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TALLENTEX 2022

ALLEN'S Talent Encouragement Exam

Students of Class V to X

SAMPLE TEST PAPER

FOR STAGE - I

CLASS X

"TALLENTEX COORDINATION CELL"

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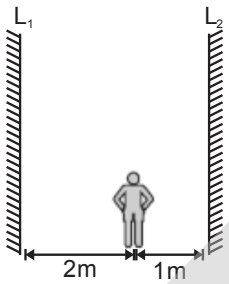
A Specially Designed Initiative at National Level to Encourage Young Talent by

ALLEN CAREER INSTITUTE KOTA (RAJASTHAN)

path to success

PART - I
PHYSICS
(OBJECTIVE)

1. Two mirror labelled L_1 for left mirror and L_2 for right mirror in the figure are parallel to each other and 3.0 apart. A person standing 1.0 m from the right mirror (L_2) looks into this mirror and sees a series of images. The second nearest image seen in the right mirror is situated at a distance:



(1) 2.0 m from the person
(2) 4.0 m from the person
(3) 6.0 m from the person
(4) 8.0 m from the person

2. The refractive index of water with respect to air is $\frac{4}{3}$ and the refractive index of glass with respect to air is $\frac{3}{2}$. Then the refractive index of water with respect to glass is–

(1) $\frac{9}{8}$ (2) $\frac{8}{9}$ (3) $\frac{1}{2}$ (4) 2

3. The brake applied to a car produce a retardation of 6 m/s^2. If the car takes 1 sec to stop after application of brakes, distance travelled by car during this time is 'x' metre. Find 'x'.
(1) 3 (2) 4 (3) 6 (4) 10

4. Two skaters A and B of mass 50 and 60 kg, respectively, stand facing each other, 11m apart on a horizontal smooth surface. They pull a rope stretched between them. How far each has moved when they meet ?
(1) Both A and B have moved 5.5 m each
(2) A moves 7m and B moves 4m
(3) A moves 3.5m and B moves 7.5m
(4) A moves 6m and B moves 5m

5. Match the elements of table I and II

Table I	Table II
(a) Myopia	(i) Bifocal lens
(b) Hypermetropia	(ii) Cylindrical lens
(c) Presbyopia	(iii) Concave lens
(d) Astigmatism	(iv) Convex lens

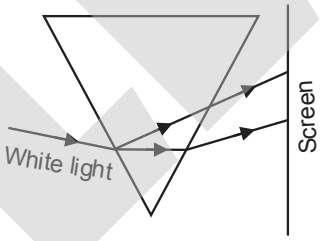
(1) a – (iii), b – (iv), c – (i), d – (ii)
(2) a – (iv), b – (iii), c – (i), d – (ii)
(3) a – (i), b – (ii), c – (iii), d – (iv)
(4) a – (ii), b – (iv), c – (i), d – (iii)

6. Light travels through a glass plate of thickness t having refractive index μ. If c be the velocity of light in vacuum, then the time taken by the light to travel this thickness of glass is–

(1) $\frac{t}{\mu c}$ (2) tμc (3) $\frac{\mu t}{c}$ (4) $\frac{tc}{\mu}$

7. If a 6 kg body is moving at a velocity 3 m/s and its velocity is changed to 4 times the initial velocity in 5 seconds, what will be the power delivered to the body in this time duration?
(1) 81W (2) 3W (3) 21W (4) 9W

8. In the figure dispersion of white light when it passes through a glass prism is shown. Then the colour which will appear at the top of the spectrum formed on the screen is–



(1) Red (2) Green (3) Violet (4) Yellow

9. An astronaut standing on the surface of the moon throws a ball upwards with velocity 6 m/s. The ball would;
(1) directly fall down from the point it is released.
(2) hang in space.
(3) go up and then come back to the surface of the moon.
(4) keep going up never to come back

10. A bullet of mass 20g is fired at a speed of 108 km/hr from a gun of mass 5 kg. The magnitude of recoil velocity of the gun is
(1) 0.12 m/s (2) 1.2 m/s (3) 12 m/s (4) 0.012 m/s

(INTEGER)

11. When a light wave of frequencey 5×10^{14} Hz passes through a medium of refractive index 1.5then its wavelength will become _____ Å

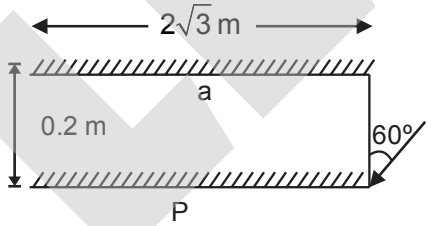
12. For a concave mirror, the magnification of a real image was found to be twice as great when the object was 15 cm from the mirror as it was when the object was 20cm from the mirror, then the focal length of the mirror is _____ cm.

13. A concave mirror of focal length 15 cm forms an virtual image having twice the linear dimensions of the object. Then the distance of the image from the pole of the mirror is _____ cm.

14. A block of mass 2 kg is moving with a constant speed of 5 ms^{-1}. The KE of block is 5n J. Find the value of n.

15. A bullet hits a wall with velocity of 20 m/s. The deceleration of the bullet in the wall is constant 4000 m/s^2. Find out how much distance (in cm) it penetrates upto.

16. Two plane mirrors P and Q are kept parallel to each other, as shown in the figure. A light ray is incident at an angle 60º at a point just inside one end of mirror P. The plane of incidence coincides with the plane of the figure. Then the maximum number of times the ray undergoes reflections (including the first one) before it emerges out, it _____



17. A machine gun fires 30 bullets per second into the target each with velocity of 400 m/s. Each bullet weighs 100 grams. The force necessary to hold the gun in position is _____ $\times 10^2$ N.

18. The focal length of normal eye-lens is about _____ cm

19. The time period of a planet revolving around the sun in a circular orbit of radius r is T. If the planet is made to orbit the sun in an orbit of radius 5r then its time period is $(X\sqrt{X})T$, where X is_____.

