ALLEN CAREER INSTITUTE
KOTA (RAJASTHAN)
path to success

TALLENTEX 2017
ALLEN'S Talent Encouragement Exam

CLASS - 10th (X)

Duration: 2 Hrs. | Maximum Marks : 320

Tallentex Roll No. | 5

Answer Sheet No. | T | 5

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. 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.
6. After breaking the Question Paper seal, check there are **16 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).
7. Think wisely before darkening bubble as **there is negative marking for wrong answer**. Answer once marked by pen cannot be cancelled.
8. 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.
9. If you are found involved in cheating or disturbing others, then your ORS will be cancelled.
10. Do not put any stain on ORS and hand it over back properly to the invigilator.
11. You can take along the question paper after the test is over.

ALLEN RESULT: JEE ADVANCED-2016

4 in Top 10 | 12 in Top 50 | 25 in Top 100 AIR

AIR 1
Aman Bansal
Classroom

AIR : 2	AIR : 3	AIR : 9	AIR : 18	AIR : 19	AIR : 23
Bhavesh Dhingra - Classroom	Kunal Goyal - Classroom	Gaurav Didwania - Classroom	Rohan Garg - Classroom	Animesh Bohra - Distance	Ritesh Goenka - Classroom

AIR : 27	AIR : 29	AIR : 33	AIR : 36	AIR : 48
Vikrant Garg - Classroom	Sharvik Mittal - Classroom	Ishan Tarunesh - Distance	Naman Jain - Classroom	Sushil Khyalia - Classroom

Total Selections
3883
Classroom : **2857** | Distance : **1026**

ALLEN RESULT: NEET (UG)-2016

7 in Top 10 | 35 in Top 50 | 58 in Top 100 AIR

AIR 1
Het Sanjay Shah
Classroom

AIR : 2	AIR : 3	AIR : 4	AIR : 6	AIR : 7	AIR : 10
Ekansh Goyal - Classroom	Nikhil Bajiya - Classroom	Ashank Khaitan - Distance	Dyuti Shah - Distance	Japnoor Kaur - Distance	Utkarsh Anand - Classroom

AIR : 12	AIR : 13	AIR : 15	AIR : 18	AIR : 19	AIR : 20
Prakhar Bansal - Classroom	Lajjaben Patel - Classroom	Gurasis Singh - Distance	Swetank Anand - Classroom	Mahak Kr. Surana - Classroom	Prachi Singh - Classroom

Total Qualified
33106
Classroom : **26198** | Distance : **6908**

Authenticity of Result : Power of ALLEN

ALLEN RESULT: AIIMS-2016

8 in Top 10 | 25 in Top 36

AIR : 3	AIR : 4	AIR : 5	AIR : 6	AIR : 7	AIR : 8	AIR : 9
Lajjaben Patel	Het Sanjay Shah	Mridul Sharma	Dyuti Shah	Aishvary Gupta	Kushagra Pandey	Ekansh Goyal
Classroom	Classroom	Classroom	Distance	Classroom	Distance	Classroom

AIR : 11	AIR : 12	AIR : 13	AIR : 17	AIR : 19	AIR : 20	AIR : 21
Ira Pachori	Ritik M Goyal	Amol Sood	Ashank Khaitan	Dhruvil D. Shah	Swetank Anand	Ankush Garg
Distance	Classroom	Classroom	Distance	Classroom	Classroom	Classroom

AIR : 23	AIR : 25	AIR : 27	AIR : 28	AIR : 29	AIR : 30	AIR : 31
Sanil Garg	Aditya Agarwal	Vishal Saini	Gurasis Singh	Manavi Gupta	Anubhav Das	Prachi Singh
Distance	Distance	Distance	Distance	Classroom	Distance	Classroom

AIR : 32	AIR : 33	AIR : 36
Japnoor Kaur	Ayush Jain	Sukriti Chaudhri
Distance	Classroom	Distance

