ISAT Practice Test 3

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) In case of negative work the angle between the force and displacement is
(a) 0° (b) 45° (c) 90° (d) 180°

(2) In SONAR, we use
(a) ultrasonic waves (b) infrasonic waves
(c) radio waves (d) audible sound waves

(3) The gravitational force between two objects is F. If masses of both objects are halved without changing distance between them, then the gravitational force would become
(a) F/4 (b) F/2 (c) F (d) 2 F

(4) An object is put one by one in three liquids having different densities. The object floats with $\frac{1}{9}, \frac{2}{11}$ and $\frac{3}{7}$ parts of their volumes outside the liquid surface in liquids of densities d_1, d_2 and d_3 respectively. Which of the following statement is correct?
(a) $d_1 > d_2 > d_3$ (b) $d_1 > d_2 < d_3$ (c) $d_1 < d_2 > d_3$ (d) $d_1 < d_2 < d_3$

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(5) An object weighs 10 N in air. When immersed fully in water, it weighs only 8 N. The weight of the liquid displaced by the object will be

(a) 2 N (b) 8 N (c) 10 N (d) 12 N

(6) A goalkeeper in a game of football pulls his hands backwards after holding the ball shot at the goal. This enables the goal keeper to

(a) exert larger force on the ball

(b) reduce the force exerted by the ball on hands

(c) increase the rate of change of momentum

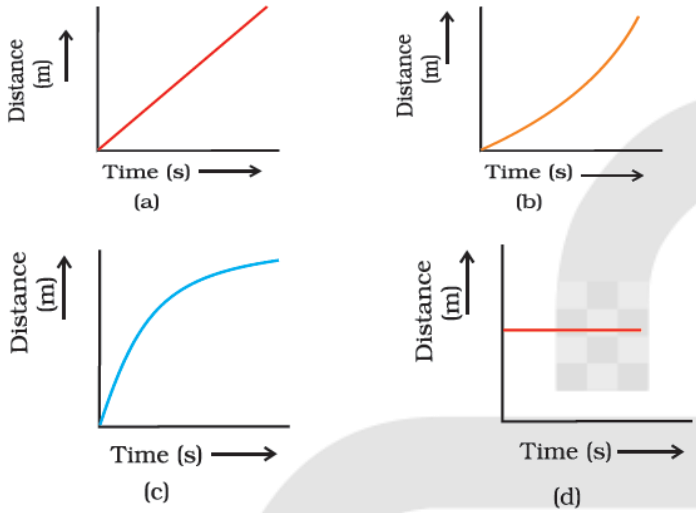
(d) decrease the rate of change of momentum

(7) The numerical ratio of displacement to distance for a moving object is

(a) always less than 1 (b) always equal to 1

(c) always more than 1 (d) equal or less than 1

(8) Which of the following figures (Fig.) represents uniform motion of a moving object correctly?

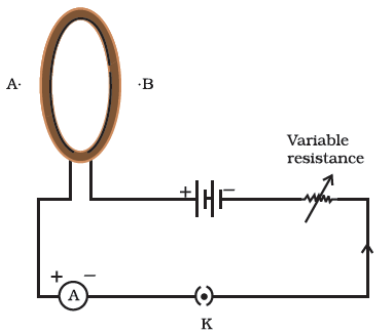


(9) Which one of the following forms of energy leads to least environmental pollution in the process of its harnessing and utilisation?

(a) Nuclear energy (b) Thermal energy

(c) Solar energy (d) Geothermal energy

(10) A circular loop placed in a plane perpendicular to the plane of paper carries a current when the key is ON. The current as seen from points A and B (in the plane of paper and on the axis of the coil) is anti clockwise and clockwise respectively. The magnetic field lines point from B to A. The N-pole of the resultant magnet is on the face close to