20. A farsighted person cannot see objects placed closer to 50 cm, then the power of the corrective lens needed to see the objects at 20 cm is _____ D

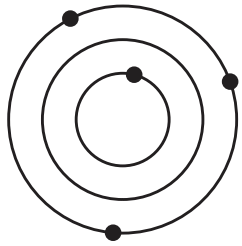
CHEMISTRY
(OBJECTIVE)

21. If 23gm of NO_2 gas occupies 'V' volume at NTP, then its molar volume will be.

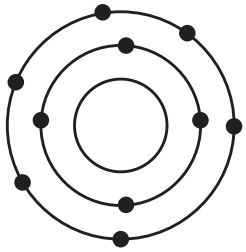
(1) 2 V (2) 3 V

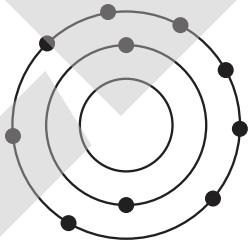
(3) $\frac{V}{2}$ (4) $\frac{V}{4}$

22. Which of the following figure do not represent correct picture of atom?

(i) 

(ii) 

(iii) 

(iv) 

(1) (i), (ii) (2) (i), (iv)

(3) (ii), (iii) (4) (i), (iii)

23. A base which is widely used in soap and paper industry. If the formula of base is XOH and molecular weight is 56. Then X will be :

(1) Na (2) K (3) Li (4) Cs

24. Zinc reacts with.....to form zinc oxide and hydrogen gas.

(1) Cold water (2) Steam

(3) Hot water (4) Oxygen

25. Preparation of Cl_2 from HCl and MnO_2, involves the process of –

(1) Oxidation of MnO_2 (2) Reduction of MnO_2

(3) Dehydration (4) Reduction of chloride ion

26. The pH number of a liquid tells its level of acidity or alkalinity. Some chemicals have different colours when put into liquids with different levels of acidity. These chemicals are called indicators. The following table shows the colour changes that occur with four different acid-base indicators.

Indicator	Colour of Indicator													
	Acidic					pH							Basic	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	red						blue							
B	clear							pink						
C	red					orange								
D	yellow						purple							

Four liquids 1, 2, 3 and 4 were tested with indicators A, B, C, and D. The results are recorded below. Which liquid has the highest pH?

Liquid	Colour of Indicator			
	Indicator A	Indicator B	Indicator C	Indicator D
1	blue	clear	orange	purple
2	blue	pink	orange	purple
3	red	clear	red	yellow
4	red	clear	orange	yellow

27. In the rusting of iron, iron has been –

(1) vaporised (2) reduced (3) oxidised (4) Decomposed

28. Match the following compounds with their formula :

Column (I)	**Column (II)**
(i) Calcium bisulphate	(p) CaS
(ii) Calcium bisulphite	(q) $Ca(HS)_2$
(iii) Calcium sulphide	(r) $Ca(HSO_3)_2$
(iv) Calcium bisulphide	(s) $Ca(HSO_4)_2$

(1) (i–p) ; (ii–q) ; (iii–r) ; (iv–s) (2) (i–s) ; (ii–r) ; (iii–p) ; (iv–q)

(3) (i–q) ; (ii–p) ; (iii–r) ; (iv–s) (4) (i–s) ; (ii–q) ; (iii–r) ; (iv–p)

29. Which of the following is a feasible reaction ?

(1) $Ba(s) + K_2SO_4(aq) \longrightarrow BaSO_4(aq) + 2K(s)$

(2) $Mg(s) + Na_2SO_4(aq) \longrightarrow MgSO_4(aq) + 2Na(s)$

(3) $Zn(s) + 2AgNO_3(aq) \longrightarrow Zn(NO_3)_2(aq) + 2Ag(s)$

(4) $Cu(s) + MgSO_4(aq) \longrightarrow CuSO_4(aq) + Mg(s)$

30. The number of electrons in the outermost shell of atom, decide its–

(1) Mass number (2) Atomic number (3) Valency (4) Atomic weight

(INTEGER)

31. How many salts among the following are made up of strong base and strong acid ?
KBr, NH_4NO_3, $NaCl$, $NaNO_2$, KCN, $(NH_4)_2SO_4$, CH_3COONH_4, K_2SO_4

32. Out of following, How many pairs are iso electronic?
(i) CO_2 and H_2O (ii) NO_2 and SO_2 (iii) SO_3 and NO_2 (iv) NH_3 and H_2O
(v) C_2H_6 and Ar (vi) CO_3^{2-} and SO_2

33. An atom of an element (X) has its K, L and M shells filled with some electrons. It reacts with sodium metal to form a compound NaX. What will be the number of electrons in M shell of an atom of element X ?

34. How many statements among the following are correct ?
(i) Phosphorus is a non-metal kept in water
(ii) Metalloids have properties in between metals and non-metals.
(iii) Non-metals have a tendency to loose electrons.
(iv) Zinc oxide is a metal oxide that can react with bases
(v) Metals react with oxygen to form acidic oxide.
(vi) Non-metals have low melting and boiling point.

35. pH of HCl solution is 2, what will be concentration of H^+ ion ?

36. How many reactions among the following correctly represent combination reaction ?
(i) $Fe + S \longrightarrow FeS$ (ii) $Fe + 2HCl \longrightarrow FeCl_2 + H_2$
(iii) $NH_3 + HCl \longrightarrow NH_4Cl$ (iv) $ZnCO_3 \longrightarrow ZnO + CO_2$
(v) $2H_2O \longrightarrow H_2 + O_2$ (vi) $CaO + CO_2 \longrightarrow CaCO_3$

37. How many among the following statements are not correct for Bohr's model of an atom?
(i) Isotopes have different no. of neutrons.
(ii) An electron carry positive 1.6×10^{-19} coloumbs charge.
(iii) Isobars have same mass number but different atomic number.
(iv) E-Goldstein discovered proton by cathode ray experiment
(v) I^{131} is used in the treatment of goiter disease.

