ISAT Practice Test 2

Time: 2 Hours
Maximum Marks: 336

CLASS-10

General Instructions

1. There are **84** questions in this question paper with internal choice.
2. Each test will have 5 sections.
3. Physics, Chemistry, Biology, Mathematics & Mental Ability.
4. Each Question will be **MCQ-Type** (Multiple Choice Question with One Option Correct.)
5. **Marking Scheme:**
   +4 Correct Response, **-1** Incorrect Response, **0** No response

DATE: _____/_____/_____

NAME: .....

PHYSICS

(1) A car is accelerated on a levelled road and attains a velocity 4 times of its initial velocity. In this process the potential energy of the car
(a) does not change
(b) becomes twice to that of initial
(c) becomes 4 times that of initial
(d) becomes 16 times that of initial

(2) A key of a mechanical piano struck gently and then struck again but much harder this time. In the second case
(a) sound will be louder but pitch will not be different
(b) sound will be louder and pitch will also be higher
(c) sound will be louder but pitch will be lower
(d) both loudness and pitch will remain unaffected

(3) The value of acceleration due to gravity
(a) is same on equator and poles (b) is least on poles
(c) is least on equator (d) increases from pole to equator

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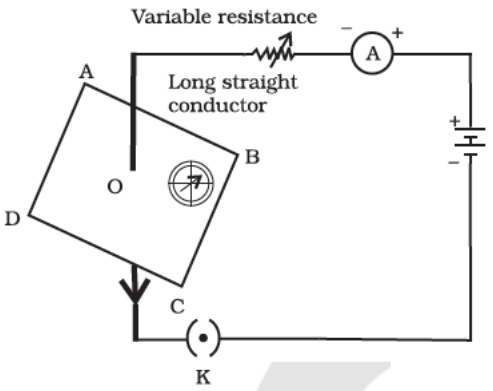
(4) According to the third law of motion, action and reaction
(a) always act on the same body
(b) always act on different bodies in opposite directions
(c) have same magnitude and directions
(d) act on either body at normal to each other

(5) A body is thrown vertically upward with velocity u, the greatest height h to which it will rise is,
(a) u/g (b) $u^2/2g$ (c) u^2/g (d) $u/2g$

(6) Acid rain happens because
(a) sun leads to heating of upper layer of atmosphere
(b) burning of fossil fuels release oxides of carbon, nitrogen and sulphur in the atmosphere
(c) electrical charges are produced due to friction amongst clouds
(d) earth atmosphere contains acids

(7) If the key in the arrangement (Figure) is taken out (the circuit is made open) and magnetic field lines are drawn over the horizontal plane ABCD, the lines are



(a) concentric circles
(b) elliptical in shape
(c) straight lines parallel to each other
(d) concentric circles near the point O but of elliptical shapes as we go away from it

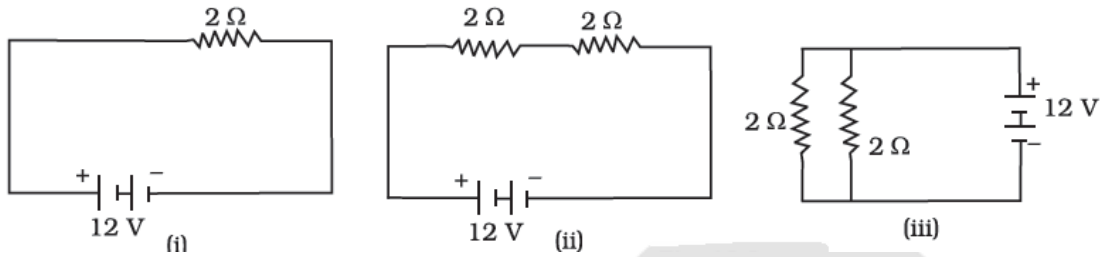
(8) Under which of the following conditions a concave mirror can form an image larger than the actual object?
(a) When the object is kept at a distance equal to its radius of curvature
(b) When object is kept at a distance less than its focal length
(c) When object is placed between the focus and centre of curvature
(d) When object is kept at a distance greater than its radius of curvature

(9) A student sitting on the last bench can read the letters written on the blackboard but is not able to read the letters written in his text book. Which of the following statements is correct?
(a) The near point of his eyes has receded away