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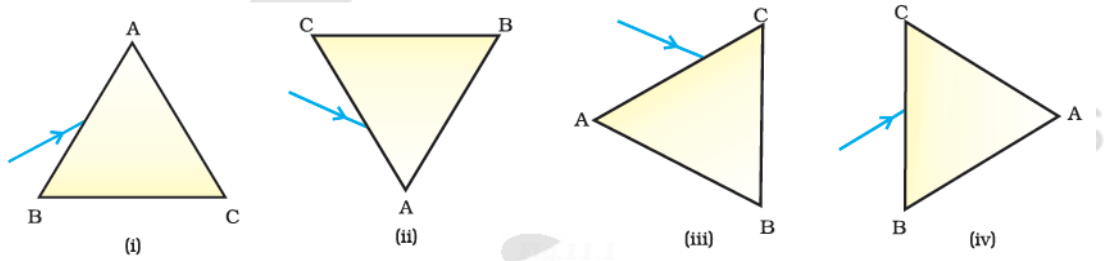
(a) A
(b) B
(c) A if the current is small, and B if the current is large
(d) B if the current is small and A if the current is large

(11) Choose the incorrect statement
(a) Fleming's right-hand rule is a simple rule to know the direction of induced current
(b) The right-hand thumb rule is used to find the direction of magnetic fields due to current carrying conductors
(c) The difference between the direct and alternating currents is that the direct current always flows in one direction, whereas the alternating current reverses its direction periodically
(d) In India, the AC changes direction after every $\frac{1}{50}$ second

(12) A 10 mm long awl pin is placed vertically in front of a concave mirror. A 5 mm long image of the awl pin is formed at 30 cm in front of the mirror. The focal length of this mirror is
(a) – 30 cm (b) – 20 cm (c) – 40 cm (d) – 60 cm

(13) Which of the following statements is true?
(a) A convex lens has 4 dioptre power having a focal length 0.25 m
(b) A convex lens has –4 dioptre power having a focal length 0.25 m
(c) A concave lens has 4 dioptre power having a focal length 0.25 m
(d) A concave lens has –4 dioptre power having a focal length 0.25 m

(14) A prism ABC (with BC as base) is placed in different orientations. A narrow beam of white light is incident on the prism as shown in Figure. In which of the following cases, after dispersion, the third colour from the top corresponds to the colour of the sky?



(a) (i) (b) (ii) (c) (iii) (d) (iv)

CHEMISTRY

(15) The following reaction is an example of a $4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$
(i) displacement reaction
(ii) combination reaction
(iii) redox reaction
(iv) neutralisation reaction
(a) (i) and (iv) (b) (ii) and (iii) (c) (i) and (iii) (d) (iii) and (iv)

(16) Calcium phosphate is present in tooth enamel. Its nature is
(a) basic (b) acidic (c) neutral (d) amphoteric

(17) Which of the following gives the correct increasing order of acidic strength?
(a) Water <Acetic acid <Hydrochloric acid
(b) Water <Hydrochloric acid <Acetic acid
(c) Acetic acid <Water <Hydrochloric acid
(d) Hydrochloric acid <Water <Acetic acid

(18) Sodium hydrogencarbonate when added to acetic acid evolves a gas. Which of the following statements are true about the gas evolved?
(i) It turns lime water milky
(ii) It extinguishes a burning splinter
(iii) It dissolves in a solution of sodium hydroxide
(iv) It has a pungent odour
(a) (i) and (ii) (b) (i), (ii) and (iii) (c) (ii), (iii) and (iv) (d) (i) and (iv)

(19) Which of the following phenomena occur, when a small amount of acid is added to water?
(i) Ionisation
(ii) Neutralisation
(iii) Dilution
(iv) Salt formation
(a) (i) and (ii) (b) (i) and (iii) (c) (ii) and (iii) (d) (ii) and (iv)

(20) "Is malleable and ductile". This best describes:
(a) a metal (b) a compound (c) a non-metal (d) a solution

(21) The process of respiration is:
(a) an oxidation reaction which is endothermic
(b) a reduction reaction which is exothermic
(c) a combination reaction which is endothermic
(d) an oxidation reaction which is exothermic

(22) A form of matter has no fixed shape but it has a fixed volume. An example of this form of matter is:
(a) krypton (b) kerosene (c) carbon steel (d) carbon dioxide

(23) The evaporation of water increases under the following conditions:
(a) increase in temperature, decrease in surface area
(b) increase in surface area, decrease in temperature
(c) increase in surface area, rise in temperature
(d) increase in temperature, increase in surface area, addition of common salt

(24) When ice melts, cooling is observed because of one of the following:
(a) Density of ice is less than that of water
(b) Ice floats over water
(c) Ice absorbs heat from the surroundings
(d) Melting point of ice is 0°