AIR 2 — Nikhil Bajiya — Classroom

Total Qualified
602
Classroom : 405 | Distance : 197

ALLEN RESULT: JEE Main-2016

8 in Top 100 | 25 in Top 200 | 65 in Top 500 | 136 in Top 1000

AIR 30	AIR 45	AIR 47	AIR 57	AIR 68	AIR 71	AIR 90	AIR 95
Syamantak Kumar	Mudit Surana	Utkarsh G. Patel	Bhavishya	Kapil Shobhnani	Aman Bansal	Ambatwar Ajinkya G.	Surya Suresh
Classroom	Classroom	Classroom	Distance	Classroom	Classroom	Distance	Distance

AIR-105	AIR-112	AIR -127	AIR -130	AIR-132	AIR-137	AIR-145	AIR-151	AIR-158	AIR-168	AIR-169
Megh V. Thakkar	Shashwat Agrawal	Rohan Garg	Amey Ravindra Patil	Akash Bhardwaj	Rahul Agrawal	Sharvik Mital	Shashwat Shivam	Ankit Dhankhar	Sukriti Gupta	Georgi Joseph Boby
Classroom	Classroom	Classroom	Distance	Classroom	Classroom	Classroom	Distance	Classroom	Distance	Distance

AIR-171	AIR-177	AIR-178		AIR-185	AIR-190	AIR-197
Rushikesh Vitthal	Koustav Yacha	Rahul M. Chanduka		Gavali H. Abhiman	Atri Dutta	Vansh J. Chiripal
Distance	Classroom	Classroom		Distance	Distance	Classroom

26660
Students secured JEE Main
All India Ranks from all Courses of ALLEN

Authenticity of Result : Power of ALLEN

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.

1. The diagram shows the variation of air pressure from an alarm siren at particular instant. The speed of sound in the air is 340 m/s.
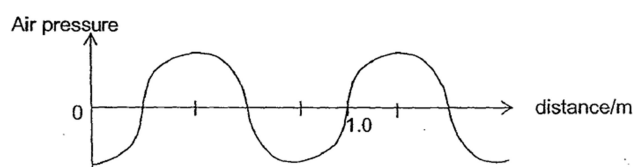
What is the period of alarm siren?

(1) 0.98 ms   (2) 1.2 ms   (3) 2.35 ms   (4) 2.9 ms

2. Speed cameras are used to detect motorists who break the speed limit. A number of lines 2 m apart are painted on the road. As a speeding car crosses the painted lines, the camera takes two photographs, 0.5 second(s) apart.

Photograph 1	Photograph 2
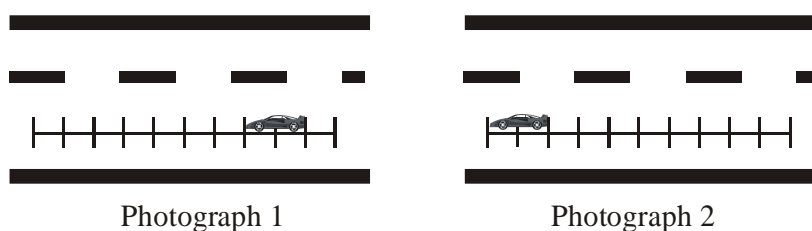
The speed of the car in the photographs is

(1) 10 m/s   (2) 14 m/s   (3) 70 m/s   (4) 28 m/s

3. An electric bulb rated 220 V, 60 W is working at full efficiency. Another identical bulb is connected across the mains as shown
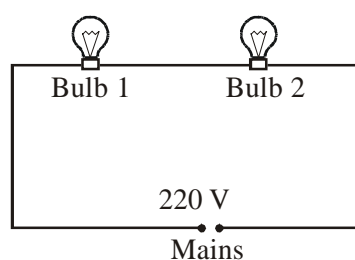
What is the total power ?

