

A Specially Designed Initiative
to Encourage Young Talent by



TALLENTEX 2018 : (15, October 2017)

PAPER CODE

I

TALLENTEX 2018
ALLEN'S Talent Encouragement Exam

CLASS - 9th (IX)

Duration: 2 Hrs. | Maximum Marks : 320

Answer Sheet No.

T

6

Tallentex Roll No.

6

Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.

Things NOT ALLOWED in EXAM HALL : Blank Paper, clipboard, log table, slide rule, calculator, camera, mobile and any electronic or electrical gadget. If you are carrying any of these, then keep them at a place specified by invigilator at your own responsibility.

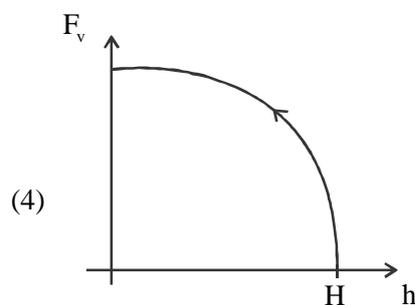
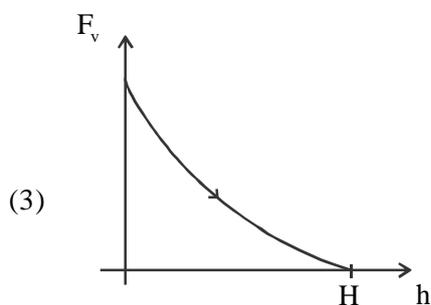
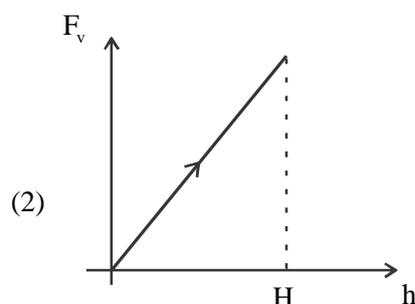
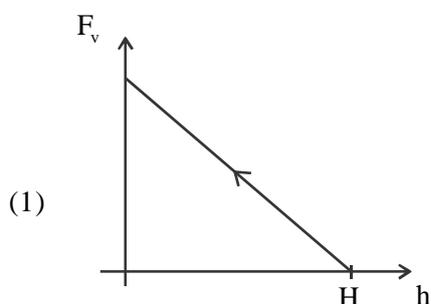
INSTRUCTIONS

1. This Booklet is your Question Paper. DO NOT break seal of Booklet until the invigilator instructs to do so.
2. Fill your TALLENTEx Roll No. & Answer Sheet No. in the space provided on the cover page.
3. Carefully fill your **PAPER CODE** and present **CLASS** in space provided (**Serial No. 6 & 12**) of optical response sheet.
4. Please make sure that paper you received is of your class only.
5. Please make sure that the **Paper Code** Printed on the **Test Booklet Cover Page** and **Inner Pages** are the same. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of Test Booklet.
6. The Answer Sheet is provided to you separately which is a machine readable Optical Response Sheet (ORS). You have to mark your answers in the ORS by darkening bubble, as per your answer choice, by using black or blue ball point pen.
7. After breaking the Question Paper seal, check there are **12 pages** in the booklet. This Question Paper contains 80 MCQs with 4 choices (Subjects: Physics: 15, Chemistry: 15, Biology: 15, Maths: 15 & Mental ability: 20).
8. Think wisely before darkening bubble as **there is negative marking for wrong answer**. Answer once marked by pen cannot be cancelled.
9. Marking Scheme:
 - a. If darkened bubble is RIGHT answer : 4 Marks.
 - b. If darkened bubble is WRONG answer : -1 Mark (Minus One Mark).
 - c. If no bubble is darkened in any question: No Mark.
10. If you are found involved in cheating or disturbing others, then your ORS will be cancelled.
11. Do not put any stain on ORS and hand it over back properly to the invigilator.
12. You can take along the question paper after the test is over.