(25) The removal of oxygen from a substance is called:
(a) oxidation (b) corrosion (c) reduction (d) rancidity

(26) Wasp sting contains:
(a) a sugar solution (b) an acidic liquid
(c) a salt solution (d) an alkaline liquid

(27) Tyndall Effect in colloids is due to_____.
(a) dispersion of light (b) merging of light rays
(c) scattering of light (d) convergence of light ray

(28) A solution reacts with marble chips to produce a gas which turns lime water milky. The solution contains:
(a) Na_2SO_4 (b) $CaSO_4$ (c) H_2SO_4 (d) K_2SO_4

BIOLOGY

(29) In photosynthesis
(a) CO_2 is reduced while H_2O oxidized
(b) CO_2 is oxidized white H_2O reduced
(c) CO_2 and H_2O are oxidized
(d) CO_2 & H_2O are reduced

(30) In which form is food transported in plants
(a) Sucrose (b) Fructose (c) Glucose (d) Lactose

(31) Growth in a plant is because of
(a) More anabolism than catabolism
(b) More catabolism than anabolism
(c) Equal amount of anabolism and catabolism
(d) More energy consumption

(32) Special excretory organ is lacking in:
(a) Earthworm (b) Amoeba (c) Man (d) Insects

(33) In which part of the alimentary canal food is finally digested?
(a) Stomach (b) Mouth cavity (c) Large intestine (d) Small intestine

(34) A few drops of iodine solution were added to rice water. The solution turned blue-black in colour. This indicates that rice water contains
(a) complex proteins (b) simple proteins
(c) fats (d) starch

(35) Dwarfism results due to
(a) Excess secretion of thyroxin
(b) Less secretion of growth hormone
(c) Less secretion of adrenaline
(d) Excess secretion of growth hormone

(36) The substance that triggers the fall of mature leaves and fruits from plants is due to
(a) auxin (b) gibberellin (c) abscisic acid (d) cytokinin

(37) Select the mis-matched pair
(a) Adrenaline : Pituitary gland (b) Testosterone: Testes
(c) Estrogen : Ovary (d) Thyroxin : Thyroid gland

(38) The ability of a cell to divide into several cells during reproduction in Plasmodium is called

(a) budding (b) reduction division

(c) binary fission (d) multiple fission

(39) The number of chromosomes in parents and offsprings of a particular species remains constant due to

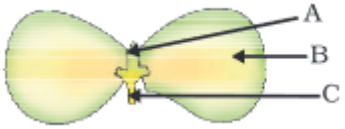
(a) doubling of chromosomes after zygote formation

(b) halving of chromosomes during gamete formation

(c) doubling of chromosomes after gamete formation

(d) halving of chromosomes after gamete formation

(40) In Figure below, the parts A, B and C are sequentially



(a) cotyledon, plumule and radicle (b) plumule, radicle and cotyledon

(c) plumule, cotyledon and radicle (d) radicle, cotyledon and plumule

(41) In Rhizopus, tubular thread-like structures bearing sporangia at their tips are called

(a) filaments (b) hyphae (c) rhizoids (d) roots

(42) The white matter in a bird's dropping is

(a) $CaCO_3$ (b) $CaSO_4$ (c) Uric acid (d) Urea

MATHEMATICS

(43) For some integer m, every even integer is of the form

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

(44) The product of a non-zero rational and an irrational number is

(a) always irrational (b) always rational

(c) rational or irrational (d) one

(45) If the zeroes of the quadratic polynomial $x^2 + (a + 1)x + b$ and 2 and –3, then

(a) a = –7, b = –1 (b) a = 5, b = –1 (c) a = 2, b = –6 (d) a = 0, b = –6

(46) The number of polynomials having zeroes as –2 and 5 is

(a) 1 (b) 2 (c) 3 (d) more than 3

(47) The pair of equations x + 2y + 5 = 0 and –3x + 6y + 1 = 0 have

(a) a unique solution (b) exactly two solutions

(c) infinitely many solutions (d) no solution

(48) If a pair of linear equations is consistent, then the lines will be

(a) parallel (b) always coincident

(c) intersecting or coincident (d) always intersecting

(49) Which of the following is not a quadratic equation?