(1) 20 W   (2) 40 W   (3) 30 W   (4) 60 W

4. The diagram shows a bar magnet placed in a uniform magnetic field. When the magnet is allowed to move freely, it will
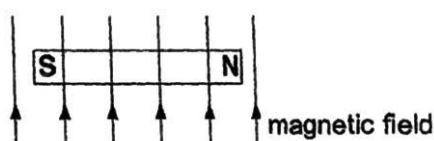
(1) remain stationary   (2) turn 90° clockwise

(3) turn 90° anti - clockwise   (4) turn 180° clockwise

5. A heater boils 1 kg of water in time t_1 and another heater boils the same water in time t_2. If both the heaters are connected in parallel, the combination will boil the water in time

(1) $\dfrac{t_1 t_2}{t_1 - t_2}$ 　　　(2) $\dfrac{t_1 t_2}{t_1 + t_2}$ 　　　(3) $\dfrac{t_1^2 + t_2^2}{t_1 + t_2}$ 　　　(4) $\dfrac{t_1^2 - t_2^2}{(t_1 - t_2)}$

6. The magnetic field lines due to a bar magnet are correctly shown in figure.
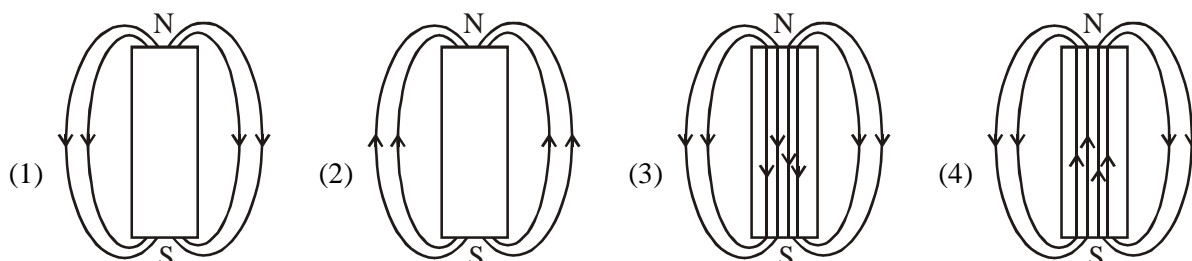
7. The wire of a heating element has a resistance R. The wire breaks and is replaced by a different wire. Data for the original wire and the replacement wire is as shown in the table.

	length	diameter	resistivity of metal
original wire	l	d	ρ
replacement wire	l	$2d$	2ρ

What is the resistance of the replacement wire?

(1) $\dfrac{R}{4}$ 　　　(2) $\dfrac{R}{2}$ 　　　(3) R 　　　(4) 2R

8. A child is stuck on a frictionless horizontal surface and cannot exert any horizontal force by pushing against the surface. How can he get off?

(1) By running 　　　(2) By rolling 　　　(3) By jumping 　　　(4) By spitting or coughing

9. A wire is placed between the poles of a horseshoe magnet. There is a current in the wire in the direction shown, and this causes a force to act on the wire.
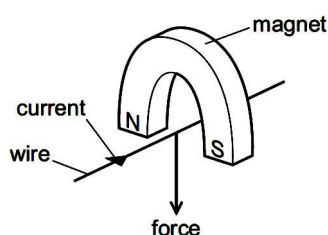
Three other arrangements, P, Q and R, of the wire and magnet are set up as shown.

magnet turned around 　current direction reversed 　current direction reversed and magnet turned around
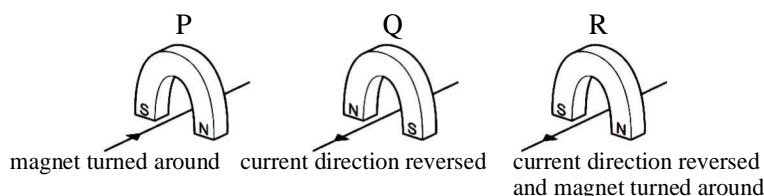
Which arrangement or arrangements will cause a force in the same direction as the original arrangement?