(b) The near point of his eyes has come closer to him
(c) The far point of his eyes has come closer to him
(d) The far point of his eyes has receded away

(10) Which of the following statements is correct regarding the propagation of light of different colours of white light in air?
(a) Red light moves fastest
(b) Blue light moves faster than green light
(c) All the colours of the white light move with the same speed
(d) Yellow light moves with the mean speed as that of the red and the violet light

(11) In the following circuits (Figure), heat produced in the resistor or combination of resistors connected to a 12 V battery will be



(a) same in all the cases
(b) minimum in case (i)
(c) maximum in case (ii)
(d) maximum in case (iii)

(12) Which of the following represents voltage?
(a) $\frac{\text{Work done}}{\text{Current} \times \text{Time}}$
(b) Work done × Charge
(c) $\frac{\text{Work done} \times \text{Time}}{\text{Current}}$
(d) Work done × Charge × Time

(13) Two resistors of resistance 2 W and 4 W when connected to a battery will have
(a) same current flowing through them when connected in parallel
(b) same current flowing through them when connected in series
(c) same potential difference across them when connected in series
(d) different potential difference across them when connected in parallel

(14) Which of the following ray diagrams is correct for the ray of light incident on a concave mirror as shown in Figure?

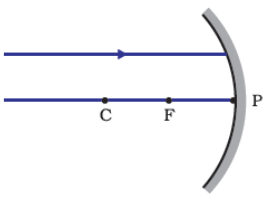


Fig. 10.6

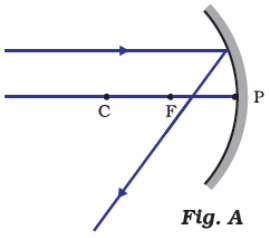


Fig. A

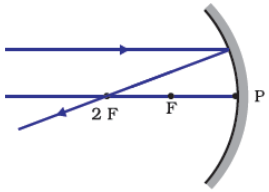


Fig. B

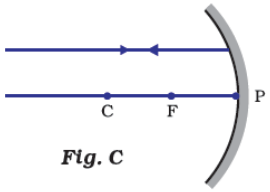


Fig. C

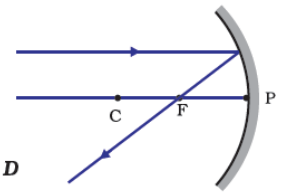


Fig. D

(a) Fig. A (b) Fig. B (c) Fig. C (d) Fig. D

CHEMISTRY

(15) Which of the following is not a physical change?
(a) Boiling of water to give water vapour
(b) Melting of ice to give water
(c) Dissolution of salt in water
(d) Combustion of Liquefied Petroleum Gas (LPG)

(16) What happens when a solution of an acid is mixed with a solution of a base in a test tube?
(i) The temperature of the solution increases
(ii) The temperature of the solution decreases
(iii) The temperature of the solution remains the same
(iv) Salt formation takes place
(a) (i) only (b) (i) and (iii) (c) (ii) and (iii) (d) (i) and (iv)

(17) Common salt besides being used in kitchen can also be used as the raw material for making
(i) washing soda
(ii) bleaching powder
(iii) baking soda
(iv) slaked lime
(a) (i) and (ii) (b) (i), (ii) and (iv) (c) (i) and (iii) (d) (i), (iii) and (iv)

(18) Which of the following methods is suitable for preventing an iron frying pan from rusting?
(a) Applying grease (b) Applying paint
(c) Applying a coating of zinc (d) All of the above.

(19) The least reactive metal among the following is:
(a) sodium (b) silver (c) copper (d) lead

(20) Which of the following is treated with chlorine to obtain bleaching power?
(a) $CaSO_4$ (b) $Ca(OH)_2$ (c) $Mg(OH)_2$ (d) KOH

(21) Which of the following statement is incorrect?
(a) the particles of matter are very, very small
(b) the particles of matter attract one another
(c) the particles of some of the matter are not moving constantly
(d) the particles of all the matter have spaces between them

(22) Which of the following process/processes release heat?
(i) condensation (ii) vaporisation (iii) freezing (iv) melting
(a) only (i) (b) only (iv) (c) (i) and (iii) (d) (ii) and (iv