SECTION-A : PHYSICS

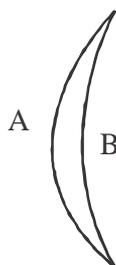
This section contains **15 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

- Jupiter is the largest planet in our solar system. What explains why Venus appears to be bigger and brighter than Jupiter in the night sky?
 - Venus is closer to Earth.
 - Jupiter is made of gases we cannot see.
 - Venus's green tint makes it easy for us to see.
 - Jupiter moves faster than Venus, which makes it look smaller.
- A particle starts from rest with uniform acceleration a . Its velocity after n seconds is v . The displacement of the body in the last two seconds is
 - $\frac{2v(n-1)}{n}$
 - $\frac{v(n-1)}{n}$
 - $\frac{v(n+1)}{n}$
 - $\frac{2v(2n+1)}{n}$
- A thin plane mirror
 - Refracts light
 - Reflects light
 - Transmits light
 - None of these
- A marble of mass ' m ' is dropped from a height ' h ' on a hard floor. If it rebounds to the same height, the change in momentum of marble is
 - $m\sqrt{2gh}$
 - $2m\sqrt{2gh}$
 - $3m\sqrt{2gh}$
 - $4m\sqrt{2gh}$
- When an object is released from a certain height, then it experiences a resistive force (F_v) which is called viscous force or air drag, and the force is directly proportional to the velocity of the object at any time. Which of the following graphs correctly represent variation of viscous force with objects height above the ground, when released from a height H .

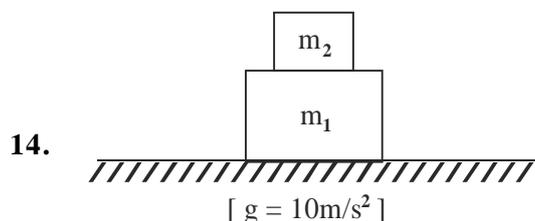


- The crack of thunder is heard few seconds after the lightning flash, because:
 - crack of thunder and lightning are not produced at same time
 - light travels extremely fast as compared to sound
 - sound waves slow down on passing through air
 - none of the above

7. Newton's law of gravitation is valid
 (1) on the earth only (2) on the moon only
 (3) in the laboratory only (4) everywhere
8. The formation of our solar system is based on the....
 (1) Big bang theory (2) Theory of relativity
 (3) Protoplanet hypothesis (4) Law of Conservation of Mass
9. The relation between frequency (f) wavelength (λ) and velocity of propagation (V) of a wave is :
 (1) $f = V\lambda$ (2) $f = \lambda/V$ (3) $f = V/\lambda$ (4) $f = \frac{1}{V\lambda}$
10. The weight of the body at the surface of the earth is 20 N and the radius of the earth is 6400 km. The weight of a body at a height 6400 km above the surface of earth is
 (1) 7 N (2) 5 N (3) 4 N (4) 6 N
11. If a lens is made by two curved surfaces A and B having radii R_1 and R_2 respectively as shown in the figure, then which of the following relations between R_1 and R_2 are correct.



- (1) $R_1 > R_2$ (2) $R_1 = R_2$ (3) $R_1 < R_2$ (4) None of these
12. For motion on a straight line path with constant acceleration, the ratio of the magnitude of the displacement to the distance covered is
 (1) = 1 (2) ≥ 1 (3) ≤ 1 (4) < 1
13. What happens to the inertia of an object when its velocity is doubled ?
 (1) The object's inertia becomes $\sqrt{2}$ times greater
 (2) The object's inertia becomes 2 times greater
 (3) The object's inertia becomes 4 times greater
 (4) The object's inertia is unchanged



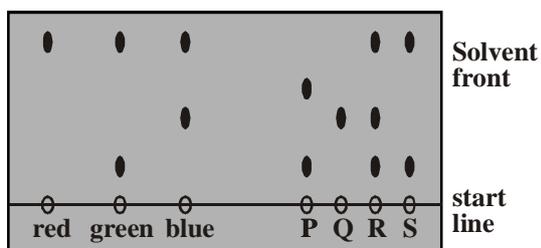
If $m_1 = 20 \text{ kg}$ & $m_2 = 10 \text{ kg}$ find normal force acting on the floor ?

- (1) 300 N (2) 100 N (3) 200 N (4) None of these
15. Which of the following can be zero when the particle is in motion for some time?
 (1) Displacement (2) Distance covered (3) Speed (4) None of these