(1) P, Q and R 　　　(2) P and Q only 　　　(3) R only 　　　(4) P only

10. A small object of mass = 234 g slides along a track with elevated ends and a central flat part, as shown in below figure. The flat part has length L = 2.16 m. The curved portions of the track are frictionless; but in traversing the flat part, object loses 688 mJ of mechanical energy, due to friction. The object is released at point A, which is at height h = 1.05 m above the flat part of the track. Where does the object finally come to rest ?
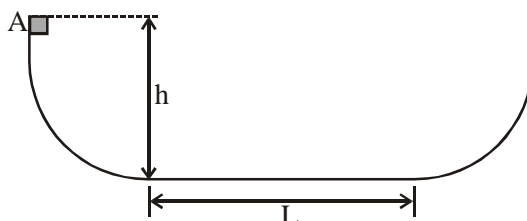
(1) Particle will move back and forth across the flat portion 3.5 times while attempting one last right to left journey.

(2) Particle will move back and forth across the flat portion 4 times while attempting one last left to right journey.

(3) Particle will move back and forth across the flat portion 3.5 times while attempting one last left to right journey.

(4) It will never stop.

11. The table below shows the mass and the weight of a certain object on Earth.

Mass (kg)	Weight (N)
6.0	60

What are the approximate mass and approximate weight of the same object on the Moon?

(1)
Mass (kg)	Weight (N)
1.0	10

(2)
Mass (kg)	Weight (N)
6.0	10

(3)
Mass (kg)	Weight (N)
6.0	360

(4)
Mass (kg)	Weight (N)
36.0	360

12. An isolated system consists of two bodies on which no external forces act. The two bodies collide with each other and stick together on impact.

	Total kinetic energy before and after collision	Total momentum before and after collision
A	different	different
B	different	the same
C	the same	different
D	the same	the same

Which row correctly compares the total kinetic energy and the total momentum of the bodies before and after the collision?

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

13. Four lights and a fan connected on the same circuit must each be able to operate independently. An electrician used the symbols shown below to draw a diagram of the circuit.

Fan   Generator   Light Bulb   Switch

F   G   (bulb)   (switch)

Which of the following circuit diagrams did the electrician draw?

(1)

(2)

(3)

(4)
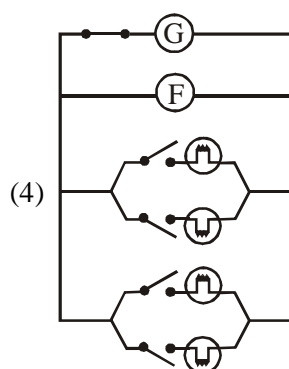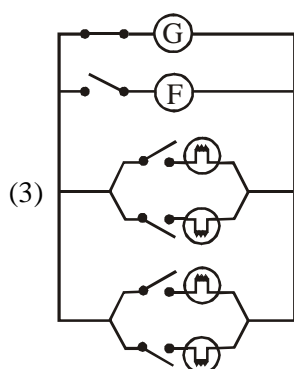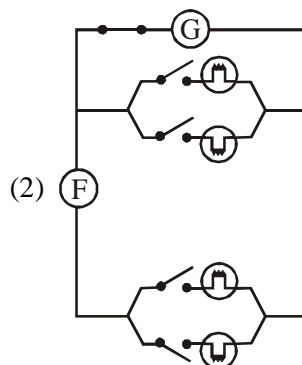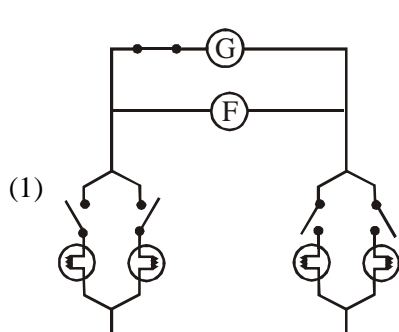
14. Data for various electrical appliances is given in the table below.

