHSO_4 (d) NH_4NO_3

Section – IV Aptitude

31. Find the missing number/letter.

4, 6, 9, $13\frac{1}{2}$, ?

- (a) $17\frac{1}{2}$ (b) 19

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- (c) $20\frac{1}{4}$ (d) $22\frac{3}{4}$
32. Find the missing number/letter.
9360, 1560, 312, 78, 26, ?
(a) 4 (b) 13
(c) 2 (d) 5
33. Find the missing number/letter.
NOS, OQV, PSY, QUB, ?
(a) SWE (b) RWE
(c) RVE (d) RWF
34. Find the missing number/letter.
XLR, YKS, ZJT, AIU, ?
(a) BHV (b) CHV
(c) BIV (d) BHW
35. Find the missing number/letter.
--stLlts--Lt--L-tst-
(a) LstsLtLs (b) LtLtstLt
(c) LttLstLL (d) LLLtstLt
36. Find the odd-numeral pair.
(a) 8 - 27 (b) 125 - 216
(c) 343 - 512 (d) 1009 - 1331
37. Find the odd-numeral pair.
(a) 72 - 45 (b) 51 - 24
(c) 47 - 20 (d) 32 - 13
38. Find the odd-numeral pair.
(a) 13 - 21 (b) 19 - 27
(c) 15 - 23 (d) 16 - 24
39. In a certain code language, STRING is written as % = *4+÷ and PRAISE as ?*@4%x How will the word GRAPES be written in that code language,?
(a) ÷*@x?% (b) ÷@*? x %
(c) ÷*@ ?x% (d) ÷*-?x%
40. Analogy find the missing the number 20 : 11 :: 102 : ?
(a) 49 (b) 52
(c) 61 (d) 98

RISE SCHOLARSHIP – ADMISSION TEST – SAMPLE PAPER

CLASS – 10th to 11th



ANSWER

1. C	2. D	3. B	4. A	5. C	6. B	7. B	8. A	9. C	10. B
11. D	12. B	13. D	14. C	15. A	16. D	17. D	18. C	19. D	20. C
21. C	22. C	23. C	24. D	25. D	26. B	27. C	28. C	29. A	30. D
31. C	32. B	33. B	34. A	35. C	36. D	37. D	38. D	39. C	40. B



**Read all the instructions carefully before answering your questions.
You are not allowed to leave the exam hall before the end of the test.**

Time Allotted: 2 Hr 15 Mins

Maximum Marks: 400

GENERAL INSTRUCTIONS

- This booklet is your question paper. Answers are to be marked in the provided OMR sheet.
- This question paper contains FIVE sections.
 - Section- I is **MATHEMATICS**,
 - Section - II is **PHYSICS**,
 - Section - III is **CHEMISTRY**,
 - Section–IV IS **BIOLOGY**,
 - Section – V is **APTITUDE**.
- There are a total of 100 questions.
- All questions are **Multiple Choice questions with single answer correct**.
- Each question carries **+4 marks** for correct answer, **No negative marks**

FILLING OMR SHEET

Ensure all details in the OMR are filled before you start marking your answers.

On the OMR sheet, darken the appropriate bubble with **BALL POINT PEN ONLY**

Note:

- Students who wish to opt for JEE in 11th need not attempt the biology questions.
- Students who wish to opt for NEET in 11th need not attempt the mathematics questions.
- Students who haven't yet decided the course they want to take in 11th, can attempt all the questions, and will get an extra 15 minutes.

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Useful Data

PHYSICS

Acceleration due to gravity	: $g = 10 \text{ m/s}^2$
Planck constant	: $h = 6.6 \times 10^{-34} \text{ J-s}$
Charge of electron	: $e = 1.6 \times 10^{-19} \text{ C}$
Mass of electron	: $m_e = 9.1 \times 10^{-31} \text{ kg}$
Permittivity of free space	: $\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2 / \text{N-m}^2$
Density of water	: $\rho_{\text{water}} = 10^3 \text{ kg/m}^3$
Atmospheric pressure	: $Pa = 10^5 \text{ N/m}^2$
Gas constant	: $R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$

CHEMISTRY

Gas Constant R	= $8.314 \text{ J K}^{-1} \text{ mol}^{-1}$ = $0.0821 \text{ Lit atm K}^{-1} \text{ mol}^{-1}$ = $1.987 \approx 2 \text{ Cal K}^{-1} \text{ mol}^{-1}$
Avogadro's number N_a	= 6.023×10^{23}
Planck's constant h	= $6.625 \times 10^{-34} \text{ J.s}$ = $6.625 \times 10^{-27} \text{ erg.s}$
1 Faraday	= 96500 coulomb
1 calorie	= 4.2 joule
1 amu	= $1.66 \times 10^{-27} \text{ kg}$
1 eV	= $1.6 \times 10^{-19} \text{ J}$

Atomic No: H = 1, He = 2, Li = 3, Be = 4, B = 5, C = 6, N = 7, O = 8, F = 9, Ne = 10, Na = 11, Mg = 12, Si = 14, Al = 13, P = 15, S = 16, Cl = 17, Ar = 18, K = 19, Ca = 20, Cr = 24, Mn = 25, Fe = 26, Co = 27, Ni = 28, Cu = 29, Zn = 30, As = 33, Br = 35, Ag = 47, Sn = 50, I = 53, Xe = 54, Ba = 56, Pb = 82, U = 92.

Atomic masses: H = 1, He = 4, Li = 7, Be = 9, B = 11, C = 12, N = 14, O = 16, F = 19, Na = 23, Mg = 24, Si = 28, Al = 27, P = 31, S = 32, Cl = 35.5, K = 39, Ca = 40, Cr = 52, Mn = 55, Fe = 56, Co = 59, Ni = 58.7, Cu = 63.5, Zn = 65.4, As = 75, Br = 80, Ag = 108, Sn = 118.7, I = 127, Xe = 131, Ba = 137, Pb = 207, U = 238.