38. How many reactions among the followings are example of precipitation reaction ?
(i) $AlCl_3 + 3NH_4OH \longrightarrow Al(OH)_3 + 3NH_4Cl$
(ii) $BaCl_2 + Na_2SO_4 \longrightarrow BaSO_4 + 2NaCl$
(iii) $NaOH + HCl \longrightarrow NaCl + H_2O$
(iv) $2H_2 + O_2 \longrightarrow 2H_2O$
(v) $CuSO_4 + 2NH_4OH \longrightarrow Cu(OH)_2 + (NH_4)_2SO_4$
(vi) $AgNO_3 + NaCl \longrightarrow AgCl + NaNO_3$

39. The number of oxygen atoms present in 32 gms of SO_2 is $x \times 6.023 \times 10^{23}$. Find the value of x.

40. The ion of an element has 3 positive charge, mass number of atom is 27 and the number of neutrons is 14. What will be the number of electrons in the ion ?

BIOLOGY
(OBJECTIVE)

41. The main reason polar regions are cooler than the equator is that
(1) there is more ice at the poles.
(2) sunlight strikes the poles at a lower angle.
(3) the poles are farther from the sun.
(4) the polar atmosphere is thinner and contains fewer greenhouse gases.

42. Acidity related pain and bleeding occurs in stomach and duodenum in a particular disease. Identify the disease and pathogen responsible for this condition.
(1) Kala Azar, *Leishmania*
(2) Peptic ulcers, *Helicobacter pylori*
(3) Tetanus, *Clostridium tetani*
(4) Typhoid, *Salmonella typhi*

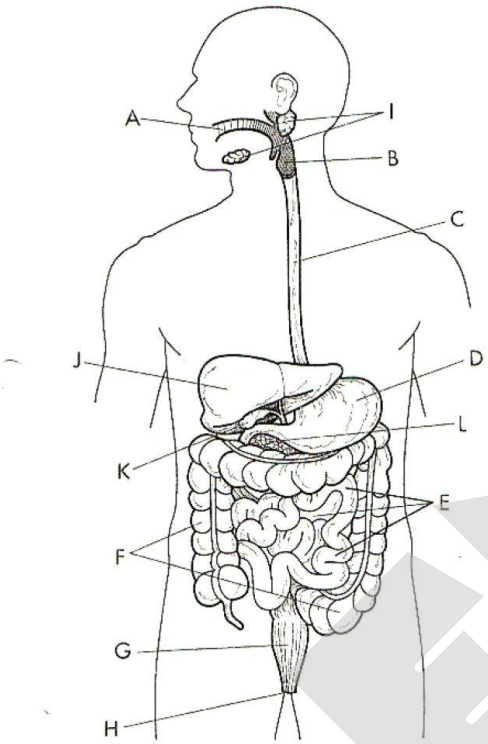
43. Find the Incorrect pair
(1) Renal vein - Supplies blood to kidney
(2) Kidney - Water balance
(3) Glomerulus - Ultrafiltration
(4) Sphincter muscles - Controls urination

44. Find the correct match.

	Column A		Column B
a	Root hair	i	Upward movement of water and mineral in xylem
b	Companion cell	ii	Increases surface area for the absorption of water
c	Ascent of sap	iii	Loading of sugar in the sieve tube
d	Phloem fibres	iv	Dead cells which gives mechanical support to the tissue

(1) a-i, b-ii, c-iii, d-iv (2) a-ii, b-iii, c-i, d-iv (3) a-iii, b-ii, c-i, d-iv (4) a-i, b-iii, c-ii, d-iv

45. Which of the following is correct about the given diagram?



(1) Part labelled as 'D' is liver and produces gastric juice.
(2) Part labelled as 'I' is producing amylase enzyme which break downs protein into amino acids.
(3) Part labelled as 'E' is small intestine which produces digestive juice and responsible for absorption of the digested food.
(4) Absorption of the water and minerals occurs in the part labelled as 'C'.

46. Which of the following is correct ?
(1) Xylem is complex permanent tisue
(2) Meristematic tissues are of two type
(3) Sumberged aquatic plants have stomata on leaves
(4) Phloem is simple permanent tissue

47. Read the following paragraph and fill the blanks with correct option.
Blood pressure is measured with instrument called _____a_____. High blood pressure is caused by the constriction of _____b_____, which results in _____c_____ resistance of blood flow.
(1) a- sphygmomanometer, b- veins, c-increased
(2) a- stethoscope, b- veins, c-increased
(3) a- sphygmomanometer, b- veins, c-decreased
(4) a- sphygmomanometer, b- arterioles, c-increased

48. Which of the following is correct ?
(1) Pyruvate is produced only in mitochondria by breaking of glucose.
(2) Complete breakdown of glucose requires oxygen and releases 38 molecules of ATP from single glucose molecule.
(3) Complete breakdown of glucose do not require oxygen and releases 2 molecules of ATP from single glucose molecule.
(4) Lactic acid is produced only when enough amount of oxygen is available to muscle cells.

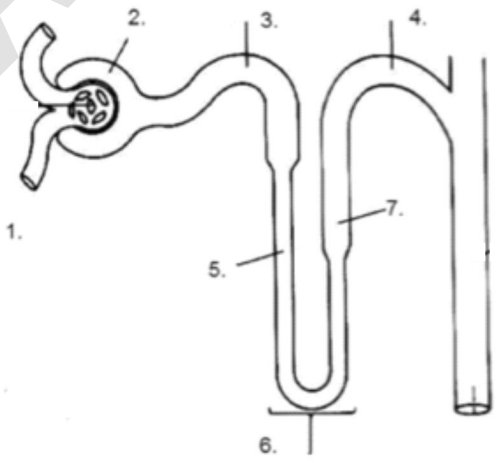
49. The characteristics that is shared by urea, uric acid and ammonia is/are
(A) They are nitrogenous wastes
(B) They all need large amount of water for excretion
(C) The are all equally toxic
(1) A, B, C (2) A only (3) A and B (4) B and C only

50. People who have migrated from the planes to an area adjoining Rohtang Pass about six months back
(1) have more RBCs
(2) are not physically fit to play games like football
(3) suffer from altitude sickness with symptoms like nausea, fatigue, etc.
(4) have the usual RBC count

(INTEGER)

51. From the list given below how many of them are the viral diseases?
Typhoid, Chicken pox, Smallpox, Tuberculosis, Cancer, Ringworm, Common cold, AIDS

52. The hormone which causes more reabsorption of water during summer, acts on which of the following labelled parts?



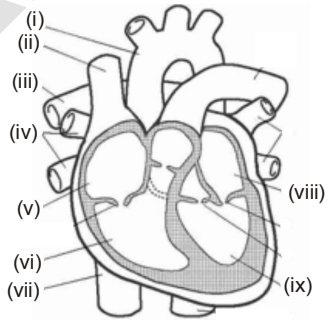
53. Read the following statements carefully.
(i) Transpiration and root pressure causes water to rise in plants by pulling & pushing it respectively
(ii) Transportation of water and minerals by xylem is bidirectional
(iii) Transpiration and root pressure causes water to rise in plants by pushing and pulling it respectively
(iv) During day time only root pressure is enough to transport water upwards in long trees.
How many statements are incorrect for transportation of water ?