Appliance	Power (W)	Potential difference (V)	Current (A)
Car headlamp	48	12	4
TV	240	240	
Hairdryer		240	2
Iron	960	240	
Kettle		240	10

The power for the hairdryer and current for the iron are, respectively :

(1) 480W ; 0,25 A   (2) 240W ; 4A

(3) 480W ; 4A   (4) 960W ; 2A

15. Four students were asked to classify the activities of the people in the picture below as examples of either potential or kinetic energy.
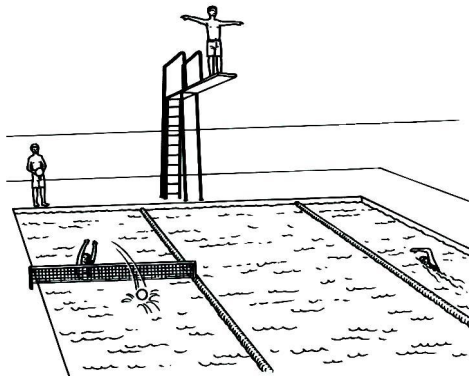
Which student correctly classified the activities?

Student 1

(1)

Activity Observed	Classification of Activity
Girl swimming laps	Potential energy
Boy on diving board	Kinetic energy
Girl hitting volleyball	Potential energy
Boy holding volleyball	Kinetic energy

Student 2

(2)

Activity Observed	Classification of Activity
Girl swimming laps	Potential energy
Boy on diving board	Potential energy
Girl hitting volleyball	Kinetic energy
Boy holding volleyball	Kinetic energy

Student 3

(3)

Activity Observed	Classification of Activity
Girl swimming laps	Kinetic energy
Boy on diving board	Kinetic energy
Girl hitting volleyball	Potential energy
Boy holding volleyball	Potential energy

Student 4

(4)

Activity Observed	Classification of Activity
Girl swimming laps	Kinetic energy
Boy on diving board	Potential energy
Girl hitting volleyball	Kinetic energy
Boy holding volleyball	Potential energy

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. Which of the following is the formula of the compound nickel bisulphate?

(1) $NiHSO_4$ (2) Ni_2HSO_4 (3) Ni_2SO_4 (4) $Ni(HSO_4)_2$

17. 10 g sample of a mixture of $CaCl_2$ and NaCl is treated to precipitate all the calcium as $CaCO_3$. This $CaCO_3$ is heated to convert all the Ca to CaO and the final mass of CaO is 1.68 g. The percent by mass of $CaCl_2$ in the original mixture is

(1) 33.3 %   (2) 16.2 %   (3) 30 %   (4) 11.0 %

18. The table below lists three characteristics of an atom of an element.

Characteristics of an Element

Number of Protons	Number of Neutrons	Number of Valence Electrons
37	48	1

An atom of which element is described by the data in the table?

(1) Radon (Rn)   (2) Cadmium (Cd)   (3) Rubidium (Rb)   (4) Astatine (At)

19. How many gram ions of SO_4^{-2} are present in 1 gram molecule of $K_2SO_4 . Al_2(SO_4)_3 . 24H_2O$?

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

20. An ore of potassium is

(1) Bauxite   (2) Dolomite

(3) Carnallite   (4) Cryolite

21. Equal-sized pieces of aluminium were placed in test tubes containing equal volumes of acid at different temperatures. From the statements below identify the actions that a student could take to increase the reaction rate in the test tubes.
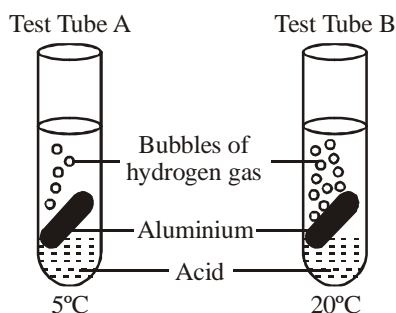
i.   adding more of the acid to the test tube

ii.   using more concentrated acid

iii.   grinding up the pieces of aluminium before adding the acid

iv.   adding water to the test tube

v.   sealing the test tube with a stopper

(1) i, ii, v   (2) ii, iii   (3) i, ii, iii v   (4) i, iv, v

22. 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

23. If H^+ ion concentration of a solution is increased 10 times its pH will

(1) increases by 1   (2) remains unchanged

(3) decreases by 1   (4) increases by 10

24. For an investigation a student poured a blue solution of $CuSO_4$ into a beaker. The student placed a shiny, silver-coloured strip of zinc metal in the solution and observed the changes.