Section - I
MATHEMATICS

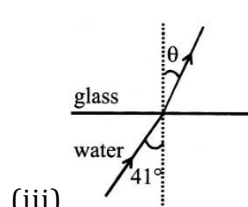
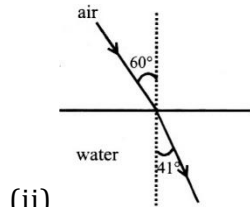
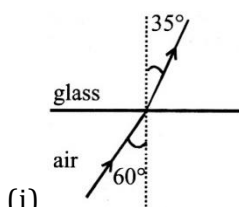
1. Which of the following is true about $19 \times 43 \times 47 \times 53 \times 61 + 47$?
 (a) Prime number (b) Composite number
 (c) Odd number (d) both A and C
2. If A, B, C, D, E are in AP then the value of $A - 4B + 6C - 4D + E$ IS
 (a) 0 (b) 6A (c) 3B (d) 4C
3. If A (2200,0), B (0,2023) are two points, and O is the Origin. The sum of prime factors of the area of ΔOAB is
 (a) 37 (b) 41 (c) 42 (d) 47
4. If the value of $(2+1)(2^2+1)(2^4+1)(2^8+1)(2^{16}+1)+1$ is 2^k then the value of k is
 (a) 16 (b) 32 (c) 64 (d) 96
5. If $F(a,b,c) = a(b^3 - c^3) + b(c^3 - a^3) + c(a^3 - b^3)$ then $\frac{F(2022,2023,2024)}{6069} =$
 (a) 1 (b) 2 (c) 3 (d) 4
6. If $f_k(x) = \sin^k x + \cos^k x$ for $k = 1, 2, 3$, then $f_2(x) - 3f_4(x) + 2f_6(x) =$ ____
 (a) 0 (b) 3 (c) 6 (d) 12
7. If $\tan(\alpha + \beta) = \sqrt{3}$, $\tan(\alpha - \beta) = 1$ then $\tan 6\beta =$ ____ (α, β are acute angles and $\alpha - \beta > 0$)
 (a) 1 (b) $\sqrt{3}$ (c) $\frac{1}{\sqrt{3}}$ (d) Undefined
8. Which of the following is even number for any natural numbers m, n?
 (a) $\frac{n(n+1)}{2}$ (b) $m(m^2 - n^2)$ (c) $mn(m^2 - n^2)$ (d) $(m^2 - n^2)$
9. If $ax^2 + bx + c$ is exactly divisible by $(x - 1)$, $(x - 2)$ and leaves a remainder '6' when divided by $(x + 1)$, then $a + b - c =$
 (a) 0 (b) 6 (c) -4 (d) 4
10. If $y = 5 - \sqrt[3]{25} - \sqrt[3]{5}$, then the value of $y^3 - 15y^2 + 60y + 40$ is
 (a) 60 (b) 70 (c) 80 (d) 90
11. If S_n denotes the sum of first 'n' terms of an A.P., and $\frac{S_{3n} - S_{n-1}}{S_{2n} - S_{2n-1}} = 31$, then the value of n is
 (a) 13 (b) 15 (c) 17 (d) 19
12. If $a + b + c = 9$, $\frac{a}{b+c} + \frac{b}{c+a} + \frac{c}{a+b} = \frac{9}{7}$ then the value of $\frac{1}{a+b} + \frac{1}{b+c} + \frac{1}{c+a} =$ is
 (a) $\frac{9}{10}$ (b) $\frac{19}{10}$ (c) $\frac{21}{10}$ (d) $\frac{10}{21}$
13. Find the value of $x + y + z$ if $x^2 + y^2 + z^2 = 18$ and $xy + yz + zx = 9$.
 (a) 9 (b) 3 (c) 6 (d) 8

14. If $x = \frac{4}{3}$ is the zero of the polynomial $f(x) = 6x^3 - 11x^2 + kx - 20$, then the value of k is ____
- (a) 19 (b) 20 (c) 38 (d) 57
15. If α and β are the zeros of $2x^2 - 3x + 7$ then the value of $\frac{1}{\alpha} + \frac{1}{\beta}$ is
- (a) $\frac{3}{7}$ (b) $\frac{2}{7}$ (c) $\frac{4}{7}$ (d) 2
16. The pair of linear equation $2x + 5y = k$ and $kx + 5y = 18$ has infinitely many solutions if
- (a) $k = 3$ (b) $k = 6$ (c) $k = 9$ (d) $k = 18$
17. The 8th term of AP is 17 and 14th term is 29. The common difference of the AP is ____
- (a) 3 (b) 2 (c) 5 (d) 4
18. If the centroid of triangle formed by the points $(a, b), (b, c), (c, a)$ is at the origin then $a^3 + b^3 + c^3$ is
- (a) abc (b) 0 (c) $a + b + c$ (d) $3abc$
19. The distance between the points $a \cos\theta + b \sin\theta, 0$ and $0, a \sin\theta - b \cos\theta$ is
- (a) $a^2 + b^2$ (b) $a + b$ (c) $a^2 - b^2$ (d) $\sqrt{a^2 + b^2}$
20. If $\sin\theta = \frac{1}{2}$ and θ is acute then the value of $3 \cos\theta - 4 \cos^3\theta$ is
- (a) 0 (b) $\frac{1}{2}$ (c) $\frac{1}{6}$ (d) - 1