SECTION-B : CHEMISTRY

This section contains **15 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

16. Fossil fuels are rich in hydrocarbon substances that contain the elements 'A' and 'B'. What are these elements 'A' and 'B' respectively?
 (1) Hydrogen and oxygen (2) Carbon and oxygen
 (3) Hydrogen and carbon (4) Hydrogen and sulphur
17. Which of the following oxide is not amphoteric ?
 (1) ZnO (2) PbO (3) CaO (4) Al_2O_3
18. Medals are made by :
 (1) Spinning (2) Coining (3) Embossing (4) Bending
19. What is the product when methane is burnt in air ?
 (1) Carbon dioxide (2) Water (3) Heat (4) All of these
20. Incandescent region in candle flame is :
 (1) Non luminous zone (2) Luminous zone
 (3) Dark zone (4) None of these
21. In which of the following conditions, the distance between the molecules of hydrogen gas would increase?
 (i) Increasing pressure on hydrogen gas contained in a closed container.
 (ii) Some hydrogen gas leaking out of the container.
 (iii) Increasing the volume of the container of hydrogen gas.
 (iv) Adding more hydrogen gas to the container without increasing the volume of the container.
 (1) (i) and (ii) (2) (i) and (iv) (3) (ii) and (iii) (4) (ii) and (iv)
22. If the molecules of different gases do not react chemically, they can :
 (1) Diffuse (2) Refuse (3) Escape (4) Trap
23. Figure below shows a chromatogram obtained using three single dyes red, green and blue, and also four unknown dye samples P, Q, R and S.



Identify the dyes contained in the sample R.

- (1) red, black (2) blue, red (3) red, blue, green (4) red, unknown

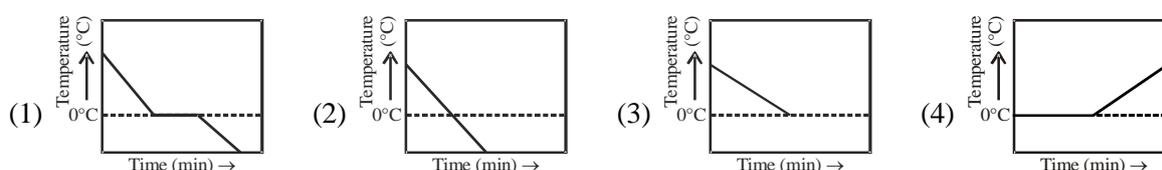
24. Which of the following represents a correct set of observations for a mixture of sugar and water ?

Transparency	Stability	Filtration
(1) Transparent	Unstable	No residue
(2) Transparent	Stable	No residue
(3) Translucent	Stable	No residue
(4) Opaque	Unstable	Residue

25. A burning candle is in the process of transforming -

- (1) heat energy into chemical energy (2) chemical energy into light and heat
(3) chemical energy into mechanical energy (4) chemical energy into nuclear energy

26. A student heats a beaker containing ice and water. He measures the temperature of the content of the beaker as a function of time. Which of the following would correctly represent the results?



27. When magnesium burns with oxygen it forms ?

- (1) $Mg(OH)_2$ (2) $MgCO_3$ (3) MgO (4) All of these

28. Which of the following is not obtained by the destructive distillation of coal ?

- (1) Coke (2) Petrol (3) Coal tar (4) Ammonical liquor

29. A sealed gas cylinder is left outside on a hot, sunny day. What happens to the average speed of the gas molecules and to the pressure of the gas in the cylinder as the temperature of the gas rises?

	average speed of gas molecules	pressure of gas in cylinder
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

- (1) A (2) B (3) C (4) D

30. At 283 K a saturated solution of solid "X" can be prepared by dissolving 21.0 g of it in 100 g of water. The maximum amount of 'X' which can be dissolved in 100 g of water at 313 K is 62.0 g. An attempt is made to dissolve 50.0 g of 'X' in 100 g of water at 313 K.

- A. All of 50.0 g of X will dissolve at 313 K.
B. At 313 K 29.0 g of X will remain undissolved
C. Solubility of X decreases with increase of temperature
D. On cooling the solution of X from 313 K to 283 K more than 21.0 g of X will crystallize out.