Observations of an Investigation

Blue solution   Zinc in blue solution   Zinc in clear solution
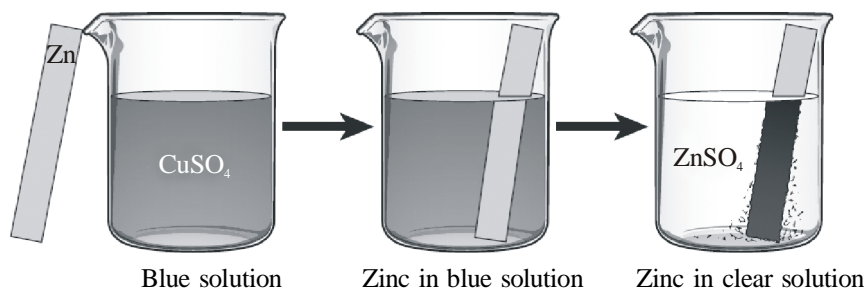
The student inferred that a chemical reaction occurred. What evidence supports this inference?

(1) A dark solid formed on the zinc metal.

(2) The zinc metal remained silver-coloured and shiny.

(3) The $CuSO_4$ solution turned blue when the zinc metal was added.

(4) None of these

25. Removal of CO_2 and H_2O from atmospheric air by using KOH and anhydrous $CaCl_2$ is an example of _____ and _____ changes respectively.

(1) chemical, chemical   (2) physical, physical

(3) chemical, physical   (4) physical, chemical

26. Electron energy is a negative energy because

(1) electron carries negative charge

(2) energy is zero near the nucleus and decrease as the distance from the nucleus increase

(3) energy is zero at infinite distance from the nucleus and decreases as the electron come closer to the nucleus

(4) there are inter - electronic repulsion

27. In which one of the following pairs the two species are both isoelectronic and isotopic?
(Atomic numbers : Ca = 20, Ar = 18, K = 19, Mg = 12, Fe = 26, Na = 11)

(1) $^{40}Ca^{2+}$ and ^{40}Ar (2) $^{39}K^+$ and $^{40}K^+$ (3) $^{24}Mg^{2+}$ and ^{25}Mg (4) ^{23}Na and $^{23}Na^+$

28. Which of the following is correct about electrorefining of metals?

(1) Pure metal is made as anode.

(2) Impure metal is made as cathode.

(3) The metal ions move to anode from cathode through the solution.

(4) It is done by using electricity.

29. Which of the following reactions is a synthesis reaction ?

(1) When steam is passed over red hot coke, a mixture of carbon monoxide and hydrogen is formed.

(2) Sodium reacts with water to form sodium hydroxide and hydrogen.

(3) When the milk of lime (calcium hydroxide) is added to hot sodium carbonate solution, sodium hydroxide is obtained and calcium carbonate separates out as mud.

(4) Stannic chloride is prepared by passing chlorine into molten tin.

30. A sodium salt of unknown anion when treated with $CaCl_2$ gives white precipitate only on boiling. The anion is

(1) SO_4^{2-} (2) HCO_3^- (3) CO_3^{2-} (4) NO_3^-

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. Which of the following diagrams shows hydrotropism ?