Section - II

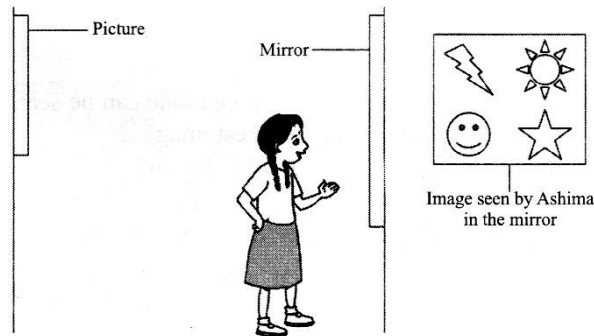
PHYSICS

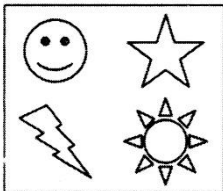
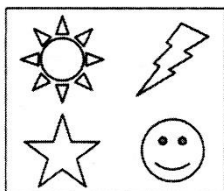
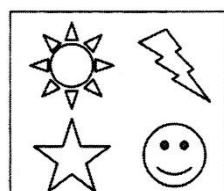
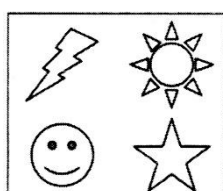
21. An object is at a distance of 0.5 m in front of a plane mirror. Distance between the object and image is
- (a) 0.5 m (b) 1 m (c) 0.25 m (d) 1.5 m
22. Magnification of a lens is given by
- (a) $\frac{\text{image height}}{\text{object height}}$ (b) $\frac{2}{\text{Radius}}$ (c) $\frac{1}{\text{focal length}}$ (d) $\frac{\text{object distance}}{\text{image distance}}$
23. Refraction of light from air to glass and from air to water are shown in the figure (i) and (ii) below. The value of the angle in the case of refraction as shown in the figure (iii) will be:



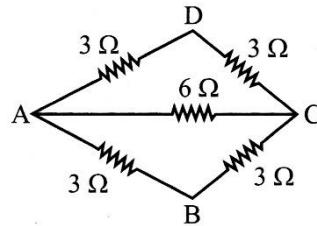
- (a) 30° (b) 35° (c) 60° (d) None of these
24. An inverted image can be seen in a convex mirror,
- (a) under no circumstances
- (b) when the object is very far from the mirror
- (c) when the object is at a distance equal to the radius of curvature of the mirror
- (d) when the distance of the object from the mirror is equal to the focal length of the mirror

25. Ashima looks into the plane mirror and sees the reflection of the picture behind her.
Which of the following is the picture that is behind Ashima?



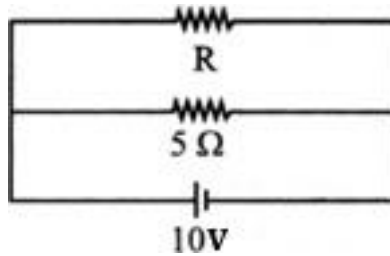
- (a)  (b)  (c)  (d) 
26. A point source of light is moving at a rate of 2 cms^{-1} towards a thin convex lens of focal length 10 cm along its optical axis. When the source is 15 cm away from the lens, the image is moving at
(a) 4 cms^{-1} towards the lens (b) 8 cms^{-1} towards lens
(c) 4 cms^{-1} away from the lens (d) 8 cms^{-1} away from the lens
27. An object is placed in front of a concave mirror of focal length 50.0 cm and a real image is formed 75 cm in front of the mirror. How far is the object from the mirror?
(a) 25 cm (b) 30 cm (c) 75 cm (d) 150 cm
28. 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) $\frac{2.5}{2}$
29. A camera employs a _____ lens to form _____ images.
(a) diverging _____ real (b) diverging _____ virtual
(c) converging _____ real (d) converging _____ virtual
30. When the ciliary muscles are relaxed, the eyelens is _____ and distant objects can be seen clearly.
(a) thin (b) thick (c) inclined (d) none of these
31. A student can distinctly see the object upto a distance 15 cm. He wants to see the black board at a distance of 3 m. Focal length and power of lens used respectively will be:
(a) - 4.8 cm, - 3.3 D (b) - 5.8 cm, - 4.3 D (c) - 7.5 cm, - 6.3 D (d) - 15.8 cm, - 6.3 D
32. The charge of 150 coulomb flows through a wire in one minute. What is the electric current flowing through it?
(a) 2.5 A (b) 3.5 A (c) 4.5 A (d) 5.5 A
33. A metal wire 80 cm long and 1.0 mm^2 in cross-section has a resistance of 0.92 ohm. Its resistivity is:
(a) 0.00000 115 ohm m (b) 0.000 115 ohm m (c) 1.15 ohm m (d) None of these

34. The effective resistance between the points A and C in the figure is



- (a) 5 Ω (b) 2 Ω (c) 3 Ω (d) 4 Ω

35. The power dissipated in the circuit shown in the figure is 30 watts. The value of R is



- (a) 20 Ω (b) 15 Ω (c) 10 Ω (d) 30 Ω

36. An electric bulb is rated 220 V and 100 W. When it is operated on 110 V, the power consumed will be

- (a) 100 W (b) 75 W (c) 50 W (d) 25 W

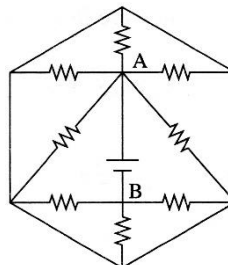
37. A student in a town in India, where the price per unit (1 unit = 1 kW-hr) of electricity is Rs. 5.00, purchases a 1 kVA UPS (uninterrupted power supply) battery. A day before the exam, 10 friends arrive to the student’s home with their laptops to the UPS. Assume that each laptop has a constant power requirement of 90 W. Consider the following statements:

- I. All the 10 laptops can be powered by the UPS if connected safely
- II. All the 10 laptops can be powered if connected using an extension box with a 3A fuse.
- III. If all the 10 friends use the laptop for 5 hours, then the cost of the consumed electricity is about Rs. 22.50

Select the correct option with the true statements.