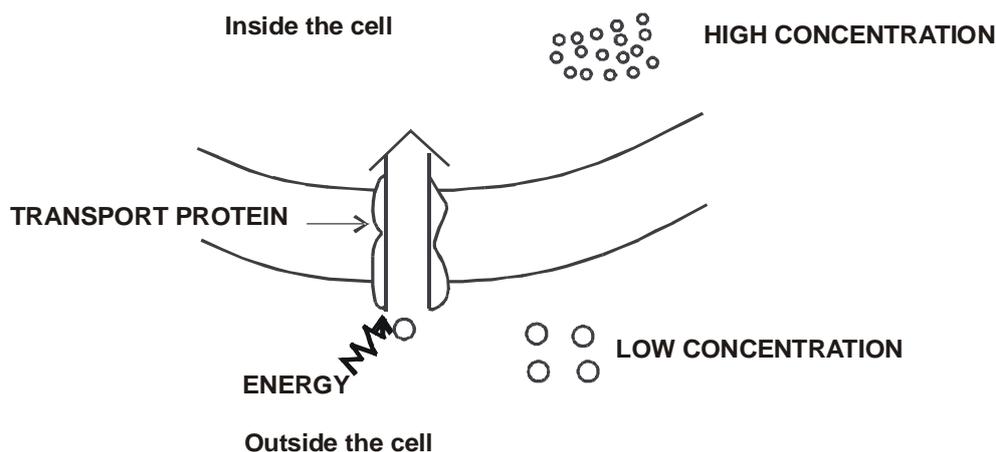
Which of the above statements are correct ?

- (1) A and B (2) A and D (3) B and C (4) A, C and D

SECTION-C : BIOLOGY

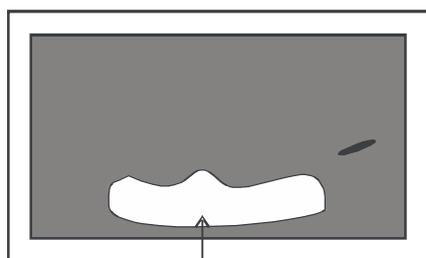
This section contains **15 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

31. Fertilizers are different from manure as they are-
- (1) organic substances obtained by decomposition of plant and animal wastes
 - (2) not nutrient specific
 - (3) nutrient specific
 - (4) insoluble in water, so slowly absorbed by plants
32. Burning fossil fuels releases carbon dioxide into the environment. Scientists think that an increase in carbon dioxide in the atmosphere will lead to global climate change and loss of coastal flora. Which of the following is the most likely to be the result of this ?
- (1) Ocean water levels will rise, resulting in the flooding of coastal areas and loss of coastal flora.
 - (2) The hole in the ozone layer will grow due to the release of carbon dioxide.
 - (3) The amount of acid precipitation will increase, causing river water to become more acidic.
 - (4) The speed at which tectonic plates drift will increase, resulting in a greater incidence of volcanoes and earthquakes.
33. Which one is correct?
- (1) Permanent tissues having all cells similar in structure and function are simple tissues.
 - (2) Permanent tissues having different type of cells are complex tissues.
 - (3) Parenchyma, collenchyma and sclerenchyma are simple tissues.
 - (4) All of these
34. Which means of particle transport is shown in figure below?



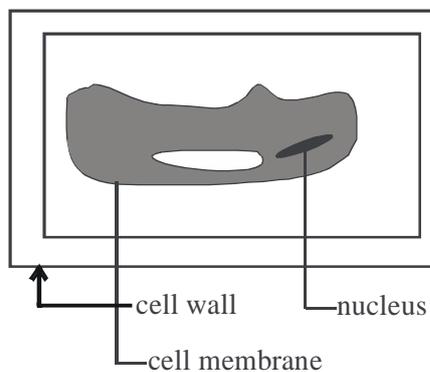
- (1) Diffusion
 - (2) Osmosis
 - (3) Facilitated diffusion
 - (4) Active transport
35. Developing embryo from a superior breed is transferred into the uterus of a female with inferior characteristics by the process of-
- (1) Hybridization
 - (2) Artificial insemination
 - (3) Embryo transfer
 - (4) Random mating

36. Which one is not the improved cross breed of dairy cows-
 (1) Karan -Swiss (2) Karan -Fries (3) Frieswal (4) Brown Swiss
37. Which one of the following is least likely to cause air pollution?
 (1) The use of CFCs in aerosol sprays
 (2) The burning of fossil fuel
 (3) The release of carbon monoxide when burning diesel
 (4) The dumping of batteries in land fill sites
38. When released from ovary, human egg contains-
 (1) Only 4 chromosomes (2) Two X chromosomes
 (3) One X chromosome (4) XY chromosomes
39. In nervous tissue receptors for Neurotransmitters are present on :
 (1) Axon (2) Telodendria (3) Dendrites (4) Schwann cells
40. The science of vegetable culture is called-
 (1) Sericulture (2) Olericulture (3) Apiculture (4) Floriculture
41. Diabetic person is advised to take insulin when _____ and there is _____ of insulin respectively.
 (1) His blood pressure is high and hypersecretion
 (2) His heart beat is high and hyposecretion
 (3) His blood sugar is high and hyposecretion
 (4) His blood sugar is high and hypersecretion
42. Which of these best defines communicable diseases?
 (1) They can be cured (2) They are caused by bacteria
 (3) They can spread to others (4) They can spread only in winter.
43. Smooth muscle fibres are
 (1) spindle-shaped, unbranched, unstriated, multinucleate and involuntary
 (2) spindle-shaped, unbranched, unstriated, uninucleate and involuntary
 (3) cylindrical, striated, unbranched, multinucleate and voluntary
 (4) cylindrical, unbranched, unstriated, multinucleate and involuntary
44. When a plant cell was placed in a sucrose solution changes within the cell were observed.