(1)

(2)

(3)

pollen grain

pollen tube

ovule

Carpel

(4)

Water
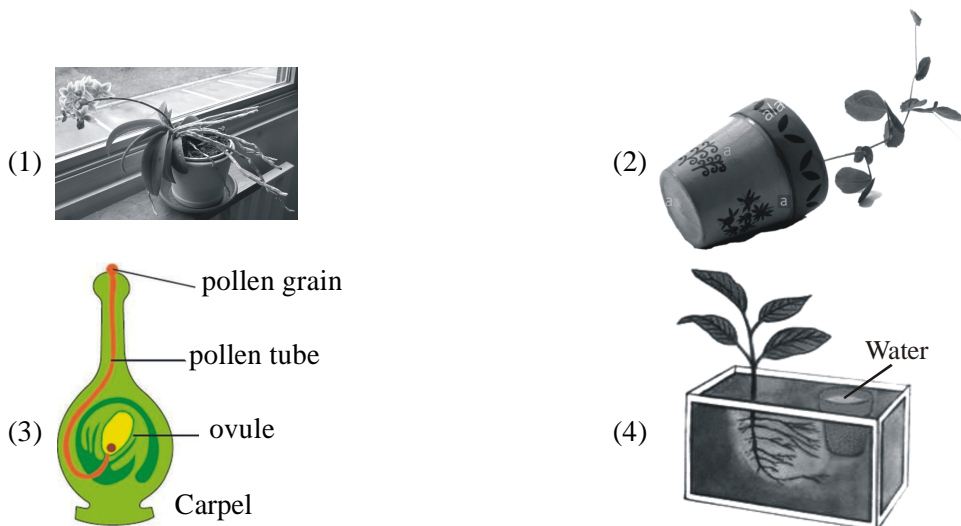
32. Which bacterial disease affects the nervous system and causes muscle contraction of the jaw and neck?

(1) Diphtheria   (2) Plague   (3) Tetanus   (4) Rabies

33. Which of the following is correct explanation about cell X and Y in the given images?
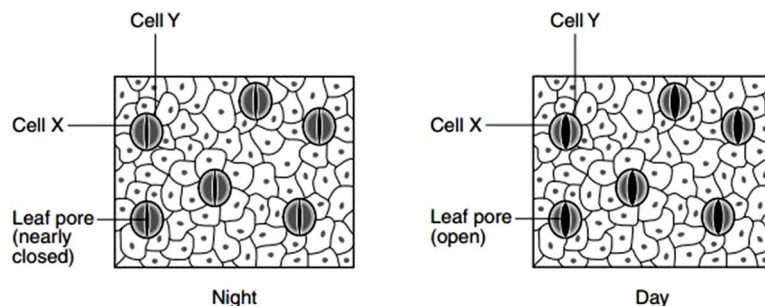
(1) Detect changes in the biotic factors present in the environment.

(2) Maintain homeostasis by controlling water loss.

(3) Store excess heat during the day and remove the heat at night.

(4) Absorb light energy necessary for cellular respiration.

34. Two arteries and two veins are labelled in the diagram given below. Which of the following are arteries?
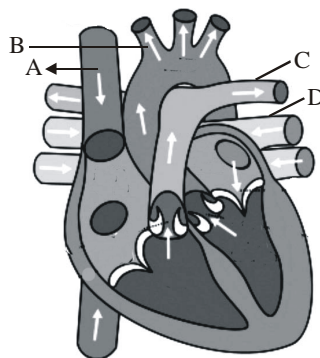
(1) A and B   (2) B and C   (3) B and D   (4) C and D

35. Look at the diagram given below and identify the position from where nerves to the upper limb originate.
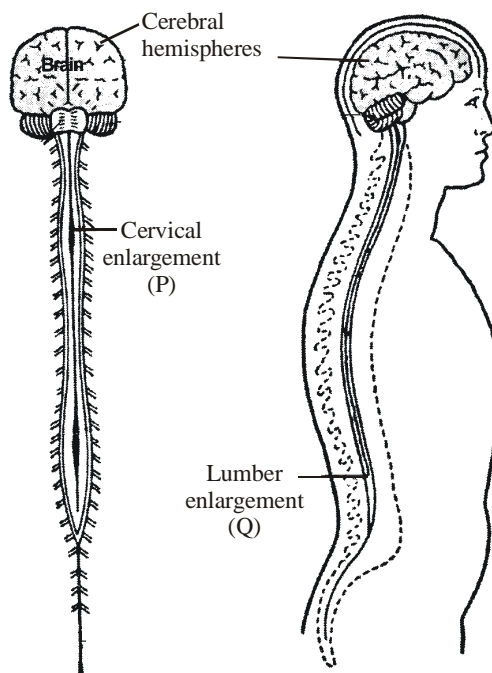
(1) P (2) Q (3) Both P and Q (4) None of these