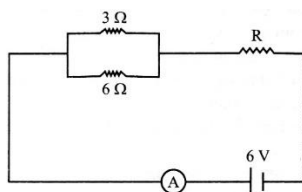
- (a) I only (b) I and II only (c) I and III only (d) II and III only

38. What is the current supplied by the battery in the circuit shown below? Each resistance used in circuit shown below? is of 1 kΩ and potential difference $V_{AB} = 8V$



- (a) 64 mA (b) 15 mA (c) 9.87 mA (d) 1 mA

39. If the ammeter in the given circuit reads 2A, what is the value of resistance R (the resistance of ammeter is negligible)



- (a) 1 Ω (b) 2 Ω (c) 3 Ω (d) 4 Ω
40. Three electric bulbs of rating 40W – 200 V; 50 W – 200 V and 100 W – 200 V are connected in series to a 600 V supply. What is likely to happen as the supply is switched on?
- (a) Only 50 W bulb will fuse
 (b) Both 40 W and 50 W bulbs will fuse
 (c) All the three bulbs will emit light with their rated powers
 (d) 100 W bulb will emit light of maximum intensity

Section - III**CHEMISTRY**

41. Which of the following is a decomposition reaction?
- (a) $\text{CH}_4 + \text{O}_2 \longrightarrow \text{CO}_2 + \text{H}_2\text{O}$ (b) $\text{H}_2 + \text{O}_2 \longrightarrow \text{H}_2\text{O}$
 (c) $\text{KClO}_3 \longrightarrow \text{KCl} + \text{O}_2$ (d) All the above
42. Which will be an exothermic reaction
- (a) $2\text{NH}_3 \longrightarrow \text{N}_2 + 3\text{H}_2$ (b) $\text{CaCO}_3 \longrightarrow \text{CaO} + \text{CO}_2$
 (c) $3\text{O}_2 + \text{O}_2 \longrightarrow 3\text{O}_3$ (d) $\text{H}_2\text{O} \longrightarrow \text{H}_2 + \text{O}_2$
43. Potassium carbonate reacts with ammonium iodide and gives potassium iodide and ammonium carbonate. On balancing this reaction ammonium iodide and ammonium carbonate will be in the ratio
- (a) 1 : 1 (b) 2 : 1 (c) 1 : 2 (d) 1 : 3
44. $\text{FeC}_2\text{O}_4 + \text{KMnO}_4 + \text{H}_2\text{SO}_4 \longrightarrow \text{Fe}_2(\text{SO}_4)_3 + \text{K}_2\text{SO}_4 + \text{MnSO}_4 + \text{CO}_2 + \text{H}_2\text{O}$
- On balancing this reaction, with smallest possible whole numbers, the coefficient of CO_2 will be
- (a) 2 (b) 12 (c) 24 (d) 20
45. $\text{HNO}_3 + \text{HBr} \longrightarrow \text{NO} + \text{Br}_2 + \text{H}_2\text{O}$ in the above reaction, reducing agent is
- (a) Nitrogen (b) Nitric acid (c) Bromine (d) Hydrogen
46. $\text{CO} + \text{H}_2 \longrightarrow \text{CH}_3\text{OH}$ in this reaction
- (a) carbon is oxidized (b) hydrogen is reduced
 (c) Both (a) and (b) (d) Carbon gains 4 electrons
47. Which among the below is the best reducing agent
- (a) Fe (b) Zn (c) Al (d) Cu
48. During electrolysis of water, the reaction at anode will be
- (a) $2\text{H}^+ + 2\text{e}^- \longrightarrow \text{H}_2$ (b) $2\text{O}^{2-} \longrightarrow \text{O}_2 + 4\text{e}^-$
 (c) $2\text{OH}^- \longrightarrow \text{O}_2 + \text{H}_2 + 2\text{e}^-$ (d) $4\text{OH}^- \longrightarrow \text{O}_2 + \text{H}_2\text{O} + 4\text{e}^-$

RISE SCHOLARSHIP CUM ADMISSION TEST – SAMPLE PAPER

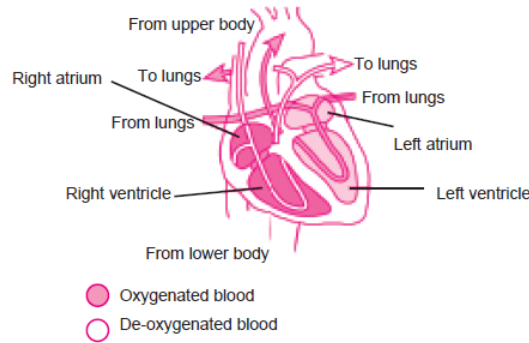


Class – 10th to 11th

49. The green coating formed on copper on exposure to air is
(a) $\text{CuCO}_3 \cdot \text{Cu(OH)}_2$, formed due to oxidation reaction
(b) $\text{CuCO}_3 \cdot \text{CuO}$, formed due to a redox reaction
(c) $\text{CuCO}_3 \cdot \text{Cu(OH)}_2$, formed due to redox reaction
(d) $\text{CuCO}_3 \cdot \text{CuOH}_2$ formed due to reduction reaction
50. Which of these salt solutions can turn blue litmus to red?
(a) Na_2CO_3 (b) KHCO_3 (c) NaHSO_4 (d) NH_4NO_3
51. pH of 0.01 M NaOH solution will be
(a) 2 (b) 12 (c) 10^{-2} (d) 10^{-12}
52. 500ml of 0.2 M H_2SO_4 is mixed with 500 ml of 0.2M NaOH solution. What is the pH of the resultant mixture?
(a) 1 (b) 7 (c) 0 (d) 14
53. Certain metals can be found in anode mud after electrolytic refining. These metals can be in which category?
(a) Metals more reactive than the metal being electrolysed
(b) Metals less reactive than the metal being electrolysed
(c) Metals equally reactive as metals being electrolysed
(d) Any metals, either less/ more reactive than metal being electrolysed
54. On increasing temperature the pH of pure water was found to be 6. This water is
(a) acidic (b) basic (c) neutral (d) cannot be predicted
55. NH_3 is the conjugate base of
(a) NH_4^+ (b) NH_2^- (c) NH_3OH (d) All the above
56. The products formed in chlor-alkali process are
(i) Cl_2 (ii) KOH (iii) H_2 (iv) NaOH
(a) (i) and (iii) (b) (ii) and (iii) (c) (i) and (iv) (d) (i) (iii) and (iv)
57. The gas released at anode during anodising is _____
(a) He (b) O_2 (c) Cl_2 (d) H_2
58. The metals which liberate hydrogen gas on reaction with dilute nitric acid is
(a) Al (b) Zn (c) Fe (d) Mg
59. In thermit reaction, the species getting oxidised is
(a) Al (b) Fe (c) O_2 (d) Fe_2O_3
60. Components of stainless steel are
(i) Fe (ii) C (iii) Mn (iv) Cr (v) Ni
(a) i, ii, iv (b) i, iv, v (c) i, ii, iii, v (d) i, ii, iv, v