Vacuole

(Before being placed
in sucrose solution)



cell wall nucleus

cell membrane

(When placed in sucrose solution)

From the information in the diagrams you can conclude that while the cell was in the sucrose solution

- (1) The cell wall was impermeable to water molecules
- (2) The vacuole membrane was impermeable to water molecules
- (3) Sucrose molecules passed through the cell membrane
- (4) Water molecules passed out through the cell membrane

45. Acrosome present on head of sperm is formed by–

- (1) Golgi complex
- (2) Endoplasmic reticulum
- (3) Lysosomes
- (4) Cell wall

SECTION-D : MATHEMATICS

This section contains **15 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

46. Which of the following is rational

- (1) $(7 + \sqrt{2})(7 - \sqrt{2})$
- (2) $(7 + \sqrt{2})(7 + \sqrt{2})$
- (3) $(7 - \sqrt{2})(7 - \sqrt{2})$
- (4) None of these

47. If $a^4 + \frac{1}{a^4} = 727$, then the value of $a^3 - \frac{1}{a^3}$ is

- (1) 103
- (2) 130
- (3) 310
- (4) 140

48. What will be the value of 'x' for which $\frac{1}{8^{x-3}} = 4^{x-\frac{1}{2}}$

- (1) 3
- (2) 2
- (3) 0
- (4) -2

49. If $x = \frac{\sqrt{3}+1}{2}$ then the value of $4x^3 + 2x^2 - 8x + 7$ is

- (1) 10
- (2) 8
- (3) 6
- (4) 4

50. By what least number 288 be multiplied so that result is a perfect cube.

- (1) 12
- (2) 15
- (3) 3
- (4) 6

51. If $x = 0.\overline{14}$, then value of $\left(\frac{9x}{9x-1}\right)^2$ is

- (1) $\frac{14}{3}$
- (2) $\frac{225}{9}$
- (3) $\frac{196}{9}$
- (4) $\frac{196}{3}$

52. If $x + y + z = 0$, what will be the value of $\frac{x^2 + y^2 + z^2}{x^2 - yz}$?

- (1) 4
- (2) 6
- (3) 2
- (4) 8

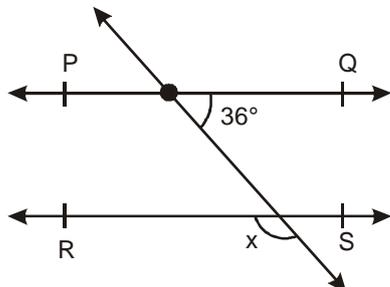
53. The least positive integer with which 661.25 should be multiplied so that the product is a perfect square.

- (1) 4
- (2) 5
- (3) Both (1) & (2)
- (4) None of these

54. The lengths of the sides of a triangle are in the ratio 3 : 4 : 5 and its perimeter is 288 cm. The height of the triangle corresponding to the longest side is

- (1) 14.4 cm (2) 57.6 cm (3) 28.8 cm (4) None of these

55. In figure, if $PQ \parallel RS$ then the value of x is



- (1) 36° (2) 63° (3) 144° (4) None of these

56. If in quadrilateral ABCD, $\angle A = 90^\circ$ and $AB = BC = CD = DA$, then ABCD is a

- (1) Parallelogram (2) Rectangle (3) Square (4) None of these

57. On drawing the graphs of the linear equations $4x - 3y + 4 = 0$ and $4x + 3y - 20 = 0$, the area bounded by these lines and x axis is