54. How many of the following is/are use/s of the energy released in respiration?
(i) active transport
(ii) muscle contraction
(iii) maintaining a steady body temperature
(iv) breaking down large molecules into smaller ones

55. Read the following statements.
(i) Ozone layer occurs naturally in the stratosphere.
(ii) CFC's are major ozone depleting substances which produce active chlorine radicals in the presence of UV radiations.
(iii) Thinning of ozone layer allows more UV radiations to pass through it and cause harmful effects on humans, plants and animals.
(iv) The region of the stratosphere that contains relatively high concentration of ozone is called troposphere.
How many of these are correct regarding ozone layer?

56. How of the following are connective tissue proper ?
blood, neuron, cardiac muscle, tendon, lymph, adipose tissue, areoler tissue.

57. How many labelled parts in the given diagram contains deoxygenated blood?



58. How many of the following statements about human excretory system is incorrect?
i. Nephron is the structural and functional unit of kidney.
ii. Urethra carries urine towards urinary bladder.
iii. One of the function of kidney is osmoregulation also.
iv. Tannins, essential oils, resins, latex, gum etc are the waste products of plants.
v. The fibrous covering around kidneys is called renal corpuscle.
vi. Micturition is the process of passing out urine.

59. Respiratory enzymes are located in
(i) Mitochondrial matrix
(ii) Perimitochondrial space
(iii) Outer mitochondrial membrane
(iv) Inner mitochondrial membrane
Number of correct options are :

60. How many of the following statements correctly describe the light reaction and dark reaction taking place during photosynthesis?
(i) Light reaction occur in grana whereas dark reaction occur in stroma of chloroplast.
(ii) Light reaction generate ATP and $NADPH_2$ whereas dark reaction consume ATP and $NADPH_2$.
(iii) Oxygen is released as by product during the light reaction as well as dark reaction.
(iv) Light reaction take place in the presence of light and dark reactions are independent of the products formed during light reactions.

MATHEMATICS

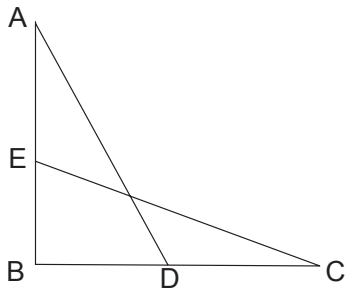
(OBJECTIVE)

61. If the points (1, 0) and (2, 1) lie on the graph of $\frac{x}{a}+\frac{y}{b}=1$, then the value of a + b is:

(1) 3 (2) 1 (3) 0 (4) –1

62. The remainder when
$5^{2021} + 2(7^{2021}) + 9^{2021} + 11^{2021} + 5(13^{2021}) + 15^{2021}$ divided by 8, is
(1) 1 (2) 3 (3) 5 (4) 7

63. In figure, ABC is a right triangle, right angled at B. AD and CE are the two medians drawn from A and C respectively. If AC = 5 cm and $AD=\frac{3\sqrt{5}}{2}$ cm, find the length of CE:



(1) $2\sqrt{5}$ cm (2) 2.5 cm (3) 5 cm (4) $4\sqrt{2}$ cm

64. In a right triangle ABC, $\angle B = 90^\circ$, AB = 9 cm, AC = 15 cm and D,E are the midpoints of AB and AC respectively, then the area of ΔADE is:

(1) 12 cm^2 (2) 13.5 cm^2 (3) 27 cm^2 (4) 24 cm^2

65. If P is a point within a rectangle ABCD, then :

(1) $AP^2 + PC^2 = BP^2 + PD^2$ (2) $AP^2 + BP^2 = PC^2 + PD^2$

(3) AP + PC = BP + PD (4) AP × PC = BP × PD

66. If $x^2 + 2x + 5$ is a factor of $x^4 + Px^2 + Q$, then the value of P + Q is:

(1) 18 (2) 25 (3) 31 (4) 28

67. If $7\text{cosec}\theta - 3\cot\theta = 7$, then the value of $7\cot\theta - 3\text{cosec}\theta$ is equal to

(1) 5 (2) 3 (3) $\frac{7}{3}$ (4) $\frac{3}{7}$

68. The perimeter of the triangle formed by the points (0, 0), (1, 0) and (0, 1) is :

(1) $1 \pm \sqrt{2}$ (2) $\sqrt{2}$ (3) 3 (4) $2 + \sqrt{2}$

69. A bag contains 4 red balls, 3 black balls and 5 green balls. If two balls are taken out one after the other at random, the probability that first ball is red and second is black, is

(1) $\frac{1}{11}$ (2) $\frac{1}{12}$ (3) $\frac{5}{11}$ (4) $\frac{4}{11}$

70. The area of the triangle with sides 25 cm, 39 cm and 56 cm is x cm^2. The value of x is

(1) 380 (2) 420 (3) 560 (4) 400

71. An n sided polygon has 'n' diagonals, then the value of n is:

(1) 4 (2) 6 (3) 7 (4) 5

72. The area of a circular path of width 'h' is surrounding a circular region of radius 'r' is :

(1) $\pi h(r + 2h)$ (2) $\pi(2r + h)$ (3) $\pi h(2r + h)$ (4) $\pi h(h + r)$

73. The three sides of a triangles are given which one of the following is not a right angle:

(1) 20, 21, 29 (2) 16, 63, 65 (3) 56, 90, 106 (4) 36, 35, 74

74. Face cards of clubs and diamonds are removed from a deck of 52 playing cards and well shuffled. One card is selected from the remaining card. The probability of getting a queen or a jack is _____.