(a) $2(x-1)^2 = 4x^2 - 2x + 1$ (b) $2x - x^2 = x^2 + 5$

(c) $(\sqrt{2}x + \sqrt{3})^2 + x^2 = 3x^2 - 5x$ (d) $(x^2 + 2x)^2 = x^4 + 3 + 4x^3$

(50) The quadratic equation $2x^2 - \sqrt{5}x + 1 = 0$ has

(a) two distinct real roots (b) two equal real roots

(c) no real roots (d) more than 2 real roots

(51) In an AP, if a = 3.5, d = 0, n = 101, then a_n will be

(a) 0 (b) 3.5 (c) 103.5 (d) 104.5

(52) The 21st term of the AP whose first two terms are –3 and 4 is

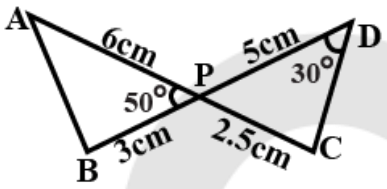
(a) 17 (b) 137 (c) 143 (d) –143

(53) In ΔABC ~ ΔEDF and ΔABC is not similar to ΔDEF, then which of the following is not true?

(a) BC · EF = AC · FD (b) AB · EF = AC · DE

(c) BC · DE = AB · EF (d) BC · DE = AB · FD

(54) In Fig., two line segments AC and BD intersect each other at point P such that PA = 6 cm, PB = 3 cm, PC = 2.5 cm, PD = 5 cm, ∠APB = 50° and ∠CDP = 30°. Then, ∠PBA is equal to



(a) 50° (b) 30° (c) 60° (d) 100°

(55) The perimeter of a triangle with vertices (0, 4), (0, 0) and (3, 0) is

(a) 5 (b) 12 (c) 11 (d) $7 + \sqrt{5}$

(56) If $P\left(\frac{a}{3}, 4\right)$ is the mid-point of the line segment joining the points Q(–6, 5) and R(–2, 3), then the value of *a* is

(a) –4 (b) –12 (c) 12 (d) –6

(57) The value of (sin 45° + cos 45°) is

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

(58) If $\sin\theta - \cos\theta = 0$, then the value of $(\sin^4\theta + \cos^4\theta)$ is

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

(59) Consider the following frequency distribution:

Class	0–5	6–11	12–17	18–23	24–29
Frequency	13	10	15	8	11

The upper limit of the median class is

(a) 17 (b) 17.5 (c) 18 (d) 18.5

(60) In the formula $\bar{x} = a + \frac{\sum f_i d_i}{\sum f_i}$, for finding the mean of grouped data d_i's are deviations from a of

(a) lower limits of the classes (b) upper limits of the classes

(c) mid points of the classes (d) frequencies of the class marks

(61) The probability of getting a bad egg in a lot of 400 is 0.035. The number of bad eggs in the lot is

(a) 7 (b) 14 (c) 21 (d) 28

(62) One ticket is drawn at random from a bag containing tickets numbered 1 to 40. The probability that the selected ticket has a number which is a multiple of 5 is

(a) $\frac{1}{5}$ (b) $\frac{3}{5}$ (c) $\frac{4}{5}$ (d) $\frac{1}{3}$

(63) If $\sqrt{2} = 1.4142$, then $\sqrt{\frac{\sqrt{2}-1}{\sqrt{2}+1}}$ is equal to

(a) 2.4142 (b) 5.8282 (c) 0.4142 (d) 0.1718

(64) The point which lies on y-axis at a distance of 5 units in the negative direction of y-axis is

(a) (0, 5) (b) (5, 0) (c) (0, –5) (d) (–5, 0)

(65) The point of the form (a, $-a$) always lies on the line

(a) x = a (b) y = –a (c) y = x (d) x + y = 0

(66) Zero of the zero polynomial is

(a) 0 (b) 1

(c) Any real number (d) Not defined

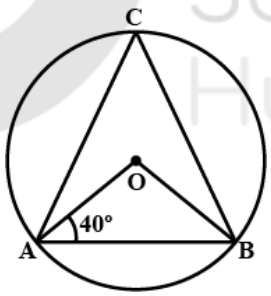
(67) In triangles ABC and DEF, AB = FD and ∠A = ∠D. The two triangles will be congruent by SAS axiom if