- (1) 10 sq. units (2) 12 sq. units (3) 5 sq. units (4) 6 sq. units

58. If Ram has Rs 3000 left after spending 90 % of his salary, then the salary of Ram is

- (1) Rs. 27,000 (2) Rs. 30,000 (3) Rs. 45,000 (4) None of these

59. A cuboid of volume 128 cm^3 is divided into two equal cubes. The sum of the total surface areas of two cubes is

- (1) 160 cm^2 (2) 64 cm^2 (3) 192 cm^2 (4) 96 cm^2

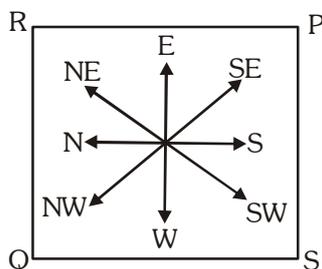
60. Factors of $x^2 + 11x + 18$ are

- (1) $(x - 9)(x + 2)$ (2) $(x + 9)(x + 2)$ (3) $(x - 2)^2$ (4) $(x + 9)^2$

SECTION-E : MENTAL ABILITY

This section contains **20 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct.

Direction (61 & 62) : Read the following information carefully and answer the questions given below:

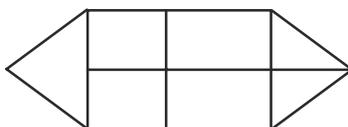


Four security guards P, Q, R and S have been posted at the four corners of a huge cashew plantations farm as shown in the above figure.

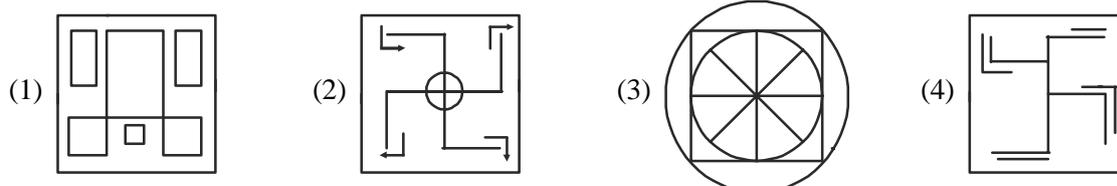
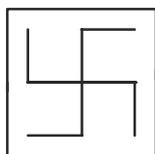
61. Given the condition that none of the corners should be unmanned and both P and R start moving towards diagonally opposite corners, in which direction should S start moving, so that he occupies a corner by travelling the minimum possible distance?

- (1) Clockwise (2) Anti-clockwise
(3) Either clockwise or anti-clockwise (4) None of the above

62. From the original position, P and Q move one arm length clockwise and then cross over to the corner diagonally opposite, R and S move one arm length anti-clockwise and cross over to the corner diagonally opposite. The original setting PSQR has now changed to–
- (1) RSPQ (2) SRPQ
(3) RQSP (4) None of these
63. If in a certain language, CALCUTTA is called as GEPGYXXE then which word would be coded as FSQFCE?
- (1) BOMBYA (2) BOMBAY (3) BOMYAB (4) JWUJGI
64. How many 7's are there in the following series which are not immediately followed by 3 but immediately preceded by 8?
- 898762263269732872778737794
- (1) 4 (2) 3 (3) 2 (4) None of these
65. One hundred and twenty-five cubes of the same size are arranged in the form of a cube on a table. Then a column of five cubes is removed from each of the four corners. All the exposed faces of the rest of the solid (except the face touching the table) are coloured red. Then how many cubes have only one red face each ?
- (1) 40 (2) 25 (3) 20 (4) 15
66. How many rectangles are there in the given figure?

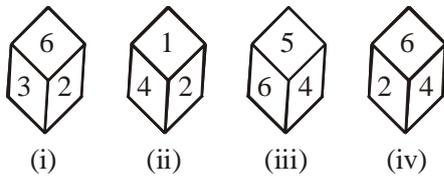


- (1) 10 (2) 9 (3) 8 (4) 7
67. If $D = 23$ & $COVER = 72$, then $BASIS = ?$
- (1) 50 (2) 85 (3) 75 (4) None of these
68. The given figure is embedded in one of the option find the correct option.



69. Complete the following series : WFB, TGD, QHG, ?
- (1) NIJ (2) NIK (3) NJK (4) OIK

70. Each of the six faces of a dice is numbered by one of the six digits from 1 to 6. This dice is shown in its four different positions in the figure (i), (ii), (iii) and (iv).