Section - IV
Biology

61. The image shows oxygenated and de-oxygenated blood in the human heart.



What is the direction of deoxygenated blood from right ventricle of the heart?

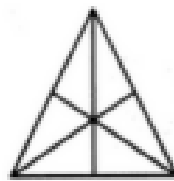
- (a) towards the lungs (b) towards the left atrium of heart.
 (c) towards the upper body (d) towards the lower body
62. Which of the following organisms absorbs nutrition with haustoria?
 (a) A carnivore (b) A herbivore (c) A parasite (d) A saprophyte
63. Which of the following is not a digestive enzyme contained in the pancreatic juice?
 (i) Lipase (ii) Hydrochloric acid (iii) Mucus (iv) Trypsin
 (a) (i) and (ii) (b) (i) and (iv) (c) (ii) and (iii) (d) (i) and (iii)
64. Raw materials required in the autotrophic mode of nutrition involves:
 (i) Carbon dioxide and water (ii) Chlorophyll (iii) Nitrogen (iv) Sunlight
 (a) (i), (ii) and (iii) (b) (i) and (ii)
 (c) (i), (ii) and (iv) (d) All (i), (ii), (iii) and (iv)
65. Which statement is wrong:
 (a) Sudden action in response to something in environment is called reflex action
 (b) The path through which signals are transmitted from receptor to muscle is called reflex arc
 (c) Motor neurons carry signal from spinal cord to effector organs
 (d) Sensory neurons carry impulse from effector to receptors
66. Groups of neurons that make hundreds of synaptic connections with each other and work together are ____.
 (a) ganglia (b) neuronal pool (c) autonomic system (d) somatic system
67. Damage of cerebellum will most affect the career of:
 (a) architect (b) teacher (c) librarian (d) athlete
68. What is the main function of the hypothalamus?
 (a) Regulation of body temperature and hunger (b) Control of voluntary movements
 (c) Regulation of heart rate (d) Production of insulin
69. In Rhizopus tubular structure bearing sporangia at their tips are called _____.
 (a) filaments (b) Rhizoids (c) roots (d) Hyphae
70. Which among the following is not the function of testis at puberty?
 (a) Formation of sperms (b) Releasing testosterone
 (c) ovulation (d) release of seminal fluid
71. The triploid nucleus formed is called _____.
 (a) fruit (b) seed (c) zygote (d) endosperm

72. Which of the following is contraceptive?
 (a) condom (b) copper T (c) Diaphragm (d) All of these
73. Two pink coloured flowers on crossing resulted in 1 and 2 pink and 1 white flower progeny. The nature of cross will be:
 (a) Double fertilization (b) Self-pollination (c) Cross pollination (d) No fertilization
74. Select the correct statement.
 (a) Tendril of pea plant and phylloclade of opuntia are homologous
 (b) Tendril of pea plant and phylloclade of opuntia are analogous
 (c) Wings of birds and limbs of lizards are analogous
 (d) Wings of birds and wings of bat are homologous
75. The number of sex chromosomes in zygote of humans is_____.
 (a) 1 (b) 2 (c) 3 (d) 4
76. The two versions of trait which are brought in by female and male gametes are situated at:
 (a) Copies of same chromosomes (b) Two different chromosomes
 (c) Sex chromosomes (d) Any chromosomes
77. Which of the following is the full form of UNEP?
 (a) United Kingdom of Africa (b) United State of America
 (c) United Nations Environment programme (d) Union English programme
78. Which of the following belong to same trophic level?
 (a) Cockroach and spider (b) Lizard and spider
 (c) Hawk and spider (d) Lizard and hawk
79. Which of the following is proper sequence of trophic levels?
 (a) Producers, Herbivores, Top carnivores, Carnivores
 (b) Top Carnivores, Carnivores, Herbivores, Producers
 (c) Carnivores, Top Carnivores, Producers, Herbivores
 (d) Herbivores, Carnivores, Producers, Top Carnivores
80. What is the nature of ozone?
 (a) It is deadly poisonous (b) It is fragrant
 (c) It is smooth (d) It causes purple smoke

Section - V

Aptitude

81. What will be the sum of the remainders when 684 will be divided by 3, 7, and 5?
 (a) 10 (b) 9 (c) 11 (d) 6
82. Find the number of triangles in the given figure



- (a) 16 (b) 13 (c) 9 (d) 7

RISE SCHOLARSHIP CUM ADMISSION TEST – SAMPLE PAPER



Class – 10th to 11th

83. Among Anil, Bibek, Pritam, Debu, and Eswar. Eswar is taller than Debu but not as fat as Debu. Pritam is taller than Anil but shorter than Bibek. Anil is fatter than Debu but not as fat as Bibek. Eswar is thinner than Pritam, who is thinner than Debu. Eswar is shorter than Anil. Who is the thinnest person?
 (a) Bibek (b) Pritam (c) Debu (d) Eswar
84. Find the Missing number 15,31,63,127,255, ?
 (a) 513 (b) 511 (c) 517 (d) 523
85. Reena saves 51 % of his total income of Rs.15,000 per month. Calculate her total spending
 (a) 7350 (b) 7550 (c) 6500 (d) 8560
86. In an examination, 40% of total marks are passing percentage. if a person gets 41 marks and fails by 3 marks, what is the maximum marks?
 (a) 110 (b) 100 (c) 120 (d) 15
87. Identify the figure that completes the pattern.