(1) $\frac{1}{26}$ (2) $\frac{1}{13}$ (3) $\frac{2}{23}$ (4) $\frac{1}{23}$

75. The sides of a triangle are 11 cm, 15 cm and 16 cm. The altitude to the largest side is

(1) $30\sqrt{7}$ cm (2) $\frac{15\sqrt{7}}{2}$ cm

(3) $\frac{15\sqrt{7}}{4}$ cm (4) 30 cm

76. The radius and height of a cone are each increased by 30% then the volume of the cone is increased by

(1) 69% (2) 12% (3) 120.3% (4) 119.7%

77. If $p(x) = 2x^2 - 3x + 5$, then $p(1) + p(-1)$ is equal to

(1) 20 (2) 6 (3) 14 (4) 8

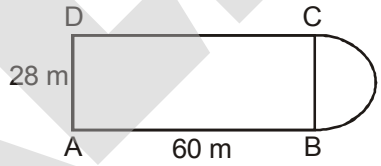
78. The value of $\frac{1-\sin^2 30^\circ}{1-\cos^2 60^\circ} + \frac{1-\sin^2 60^\circ}{1-\cos^2 30^\circ}$ is

(1) 1 (2) 3 (3) $\frac{3}{2}$ (4) 2

79. The average value of the median of 2, 8, 3, 7, 4, 6, 7 and the mode of 2, 9, 3, 4, 9, 6, 9 is

(1) 9 (2) 8 (3) 7.5 (4) 6

80. In the following figure, rectangle ABCD is having semi-circle on BC, if AB = 60 m and BC = 28 m, then Area of figure is :



(1) 1675 m^2 (2) 1988 m^2 (3) 1690 m^2 (4) None of these

81. The median of a set of 11 distinct observations is 21.5. If each of the largest 5 observations of the set is increased by 2, then the median of the new set

(1) is increased by 2

(2) is decreased by 2

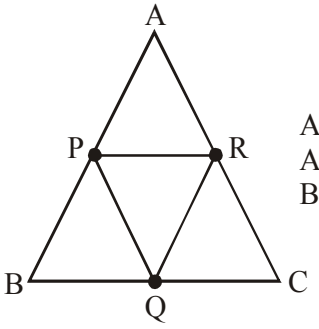
(3) is two times the original median

(4) remains the same as that of the original set

82. How many metres of cloth 2.5 m wide will be needed to make a conical tent with base radius 7m and height 24 m ?

(1) 120 m (2) 180 m (3) 220 m (4) 550 m

83. In the triangle ABC, points P, Q and R are the mid-points of sides AB, BC and CA respectively. The area of ΔPQR (in square units) is



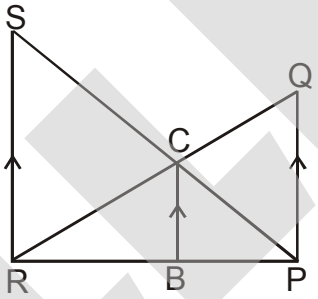
AB = 17 cm
AC = 21 cm
BC = 10 cm

(1) 21 (2) 63 (3) 42 (4) 84

84. The value of k for which the pair of linear equations $x + 2y = 46$, $2x + 4y = k$ have infinitely many solutions, is

(1) 46 (2) 27 (3) 92 (4) 82

85. In the given figure PQ || RS || BC. If RS = 4 cm, PQ = 3 cm, then BC is equal to



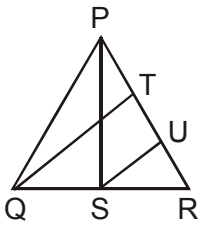
(1) $\sqrt{12}$ cm (2) $\frac{12}{7}$ cm (3) 3.5 cm (4) 2 cm

(INTEGER)

86. If $\frac{x}{y}+\frac{y}{x}=6$, find the value of $\frac{x^3}{y^3}+\frac{y^3}{x^3}$.

87. If the sum of ten different positive integers is 100. Then what is the greatest possible number among these ten numbers ?

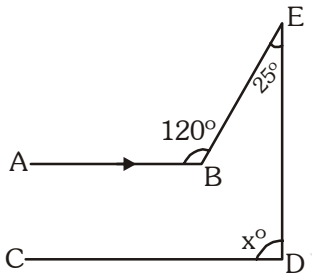
88. In the given figure, PS and QT are the medians of ΔPQR and QT || SU, then $\frac{PR}{UR}$ = ?



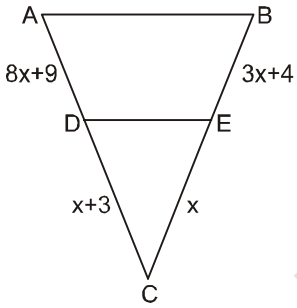
89. Find the value of x + y if, $\frac{57}{x+y}+\frac{6}{x-y}=5$; $\frac{38}{x+y}+\frac{21}{x-y}=9$.

90. Area of $\Delta ABC = 30\ cm^2$. D and E are the mid - points of BC and AB respectively. Find ar (ΔBDE)

91. In the figure, AB || CD. If $\angle ABE = 120°$ and $\angle BED = 25°$, the value of x is :

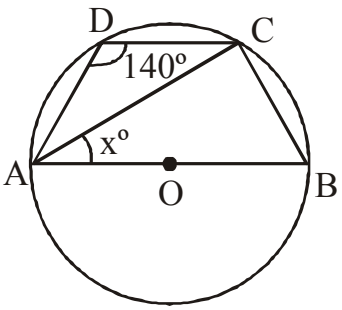


92. In the given figure DE || AB, find x.



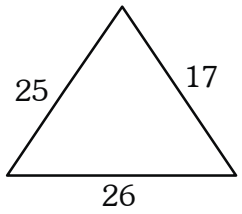
93. If $8\cot\theta = 15$, then find the value of $\frac{64(2+2\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(2-2\cos\theta)}$

94. In figure, O is the centre of the circle then find the value of x (in degrees).



95. A card is drawn at random from a well shuffled deck of 52 cards. The probability of getting a face card of heart is p/q, then find the value of q – p ?