(23) The boiling point of X is, – 222°C. This temperature will be equivalent to:
(a) 285 K (b) 288 K (c) 51 K (d) 361 K

(24) One common method used to separate dyes is
(a) filtraton (b) distillation

(c) chromatography (d) conductivity

(25) The chemical equations are balanced to satisfy one of the following laws in chemical reactions. This law is known as:
(a) law of conservation of momentum
(b) law of conservation of mass
(c) law of conservation of motion
(d) law of conservation of magnetism

(26) The property which is not shown by acids is:
(a) they have sour taste (b) they feel soapy
(c) they turn litmus red (d) their pH is less than seven

(27) The formula of baking soda is:
(a) K_2CO_3 (b) $KHCO_3$ (c) $NaHCO_3$ (d) Na_2CO_3

(28) The process used to separate oil and water is
(a) distillation (b) sublimation
(c) separating funnel (d) chromatography

BIOLOGY

(29) Making anti-viral drugs is more difficult than making anti-bacterial medicines because
(a) viruses make use of host machinery
(b) viruses are on the border line of living and non-living
(c) viruses have very few biochemical mechanisms of their own
(d) viruses have a protein coat

(30) If you live in a overcrowded and poorly ventilated house, it is possible that you may suffer from which of the following diseases
(a) Cancer (b) AIDS
(c) Air borne diseases (d) Cholera

(31) Which one of the following causes kala-azar?
(a) Ascaris (b) Trypanosoma (c) Leishmania (d) Bacteria

(32) Which of the following tissues has dead cells?
(a) Parenchyma (b) Sclerenchyma (c) Collenchyma (d) Epithelial tissue

(33) Girth of stem increases due to
(a) apical meristem (b) lateral meristem
(c) intercalary meristem (d) vertical meristem

(34) Involuntary actions in the body are controlled by
(a) medulla in fore brain (b) medulla in mid brain
(c) medulla in hind brain (d) medulla in spinal cord

(35) Which statement is not true about thyroxin?
(a) Iron is essential for the synthesis of thyroxin
(b) It regulates carbohydrates, protein and fat metabolism in the body
(c) Thyroid gland requires iodine to synthesise thyroxin

(d) Thyroxin is also called thyroid hormone

(36) During respiration exchange of gases take place in

(a) trachea and larynx (b) alveoli of lungs

(c) alveoli and throat (d) throat and larynx

(37) When air is blown from mouth into a test-tube containing lime water, the lime water turned milky due to the presence of

(a) oxygen (b) carbon dioxide

(c) nitrogen (d) water vapour

(38) A man respires about

(a) 40 times per minute (b) 72 times per minute

(c) 100 times per minute (d) 16–20 times per minutes

(39) Plant storage food materials is_____.

(a) Glycogen (b) Cellulose (c) Starch (d) Protein

(40) Photosynthesis is a

(a) Anabolic pathway (b) Catabolic pathway

(c) Both of them (d) None of them

(41) A cell that lacks chloroplast does not

(a) Evolve carbon-di-oxide (b) Liberate oxygen

(c) Require water (d) Utilize Carbohydrate

(42) Chlorophyll is found in the chloroplast

(a) Grana (b) Pyrenoid (c) Stroma (d) None of these

MATHEMATICS

(43) If two positive integers a and b are written as $a = x^3y^2$ and $b = xy^3$; x, y are prime numbers, then HCF (a, b) is

(a) xy (b) xy^2 (c) x^3y^3 (d) x^2y^2

(44) For some integer q, every odd integer is of the form

(a) q (b) q + 1 (c) 2q (d) 2q + 1

(45) If one of the zeroes of the quadratic polynomial $(k - 1)x^2 + kx + 1$ is –3, then the value of k is

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

(46) A quadratic polynomial, whose zeroes are –3 and 4, is

(a) $x^2 - x + 12$ (b) $x^2 + x + 12$ (c) $\frac{x^2}{2} - \frac{x}{2} - 6$ (d) $x^2 + 2x - 24$

(47) Graphically, the pair equations

$6x - 3y + 10 = 0$

$2x - y + 9 = 0$

represents two lines which are

(a) intersecting at exactly one point. (b) intersecting at exactly two points.

(c) coincident. (d) parallel.