(X)



(1)

(a) 1



(2)

(b) 2



(3)

(c) 3



(4)

(d) 4

88. In certain code 'FROZEN' is written as 'OFAPSG'. Then how would 'MOLTEN' be written in that code?

(a) OFPOMN (b) OFSMPN (c) OFUMPN (d) OFUNPM

89. Find the Missing number 1,8,27,64,125, 216, ?

(a) 354 (b) 343 (c) 392 (d) 245

90. Arrange the following in the order of the dictionary.

1.Scenery 2. Science 3. Scandal 4. School 5. Scatter

(a) 3,5,1,4,2 (b) 3,5,4,1,2 (c) 5,3,4,2,1 (d) 5,3,2,1,4

91. Pick out the wrong number in the sequence 125,127,130,135,142,153,165

(a)130 (b) 142 (c) 153 (d) 165

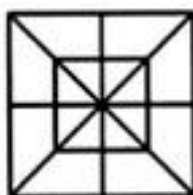
92. Sam started walking from point A towards East and walked for 6 km, then he turned to the left and walked for 8 km to reach point B. How far was he from the starting point?

(a) 10 km (b) 6 km (c) 14 km (d) 8 k

93. The average of 20 numbers is Zero. Of them, at the most, how many may be greater than zero?

(a) 0 (b) 1 (c) 10 (d) 19

94. Find the number of squares in the given figure.



(a) 10

(b) 8

(c) 9

(d) 12

RISE SCHOLARSHIP CUM ADMISSION TEST – SAMPLE PAPER



Class – 10th to 11th

95. A : B: C is in the ratio of 3 : 2 : 5. How much money will C get out of Rs. 1260?
(a) 252 (b) 125 (c) 503 (d) 630
96. The average of 10 numbers is 23. If each number is increased by 4, what will the new average be?
(a) 23 (b) 25 (c) 27 (d) 29
97. To determine the number of parrots in a sparse population, an ecologist captures 30 parrots and puts rings around their necks and releases them. After a week he captures 40 parrots and finds that 8 of them have rings on their necks. What approximately is the parrot population?
(a) 70 (b) 150 (c) 160 (d) 100
98. The sum of first sixty numbers from one to sixty is divisible by
(a)13 (b) 60 (c) 61 (d) 59
99. Two numbers are respectively 20% and 50% more than a third number. The ratio of the two numbers is
(a) 3:4 (b) 4:5 (c) 2:3 (d) 2:4
100. Today is Monday. After 61 days, it will be:
(a) Wednesday (b) Saturday (c) Tuesday (d) Thursday

RISE SCHOLARSHIP CUM ADMISSION TEST – SAMPLE PAPER

Class – 10th to 11th



Keys

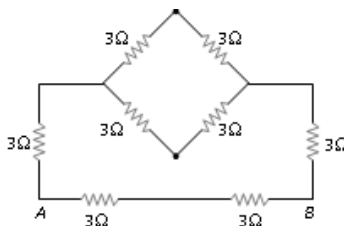
Q. No.	Key	Q. No.	Key	Q. No.	Key	Q. No.	Key	Q. No.	Key
1	B	21	B	41	C	61	A	81	B
2	A	22	A	42	C	62	C	82	A
3	C	23	B	43	B	63	C	83	D
4	B	24	A	44	D	64	C	84	B
5	D	25	B	45	C	65	D	85	A
6	A	26	D	46	D	66	B	86	A
7	A	27	D	47	C	67	D	87	A
8	C	28	B	48	D	68	A	88	C
9	C	29	C	49	C	69	D	89	B
10	A	30	A	50	D	70	C	90	A
11	B	31	D	51	B	71	D	91	D
12	D	32	A	52	A	72	D	92	A
13	C	33	A	53	B	73	B	93	D
14	A	34	B	54	C	74	A	94	A
15	A	35	C	55	B	75	B	95	D
16	B	36	D	56	D	76	A	96	C
17	B	37	C	57	B	77	C	97	B
18	D	38	B	58	D	78	B	98	C
19	D	39	A	59	A	79	B	99	B
20	A	40	B	60	D	80	A	100	B

Section - I
MATHEMATICS

1. $2022^3 - 2021 \times 2022 \times 2023 =$ _____
 (a) 2021 (b) 2022 (c) 1 (d) 0
2. Real numbers a, b, c satisfying the equations $a + b + c = 26$ and $\frac{1}{a} + \frac{1}{b} + \frac{1}{c} = 28$ then the value of $\frac{a}{b} + \frac{b}{c} + \frac{c}{a} + \frac{a}{c} + \frac{c}{b} + \frac{b}{a} =$
 (a) 746 (b) 625 (c) 728 (d) 725
3. Given 3 different prime numbers p, q, r such that $p + q + r = 100$ and $p < q < r$. If r is the largest possible value then the value of $(-1)^{p-1}(p-1) + (-1)^q(q) + (-1)^{r+1}(r+1)$ is
 (a) 77 (b) 60 (c) 82 (d) 75
4. If $a^b = 125$, where a & b are prime, then the value of $(a - b)^{a+b-4}$ is
 (a) 16 (b) 18 (c) 25 (d) 9
5. If $A(-2, -1)$, $B(a, 0)$, $C(4, b)$ and $D(1, 2)$ are the vertices of a parallelogram, then $a + b =$
 (a) 2 (b) -2 (c) 4 (d) -4
6. The units digit of $(1+9+9^2+9^3+9^4+\dots+9^{2022})$ is
 (a) 0 (b) 1 (c) 9 (d) 3
7. If 3, 5, x are the sides of an integer sided obtuse angle triangle, the number of such triangles is
 (a) 0 (b) 3 (c) 4 (d) infinite
8. If $f(x) = x^4 + x^3 + x^2 + x + 1$, then the remainder when $f(x^{11})$ is divided by $f(x)$ is
 (a) 0 (b) x (c) $x + 1$ (d) $x^2 + 2x + 1$
9. If $\left(x + \frac{1}{x}\right) = 3$, then $\left(x^5 + \frac{1}{x^5}\right)$ is equal to
 (a) 192 (b) 198 (c) 195 (d) 243
10. In $\triangle ABC$, $BC = a$, $CA = b$, $AB = c$. and h_a, h_b, h_c are the heights from A, B, C to the opposite sides BC, CA, AB respectively. If $\frac{2}{h_b} = \frac{1}{h_a} + \frac{1}{h_c}$ then the value of $\frac{(a-b)^2 + (b-c)^2}{(a-c)^2}$ is
 (a) 1 (b) $\frac{1}{2}$ (c) 2 (d) $\frac{1}{4}$