96. What will be the area of the triangle given below (in sq. units)



97. Find the area of a triangle whose sides are 13 cm, 14 cm and 15 cm. (in cm^2)

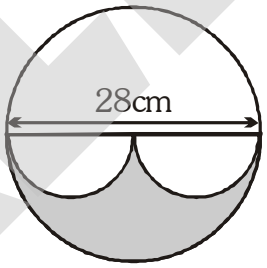
98. The following observations are arranged in ascending order :
30, 34, 41, 50, x, x + 6, 70, 78, 90, 92
If the median is 58, find the value of x.

99. Two circles touch internally. The sum of their areas is $116\pi cm^2$ and distance between their centres is 6 cm. Then sum of radii of the circles are :

100. If $\cot A = \frac{5}{12}$, then $\sec^2 A + \tan^2 A$ is_____.

101. If a + c = –b, then $\frac{a^2}{bc} + \frac{b^2}{ac} + \frac{c^2}{ab}$ is

102. In the given figure, the area of shaded region is (in cm^2)



103. If the class intervals of a frequency distribution are (100 – 110), (110 – 120), (120 – 130), (130 – 140), (140 – 150) etc, then the class mark of the class (120 – 130) is _____.

104. The height of a cylinder is 14 cm and its curved surface area is 264 cm^2, then find the volume of the cylinder in cm^3.

105. The sides of a triangular ground are 8m, 17m and 15m. Find the cost (in Rs.) of levelling the ground at the rate of Rs. 10 per m^2.

106. A rectangular block of wood has dimensions 24 cm by 9 cm by 7 cm. It is cut into children's bricks. Each brick is a cube of edge 3 cm. Find the largest number of bricks that can be cut from the block.

107. The sum of the coefficients of the polynomial $p(x) = (3x - 1)(2x^2 + 5x + 7)$ is_____.

108. If $\sec A = \sqrt{\frac{29}{28}}$, then value of $\cot^2 A$ is _____.

109. A class is divided into two sections A and B. Passing average of 20 students of section A is 80% and passing average of 30 students of section B is 70%. What is the passing average percentage of both the sections?

110. A chord of a circle of radius 14 cm makes a right angle at the centre. Calculate the area of the minor segment of the circle.

PART - II
IQ
(OBJECTIVE)

111. Kinjol, who is Raj's daughter, says to Indu, "Your mother Reeta is the younger sister of my father, who is the third child of Gauravji." How is Gauravji related to Indu?
(1) Maternal-uncle (2) Grandfather (3) Father (4) Father-in-law

112. Seven persons Aryan, Bunny, Dev, Gautam, Kabir, Prem, Rohit are having either of the three ocuupations- Private Job, Government Job or Business. Each of them is having cars of different colours i.e. Red, Grey, Blue, White, Black, Silver and Brown not necessarily in that order. Not more than three or less than two are having same occupations. Prem is having brown car and have the same occupation as only Rohit has. i.e. Private Job. Dev is having a black car and does not have Business. Gautam does not have the same occupation as Aryan or Kabir and is having a silver coloured car. Bunny is having a Business and he has a green car. Only one more person has a Business. Those who are having Government job do not have a white car. Kabir does not have a blue car.
What coloured car does Rohit have?
(1) Blue (2) White (3) Black (4) Data inadequate

113. Seven persons Aryan, Bunny, Dev, Gautam, Kabir, Prem, Rohit are having either of the three ocuupations- Private Job, Government Job or Business. Each of them is having cars of different colours i.e. Red, Grey, Blue, White, Black, Silver and Brown not necessarily in that order. Not more than three or less than two are having same occupations. Prem is having brown car and have the same occupation as only Rohit has. i.e. Private Job. Dev is having a black car and does not have Business. Gautam does not have the same occupation as Aryan or Kabir and is having a silver coloured car. Bunny is having a Business and he has a green car. Only one more person has a Business. Those who are having Government job do not have a white car. Kabir does not have a blue car.
Who has Government Job?
(1) Aryan, Dev, Gautam (2) Dev, Gautam, Kabir
(3) Aryan, Dev, Kabir (4) Dev, Kabir, Prem

114. Six friends – A, B, C, D, E and F are sitting on a hexagonal table to play a game, but not necessarily in the same order. F is exactly in front of A, who is exactly at the right side of B. D is in the middle of F and B and exactly in front of C.
Who is sitting exactly in front of B?
(1) D (2) A (3) E (4) F

115. Tina and Dhiru start towards the North from a point. Tina turns towards the left after walking 10 km. Dhiru also walks the equal distance and he turns towards the right. Tina stopped there for a while and then walked 5 km but Dhiru walked 3 km. Then both returned in the South and walked 15 km. How far is Tina from Dhiru ?
(1) 8 km (2) 11 km (3) 13 km (4) 10 km

116. Pointing to a man in a photograph, Anita said "His brother's father is the only son of my grandfather". How is the Anita related to the man in the photograph ?
(1) Mother (2) Aunt (3) Sister (4) Daughter

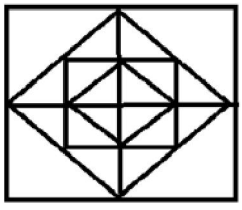
117. Find the missing number ?

1	2	3	6
2	4	6	12
4	8	12	24
3	7	11	?

(1) 48 (2) 21 (3) 22 (4) 24

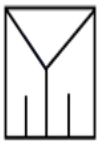
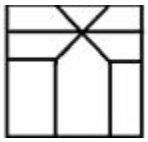
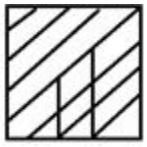
118. If **x** stands for 'add', **y** stands for 'subtract', **z** stands for 'divide', and **p** stands for 'multiply,' then what is the value of (7 **p** 3) y 6 x 5 ?
(1) 10 (2) 12 (3) 15 (4) 20

119. Count the number of triangles in the given figure.



(1) 44 (2) 40 (3) 36 (4) 32

120. From the given answer figures, select the one in which the question figure is hidden/ embedded.

(1) 
(2) 
(3) 
(4) 

121. In the following question, two statements are given and then two conclusion – I and II are given. Which logical conclusion/s can be drawn out as per the statements?