(48) The pair of equations y = 0 and y = –7 has

(a) one solution (b) two solutions

(c) infinitely many solutions (d) no solution

(49) Which of the following is a quadratic equation?

(a) $x^2 + 2x + 1 = (4 - x)^2 + 3$ (b) $-2x^2 = (5 - x)\left(2x - \frac{2}{5}\right)$

(c) $(k+1)x^2 + \frac{3}{2}x = 7$, where k = –1 (d) $x^3 - x^2 = (x - 1)^3$

(50) Values of k for which the quadratic equation $2x^2 - kx + k = 0$ has equal roots is

(a) 0 only (b) 4 (c) 8 only (d) 0, 8

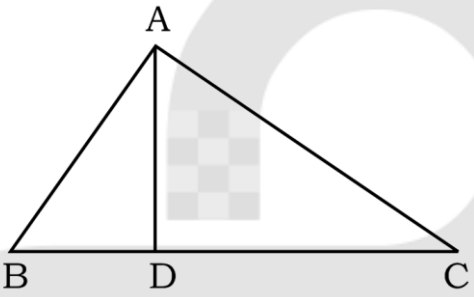
(51) In an AP, if d = –4, n = 7, $a_n = 4$, then a is

(a) 6 (b) 7 (c) 20 (d) 28

(52) The 11th term of the AP: $-5, \frac{-5}{2}, 0, \frac{5}{2}, \ldots$ is

(a) –20 (b) 20 (c) –30 (d) 30

(53) In Fig. ∠BAC = 90° and AD ⊥ BC. Then,



(a) $BD \cdot CD = BC^2$ (b) $AB \cdot AC = BC^2$ (c) $BD \cdot CD = AD^2$ (d) $AB \cdot AC = AD^2$

(54) The lengths of the diagonals of a rhombus are 16 cm and 12 cm. Then, the length of the side of the rhombus is

(a) 9 cm (b) 10 cm (c) 8 cm (d) 20 cm

(55) The distance of the point P(–6, 8) from the origin is

(a) 8 (b) $2\sqrt{7}$ (c) 10 (d) 6

(56) If the point P(2, 1) lies on the line segment joining points A(4, 2) and B(8, 4), then

(a) $AP = \frac{1}{3}AB$ (b) AP = PB (c) $PB = \frac{1}{3}AB$ (d) $AP = \frac{1}{2}AB$

(57) The value of $\frac{\tan 30^\circ}{\cot 60^\circ}$ is

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

(58) If 4 tan θ = 3, then $\left(\frac{4\sin\theta - \cos\theta}{4\sin\theta + \cos\theta}\right)$ is equal to

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

(59) Consider the following frequency distribution of the heights of 60 students of a class:

Height (in cm)	Number of students
150–155	15
155–160	13
160–165	10
165–170	8
170–175	9
175–180	5

The sum of the lower limit of the modal class and upper limit of the median class is

(a) 310 (b) 315 (c) 320 (d) 330

(60) While computing mean of grouped data, we assume that the frequencies are

(a) evenly distributed over all the classes

(b) centred at the class marks of the classes

(c) centred at the upper limits of the classes

(d) centred at the lower limits of the classes

(61) A bag contains 3 red balls, 5 white balls and 7 black balls. What is the probability that a ball drawn from the bag at random will be neither red nor black?

(a) $\frac{1}{5}$ (b) $\frac{1}{3}$ (c) $\frac{7}{15}$ (d) $\frac{8}{15}$

(62) 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

(63) After rationalising the denominator of $\frac{7}{3\sqrt{3}-2\sqrt{2}}$, we get the denominator as

(a) 13 (b) 19 (c) 5 (d) 35

(64) The points whose abscissa and ordinate have different signs will lie in

(a) I and II quadrants (b) II and III quadrants

(c) I and III quadrants (d) II and IV quadrants

(65) How many linear equations in x and y can be satisfied by x = 1 and y = 2?