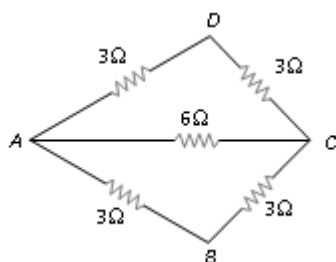
Section - II
PHYSICS

11. Equivalent resistance between A and B will be -



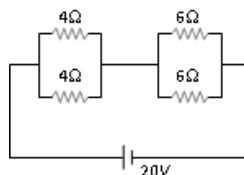
- (a) 2 ohm (b) 18 ohm
(c) 6 ohm (d) 3.6 ohm

12. The effective resistance between the points A and B in the figure is –



- (a) 5 Ω (b) 2 Ω
(c) 3 Ω (d) 4 Ω

13. Four resistances are connected in a circuit in the given figure. The electric current flowing through 4 ohm and 6 ohm resistance is respectively –



- (a) 2 amp and 4 amp (b) 3 amp and 2 amp
(c) 1 amp and 1 amp (d) 2 amp and 2 amp

14. An electric lamp is marked 60 W, 230 V. The cost of a 1 kWh of energy is Rs. 1.25. The cost of using this lamp 8 hrs a day for 30 day is ____.

- (a) Rs. 10 (b) Rs. 16
(c) Rs. 18 (d) Rs. 20

15. A concave mirror is used to focus the image of a flower on a nearby well 120 cm from the flower. If a lateral magnification of 16 is desired, the distance of the flower from the mirror should be –

- (a) 8 cm (b) 12 cm (c) 80 cm (d) 120 cm

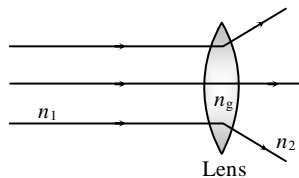
16. Radius of curvature of concave mirror is 40 cm and the size of image is twice as that of object, then the object distance is ____.

- (a) 60 cm (b) 20 cm (c) 40 cm (d) 30 cm

17. A point object is placed at a distance of 30 cm from a convex mirror of focal length 30cm. The image will form at

- (a) Infinity (b) Focus (c) Pole (d) f/2

18. A person sees his virtual image by holding a mirror very close to the face. When he moves the mirror away from his face, the image becomes inverted. What type of mirror he is using?
- (a) Plane mirror (b) Convex mirror
(c) Concave mirror (d) None of these
19. Two lenses are placed in contact with each other and the focal length of combination is 80 cm. If the focal length of one is 20 cm, then the power of the other will be –
- (a) 1.66 D (b) 4.00 D
(c) -1.00 D (d) - 3.75 D
20. The ray diagram could be correct –
- (a) If $n_1 = n_2 = n_g$
(b) If $n_1 = n_2$ and $n_1 < n_g$
(c) If $n_1 = n_2$ and $n_1 > n_g$
(d) Under no circumstances



Section – III CHEMISTRY

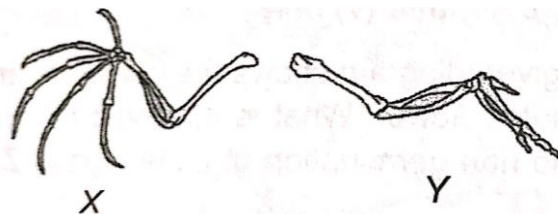
21. Which of the following is not a combination reaction?
- (a) $C + O_2 \longrightarrow CO_2$ (b) $H_2 + O_2 \longrightarrow H_2O$
(c) $CH_4 + O_2 \longrightarrow CO_2 + H_2O$ (d) All of these
22. Which will be an endothermic reaction?
- (a) $N_2 + 3H_2 \longrightarrow 2NH_3$ (b) $CaO + CO_2 \longrightarrow CaCO_3$
(c) $SO_3 \longrightarrow SO_2 + O_2$ (d) $H_2 + O_2 \longrightarrow H_2O$
23. Zinc sulphide heating with Aluminum phosphide gives zinc phosphide and aluminium sulphide. On balancing this reaction, the coefficient of Zinc sulphide and Aluminum phosphide, will be in the ratio
- (a) 1 : 1 (b) 2 : 1
(c) 3 : 2 (d) 2 : 3
24. $FeC_2O_4 + KMnO_4 + H_2SO_4 \longrightarrow Fe_2(SO_4)_3 + K_2SO_4 + MnSO_4 + CO_2 + H_2O$
- On balancing this reaction, with smallest possible whole numbers, the coefficient of CO_2 will be
- (a) 2 (b) 12
(c) 24 (d) 20
25. $SO_2 + O_2 \longrightarrow SO_3$ In the above reaction
- (a) Sulphur is oxidised (b) Oxygen is oxidised
(c) Oxygen is reduced (d) Both (a) and (c)
26. $Fe_2O_3 + Cr \longrightarrow Cr_2O_3 + Fe$ in the above reaction, reducing agent is