1. If only conclusion I is followed.
2. If only conclusion II is followed.
3. If both the conclusion are followed.
4. If both the conclusion are not followed.

Statement :

All keys are locks.

All locks are pech.

Conclusion :

I. All pech are keys.

II. Some locks are keys.

122. Six friends – A, B, C, D, E and F are sitting on a hexagonal table to play a game, but not necessarily in the same order. F is exactly in front of A, who is exactly at the right side of B. D is in the middle of F and B and exactly in front of C.

Between persons of which pair from the following, A is sitting?

(1) D, E (2) B, E (3) B, C (4) E, C

123. In the following question, two statements are given and then two conclusion – I and II are given. Which logical conclusion/s can be drawn out as per the statements?

1. If only conclusion I is followed.
2. If only conclusion II is followed.
3. If both the conclusion are followed.
4. If both the conclusion are not followed.

Statement :

Some books are toys.

None of a toy is an inkpot.

Conclusion :

I. Some books are not inkpots.

II. Some toys are books.

124. A is B's father, C is B's daughter. D is B's brother. E is A's son. What is the relation between C and E ?

(1) Brother-Sister (2) Cousin Brother-Sister

(3) Niece-Uncle (4) Uncle-Aunt

125. Imagine a clock where the hour hand makes only one revolution in 1 day (i.e., 24 hr) whereas the minute hand completes one revolution in one hour. What is the angle between the two hands at 13:40 hr as per this clock ?

(1) 45° (2) 35° (3) 55° (4) 70°

126. If "A" means (x), 'B' means (-) , 'C' means (÷) and D means (+), then what will be the value of the following expression ?

(200 C 2) D (18 A 5) B (12 C 3)

(1) 216 (2) 196 (3) 186 (4) 176

127. In the following question, two statements are given and then two conclusion – I and II are given. Which logical conclusion/s can be drawn out as per the statements?

1. If only conclusion I is followed.
2. If only conclusion II is followed.
3. If both the conclusion are followed.
4. If both the conclusion are not followed.

Statement :

Some fans are walls.

All walls are radio.

Conclusion :

I. Some fans are not radio.

II. All of radio are not fans.

128. How many 4's are there preceded by 7 but not followed by 3?

5 9 3 2 1 7 4 2 6 9 7 4 6 1 3 2 8 7 4 1

3 8 3 2 5 6 7 4 3 9 5 8 2 0 1 8 7 4 6 3

(1) Four (2) Three (3) Six (4) Five

129. In which large shape is the small shape (X) hidden?

(X)

(1) 

(2) 

(3) 

(4) 

130. It is 4 hrs 40 min in a clock. Find the angle between both the needles of a clock ?
(1) 100° (2) 80° (3) 120° (4) 200°

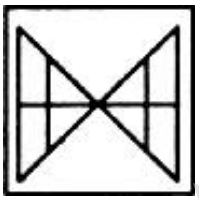
131. Vijay say, "Anand's mother is the only daughter of my mother." How Anand is related to Vijay?
(1) Brother (2) Father (3) Nephew (4) Grandfather

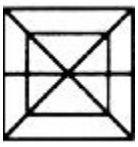
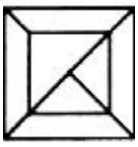
132. Find the number of triangles in the given figure.

(1) 24 (2) 28 (3) 29 (4) 31

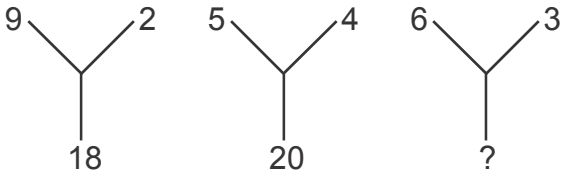
133. Lata starts to walk from a point and goes 1km. in the East. Then she turns to the left and walks 2 km. Then she turns to the right and walks 2 km. Then she walks 2 km. towards her right, from where she walks 1km. towards her left. How far is she now from her starting point ?
(1) 4 km (2) 6 km (3) 8 km (4) 9 km

134. From the given answer figures, select the one in which the question figure is hidden/embedded.



(1)  (2)  (3)  (4) 

135. Find the missing number ?



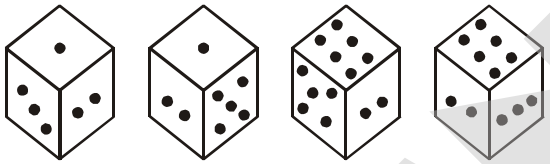
(1) 22 (2) 28 (3) 18 (4) 20

(INTEGER)

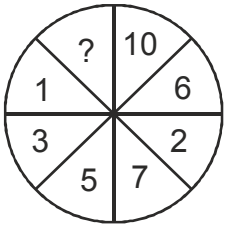
136. In a certain code, if **TEN** is coded as **42**, and **TWO** as **23**, how is **ONE** coded in that code ?

137. **Direction :** Solve the following questions and answer them according to the given codes : Monday = 1, Tuesday = 2, Wednesday = 3, Thursday = 4, Friday = 5, Saturday = 6, Sunday = 7.
If it is Wednesday on 17 March, 2005, then which day would come 12 September, 2005 ?

138. In the following figures, four different figures of a dice are given. Find the number of points on plane on opposite of the plane of one point -

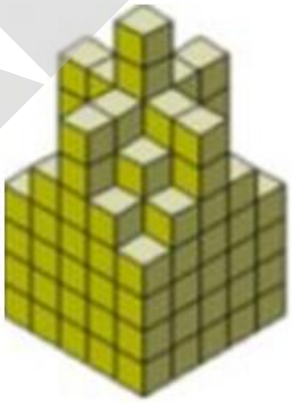


139. Find the missing number ?



140. In a certain code, if **RAT** is coded as **42**, and **CAT** as **57**, how is **BOX** coded in that code?

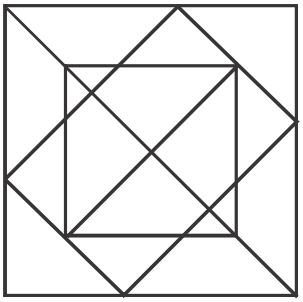
141. Count the number of cubes in the given figure.