(a) Only one (b) Two (c) Infinitely many (d) Three

(66) The value of the polynomial $5x - 4x^2 + 3$, when $x = -1$ is

(a) –6 (b) 6 (c) 2 (d) –2

(67) In triangles ABC and PQR, AB = AC, $\angle C = \angle P$ and $\angle B = \angle Q$. The two triangles are

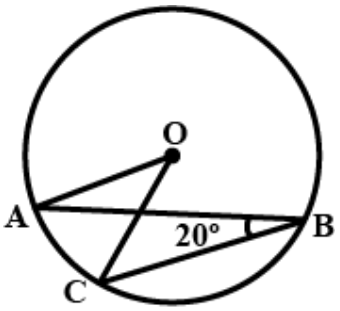
(a) isosceles but not congruent (b) isosceles and congruent

(c) congruent but not isosceles (d) neither congruent nor isosceles

(68) A diagonal of a rectangle is inclined to one side of the rectangle at 25°. The acute angle between the diagonals is

(a) 55° (b) 50° (c) 40° (d) 25°

(69) In Fig., if ∠ABC = 20°, then ∠AOC is equal to:



(a) 20° (b) 40° (c) 60° (d) 10°

(70) A cone is 8.4 cm high and the radius of its base is 2.1 cm. It is melted and recast into a sphere. The radius of the sphere is:

(a) 4.2 cm (b) 2.1 cm (c) 2.4 cm (d) 1.6 cm

MENTAL ABILITY

(71) 1, 2, 10, 4, 3, 14, 9, 5, ...

(a) 19 (b) 20 (c) 17 (d) 18

(72) Find out the missing number. 240, ? 120, 40, 10, 2 –

(a) 120 (b) 240 (c) 40 (d) 10

(73) Select the combination of numbers so that letters arranged accordingly will form a meaningful word.

R A C E T

1 2 3 4 5

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

(74) Rearrange the first four letters, in any way, of the word DECISION. Find how many words can be formed by using all the four words.

(a) One (b) Two (c) Three (d) More than three

(75) In a certain code, RADIO is XZOPL and SHEET is NBGGI, then HEATER is coded as ?

(a) BNGZIX (b) BGZGIX (c) BGZIGX (d) GZBIXZ

(76) In a certain code, if BLACK is KCALB then THEFT is?

(a) TFEHT (b) FHETT (c) TEHFT (d) TFHET

(77) How many combinations of two-digit numbers having 8 can be made from the following numbers ? 8, 5, 2, 1, 7, 6

(a) 9 (b) 10 (c) 11 (d) 12

(78) How many numbers amongst the numbers 9 to 54 are there which are exactly divisible by 9 but not by 3?

(a) 8 (b) 6 (c) 5 (d) Nil

(79) If + means × . × means –, ÷ means + and – means ÷, then which of the following gives the result of 175 – 25 ÷ 5 ÷ 20 × 3 + 10 ?

(a) 77 (b) 160 (c) 240 (d) 2370

(80) If × means ÷, – means × , ÷ means + and + means – then (3 – 15 ÷ 19) × 8 + 6 = ?

(a) – 1 (b) 2 (c) 4 (d) 8

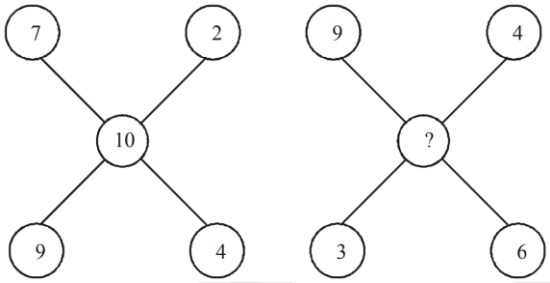
(81) Deepak starts walking straight towards east. After walking 75 metres, he turns to the left and walks 25 metres straight. Again he turns to the left, walks a distance of 40 metres straight, again he turns to the left and walks a distance of 25 metres. How far is he from the starting point?

(a) 25 metres (b) 50 Metres (c) 115 Metres (d) 35 Metres

(82) A rat runs 20' towards East and turns to right, runs 10' and turns to right, runs 9' and again turns to left, runs 5' and then turns to left, runs 12' and finally turns to left and runs 6' Now, which direction is the rat facing ?

(a) East (b) West (c) North (d) South

(83) What number should replace the question mark?



(a) 2 (b) 9 (c) 12 (d) 19

(84) 312568 | ?

(a) 312568 (b) 312568 (c) 312568 (d) 312568

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