(a) BC = EF (b) AC = DE (c) AC = EF (d) BC = DE

(68) ABCD is a rhombus such that ∠ACB = 40°. Then ∠ADB is

(a) 40° (b) 45° (c) 50° (d) 60°

(69) In Fig., if ∠OAB = 40°, then ∠ACB is equal to:



(a) 50° (b) 40° (c) 60° (d) 70°

(70) The number of planks of dimensions (4 m × 50 cm × 20 cm) that can be stored in a pit which is 16 m long, 12 m wide and 4 m deep is

(a) 1900 (b) 1920 (c) 1800 (d) 1840

MENTAL ABILITY

(71) 2, 4, 4, 8, 16, 16, 256, ?
(a) 64 (b) 36 (c) 180 (d) 32

(72) 19, 4, 14, 7, 10, 11, 7, ?
(a) 16 (b) 15 (c) 17 (d) 23

(73) Each of the following questions is based on the following alphabet series. A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Which letter is exactly midway between H and S in the given alphabet?
(a) No such letter (b) L (c) M (d) O

(74) Arrange the given words in the sequence in which they occur in the dictionary and then choose the correct sequence.
1. Wrinkle 2. Wriggle 3. Writhe 4. Wretch 5. Wrath
(a) 4, 5, 1, 2, 3 (b) 5, 4, 2, 1, 3 (c) 4, 2, 5, 1, 3 (d) 5, 2, 1, 3, 4

(75) In a certain code BOOK is TLLC and TRICK is NAGDC, then BRICK is coded as –
(a) NAGDC (b) TAGLC (c) TALCD (d) TAGDC

(76) If COME is code as BNLD then DANGER will be coded as
(a) EBOHIS (b) CZMGER (c) CZMFDQ (d) DANFDQ

(77) In a queue, A is eighteenth from the front while B is sixteenth from the back. If C is twentieth from the front and is exactly in the middle of A and B, then how many persons are there is the queue?
(a) 45 (b) 46 (c) 47 (d) 48

(78) In a row of 21 girls, when monika was shifted by four place towards the right, she became 12 th from the left end. What was her earlier position from the right end of the row ?
(a) 9th (b) 10th (c) 11th (d) 14th

(79) In this question, three statements of numbers following same rules are given. Find the rule and accordingly find the value of the number
If 43 = 158; 35 = 824; 42 = 153; then 32 = ?
(a) 84 (b) 83 (c) 85 (d) 94

(80) In this question, three statements of numbers following same rules are given. Find the rule and accordingly find the value of the number
If 73 = 52; 95 = 86; 34 = 13, then 57 = ?
(a) 30 (b) 57 (c) 40 (d) 32

(81) P, Q, R, S, T, U, V and W are sitting around a round table in the same order, for group discussion at equal distance. Their positions are clockwise. If V sits in the north, then what will be the position of S?
(a) East (b) South-east (c) South (d) South-west

(82) If all the directions are rotated, i.e., if North is changed to West and East to North and so on, then what will come in place of North-West ?
(a) South-West (b) North-East (c) East-North (d) East-West

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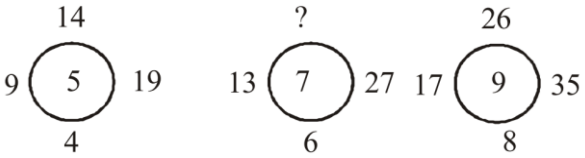
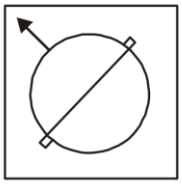
(83) Find the missing number in the following sets of number around the circle from the choice given below :

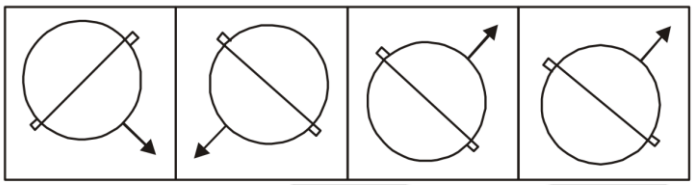


(a) 18 (b) 20 (c) 22 (d) 24

(84) Choose the correct mirror-image of the Fig. (X) from amongst the four alternatives (a), (b), (c) and (d) given along with it.



(X)



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

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