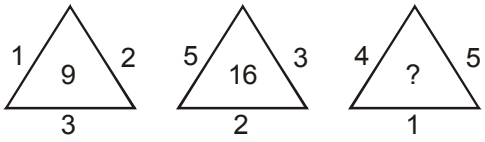
142. In a queue, Suneeta is at the tenth place from front. Subhash is at 25th place from behind. Gargi is standing at the central place between Suneeta and Subhash. There are 50 persons in the queue. Then gargi is standing at which place from front?

143. Which year has the same calendar as 809?

144. How many triangles are there in the given figure.



145. Find the missing number in the given figure :



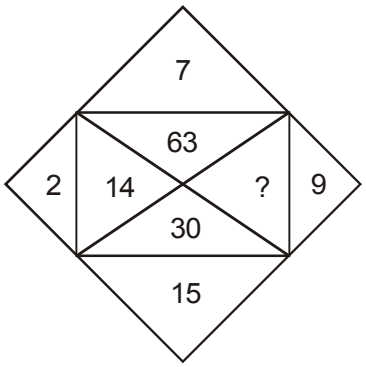
146. Samir goes 40 m in the South-East from a point A. Then he goes 30 m. in the South-West. Pravir also starts from point A and goes 40 m. in the North-West and 30 m in the North-East. What is the distance between Samir and Pravir ?

147. Indu covers the distance of 8 km. in the West, 6 km in the North, 4 km in the West and then 3 km in the North respectively to reach the dance club from her home. How far is the club from Indu's home ?

148. A watch which gains 15 seconds in 10 minutes was set right at 4 a.m. In the afternoon of the same day, when the watch indicated quarter past 2 o'clock, the true time is.

149. A is 10th from left and B is 9th from right in a queue of boys. If they interchange their places, A becomes 15th from the left. How many students are in the queue?

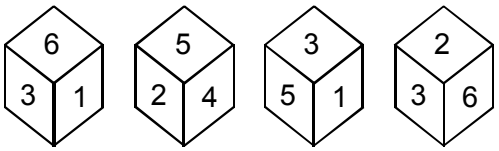
150. Find the missing number in the given figure :



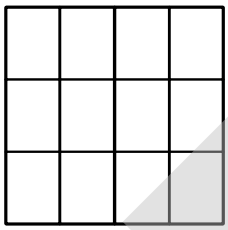
151. Rajan walks 25 km in the North and 5 km after turning to the left. Thus, he reaches to the point 'O'. Then he walks 5 km after turning to the right. Then he walks 5km after turning to the East. How far he is from the starting point ?

152. Direction : Solve the following questions and answer them according to the given codes : Monday = 1, Tuesday = 2, Wednesday = 3, Thursday = 4, Friday = 5, Saturday = 6, Sunday = 7.
Which day would come on 5 July, 1999 if it was Sunday on 20 November, 1999 ?

153. Which number is on opposite plane of 2 ?



154. Find the no. of rectangles including squares ?



155. In a certain code language TIN is coded as 43. What will be the code for TEN = ?

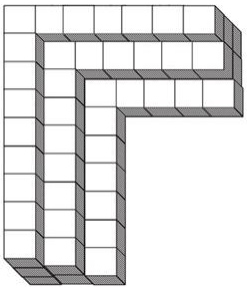
156. Direction: Solve the following questions and answer them according to the given codes : Monday = 1, Tuesday = 2, Wednesday = 3, Thursday = 4, Friday = 5, Saturday = 6, Sunday = 7.
2 days before the yesterday, it was Tuesday, then which would be the day on the day after 2 days from tomorrow ?

157. It is 5:10 hours in a clock. What will be the smaller angle between the hour needle and the minute needle of that clock ?

158. After 784 which nearest year have same calendar as 784?

159. Ravi's rank from the starting is 15th. What will be his rank from the bottom if there are 37 students in the row?

160. How many cubes/blocks are there in below figure?



* * * * *

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	2	1	4	1	3	1	3	3	1
Que.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Ans.	4000	10	15	5	5	11	12	25	5	3
Que.	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Ans.	1	4	2	2	2	2	3	2	3	3
Que.	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Ans.	3	3	7	4	0.01	3	2	4	1	10
Que.	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
Ans.	2	2	1	2	3	1	4	2	2	1
Que.	**51**	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**
Ans.	4	4	3	3	3	3	4	2	2	2
Que.	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**
Ans.	3	4	1	2	1	3	2	4	1	2
Que.	**71**	**72**	**73**	**74**	**75**	**76**	**77**	**78**	**79**	**80**
Ans.	4	3	4	3	3	4	3	4	3	2
Que.	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**
Ans.	4	3	1	3	2	198	55	4	19	7.5
Que.	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**
Ans.	95	2	225	50	49	204	84	55	14	12.52
Que.	**101**	**102**	**103**	**104**	**105**	**106**	**107**	**108**	**109**	**110**
Ans.	3	154	125	396	600	48	28	28	74	56
Que.	**111**	**112**	**113**	**114**	**115**	**116**	**117**	**118**	**119**	**120**
Ans.	2	2	3	3	1	3	2	4	3	1
Que.	**121**	**122**	**123**	**124**	**125**	**126**	**127**	**128**	**129**	**130**
Ans.	2	3	3	3	2	3	4	1	3	1
Que.	**131**	**132**	**133**	**134**	**135**	**136**	**137**	**138**	**139**	**140**
Ans.	3	2	1	3	3	47	7	6	14	40
Que.	**141**	**142**	**143**	**144**	**145**	**146**	**147**	**148**	**149**	**150**
Ans.	145	18	815	28	9	100	15	2	23	135
Que.	**151**	**152**	**153**	**154**	**155**	**156**	**157**	**158**	**159**	**160**
Ans.	30	2	1	60	39	1	95	812	23	82