- (a) Iron
(c) Oxygen
- (b) Chromium
(d) It is not a redox reaction

27. Which of the following reaction will change the color of the solution to colourless?
(a) $\text{CuSO}_4 + \text{Fe}$ (b) $\text{FeSO}_4 + \text{Cu}$ (c) $\text{CuSO}_4 + \text{Zn}$ (d) $\text{FeSO}_4 + \text{Ag}$
28. Which among the following metals has as the least oxidising properties?
(a) Fe (b) Zn (c) Al (d) Cu
49. The solution which turns blue litmus to red may have a pOH of
(a) 13 (b) 7 (c) 2 (d) All of these
30. The acidic salt among the following is
(a) Na_2CO_3 (b) KHCO_3 (c) NaHSO_4 (d) NH_4NO_3

Section – IV
BIOLOGY

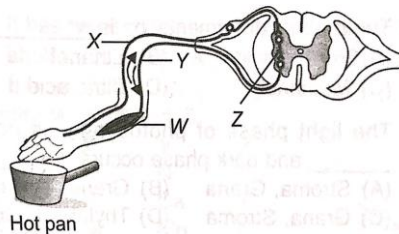
31. The product of fermentation is _____
(a) Formic acid (b) Ethanol
(c) Methanol (d) Citric acid
32. Refer to the given figure. It shows bones of wings of two animals X and Y. These wings are Z structures.



Select the option that correctly identifies X, Y and Z

- | X | Y | Z |
|----------|--------|------------|
| (a) Bat | Bird | Analogous |
| (b) Bat | Insect | Homologous |
| (c) Bird | Bat | Homologous |
| (d) Bird | Insect | Analogous |
33. Which of the following statements is incorrect?
(a) Placenta allows exchange of materials between mother and foetus
(b) The foetal part of the placenta consists of the cells of the chorion which produce projections called chorionic villi
(c) Antibody cannot cross the placenta from mother to foetus
(d) Placenta secretes pregnancy hormones required for supporting foetal growth and metabolic changes in mother during pregnancy

34. The given figure shows the pathway of a nerve impulse in a reflex action. Which part serves as a link between neurons?



- (a) W (b) X (c) Y (d) Z
35. Humans inherit colour of their eyes from their parents. Brown-eyed couple has three blue-eyed children. Which of the following statements gives correct explanation of this situation?
- (i) Each parent has an allele for brown eyes and an allele for blue eyes.
 (ii) The allele for blue eyes is recessive
 (iii) The probability that their next child will have blue eyes is 0.75.
 (iv) The probability that their next child will have brown eyes is 0.5.
- (a) (i) and (ii) only (b) (i) and (iii) only
 (c) (ii) and (iv) only (d) (iii) and (iv) only
36. Select the incorrect statement.
- (a) Economic development is linked to environmental conservation
 (b) Sustainable development encourages development for current generation and conservation of resources for future generations.
 (c) Sustainable development does not consider the view points of stakeholders
 (d) Sustainable development is a long, planned and persistent development
37. The table below lists some information about the trophic levels of a food chain.

Trophic level	Number of organisms	Energy in the trophic level (arbitrary units)
P	100	10,000
Q	1	100
R	1000	100,000
S	10	1000

Which of the following food chains is correct?

- (a) P → Q → R → S (b) P → S → Q → R
 (c) R → P → S → Q (d) R → Q → S → P
38. The given figure shows a food web in a forest area. In the forest, large amounts of insecticides are blown with wind from a nearby field. What will be the effect on given food web?

RISE SCHOLARSHIP – ADMISSION TEST – SAMPLE PAPER

CLASS – 10th to 11th



- (a) $17\frac{1}{2}$ (b) 19 (c) $20\frac{1}{4}$ (d) $22\frac{3}{4}$
42. Find the missing number/letter.
9360, 1560, 312, 78, 26, ?
(a) 4 (b) 13 (c) 2 (d) 5
43. Find the missing number/letter.
NOS, OQV, PSY, QUB, ?
(a) SWE (b) RWE (c) RVE (d) RWF
44. Find the missing number/letter.
X L R, Y K S, Z J T, A I U, ?
(a) B H V (b) C H V (c) B I V (d) B H W
45. Find the missing number/letter.
-- s t L L t s -- L t -- L - t s t -
(a) L s t s L t L s (b) L t L t s t L t (c) L t t L s t L L (d) L L L t s t L t
46. Find the odd-numeral pair.
(a) 8 - 27 (b) 125 - 216 (c) 343 - 512 (d) 1009 - 1331
47. Find the odd-numeral pair.
(a) 72 - 45 (b) 51 - 24 (c) 47 - 20 (d) 32 - 13
48. Find the odd-numeral pair.
(a) 13 - 21 (b) 19 - 27 (c) 15 - 23 (d) 16 - 24
49. In a certain code language, STRING is written as % = *4+÷ and PRAISE as ?*@4%x How will the word GRAPES be written in that code language,?
(a) ÷*@x?% (b) ÷@*? x %
(c) ÷*@ ?x% (d) ÷*-?x%
50. Analogy find the missing the number 20 : 11 :: 102 : ?
(a) 49 (b) 52 (c) 61 (d) 98

1. C	2. D	3. B	4. A	5. C	6. B	7. B	8. A	9. C	10. B
11. D	12. B	13. D	14. C	15. A	16. D	17. D	18. C	19. D	20. C
21. C	22. C	23. C	24. D	25. D	26. B	27. C	28. C	29. A	30. D
31. B	32. A	33. C	34. D	35. A	36. C	37. C	38. C	39. B	40. D
41. C	42. B	43. B	44. A	45. C	46. D	47. D	48. D	49. C	50. B