Consider the following statements :

- I. Figures (ii) and (iii) are sufficient to know as to which face is opposite to the face numbered 6.
- II. Figures (ii) and (iii) are sufficient to know as to which face is opposite to the face numbered 4.
- III. Figures (i) and (iv) are sufficient to know as to which face is opposite to the face numbered 3.

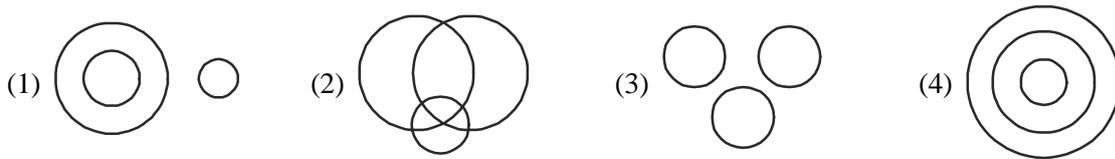
Which of the statements given above are correct ?

- (1) I and III only (2) I and II only (3) II and III only (4) I, II and III

71. If + means ÷, × means −, ÷ means ×, and − means +, then $8 + 6 \times 4 \div 3 - 4 = ?$

- (1) -12 (2) $-\frac{20}{3}$ (3) 12 (4) $\frac{+20}{3}$

72. Select from the four alternative diagrams, the one that best illustrates the relationship among the three classes : Pigeons, Birds, Dogs.



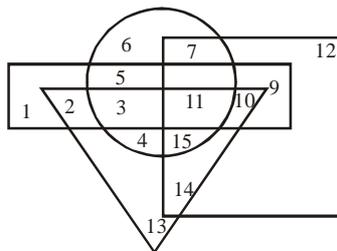
73. Find the missing term (?)

8	25	2
9	5	8
3	8	32
6	10	?

- (1) 6 (2) 8 (3) 10 (4) 12

74. In the Venn diagram given below, circle represents sportspersons, square represents unmarried persons, triangle represents women and rectangle represents educated persons.

Each section is numbered. Study this diagram to answer the following questions.



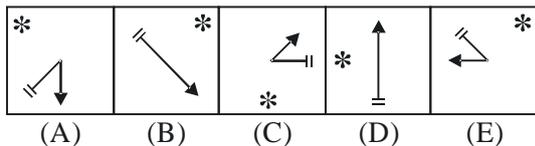
Which sections are represented by the region numbered 11 ?

- (1) Married educated sportswomen (2) Unmarried uneducated women sportspersons
(3) Married educated sportsmen (4) Unmarried educated sportswomen

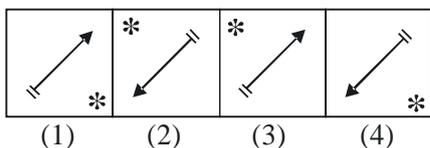
75. Markandey is Rajiv's mother's father. Markandey has three brother. One of them has grandson Abhi. Rajan is son of Abhi. Rajan is related to Rajiv as
- (1) Brother (2) Nephew
(3) Cousin (4) Uncle

76. In the following question, which one of the four answer figures should come after the question figures on the right, if the sequence were continued.

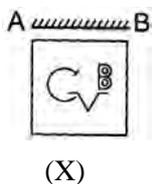
Question Figures



Answer Figures



77. Pointing to a women, Naman said, "She is the daughter of the only child of my grandmother." How is the women related to Naman?
- (1) Sister (2) Niece (3) Cousin (4) Mother
78. In the following question, choose the correct mirror image from the answer figures (1), (2), (3) and (4)



79. Find the missing number in the following series ?
3, 1, 11, 25, 83, ?
- (1) 241 (2) 245 (3) 343 (4) 166
80. Find the Water image of: ACOUSTIC
- (1) VCOUN2LIC (2) VCON2LIC
(3) VCONS2LIC (4) VCON2TIC

SPACE FOR ROUGH WORK

ANSWER KEY : 15-10-2017					CLASS – IX					CODE : I					
Q.No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	1	2	2	4	2	4	1	3	2	3	3	4	1	1
Q.No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	3	3	3	4	2	3	1	3	2	2	4	3	2	4	2
Q.No.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	3	1	4	4	3	4	4	3	3	2	3	3	2	4	1
Q.No.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	1	4	2	1	4	3	3	2	2	3	3	2	2	3	2
Q.No.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ans.	2	3	1	3	2	2	2	3	2	4	2	1	2	4	2
Q.No.	76	77	78	79	80										
Ans.	4	1	2	1	2										