36. A girl was walking slowly to the school. One day suddenly she began breath rapidly.What do you think may have caused her breathing rate to increase?

(1) too much minerals in her blood. (2) too much salt in her blood.

(3) too much nitrogen in her blood. (4) too much carbon dioxide in her blood.

37. The arrows in the diagram below represent the movement of materials. This movement of materials indicated by the arrows is most directly involved in the processes of
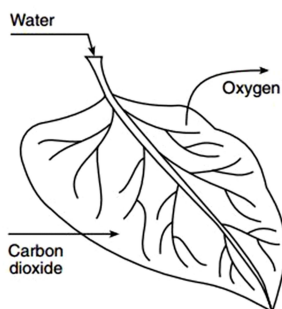
(1) Respiration (2) Photosynthesis (3) Digestion (4) Circulation

38. Which of the following is human excretory system ?

(1) (2) (3) (4)
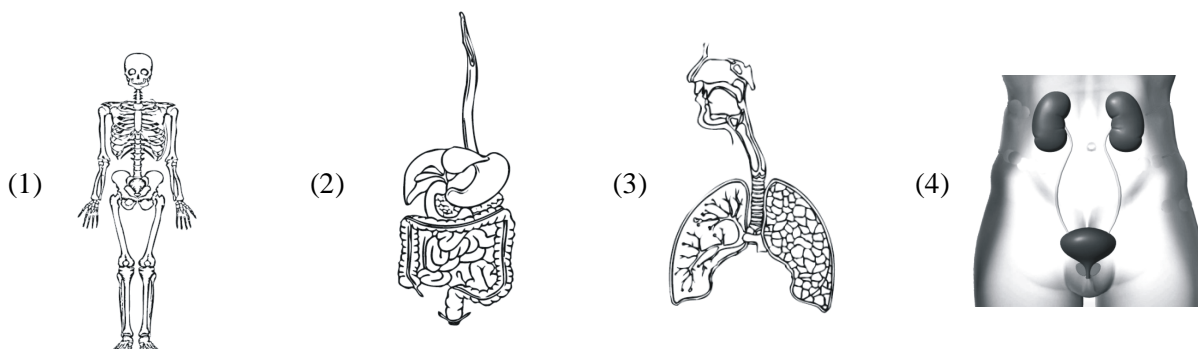
39. The following table shows selected characters used in analyzing the Phylogenetic relationship of four plant taxa: (YES means present that character)

Taxon	Characters			
	Xylem / Phloem	Wood	Seed	Flowers
A_1	YES	NO	NO	NO
A_2	YES	YES	YES	YES
A_3	YES	YES	YES	NO
A_4	NO	NO	NO	NO

So, Taxa A_1, A_2, A_3 and A_4 are respectively

(1) Ferns, Oaks, Pines, Hornworts   (2) Oaks, Pines, Hornworts, Ferns

(3) Ferns, Pines, Oaks, Hornworts   (4) Hornworts, Pines, Oaks, Ferns

40. Which of these best describes carbon as it travels through the carbon cycle ?

(1) Carbon is totally removed from the cycle when an animal dies.

(2) Carbon exists as a gas throughout the cycle.

(3) The total mass of carbon remains constant throughout the cycle.

(4) The carbon atoms are only found in living organisms in the cycle.

41. Study the experimental setup given below in which water level rises in the test tube then which of the following option correctly depicting this experiment ?
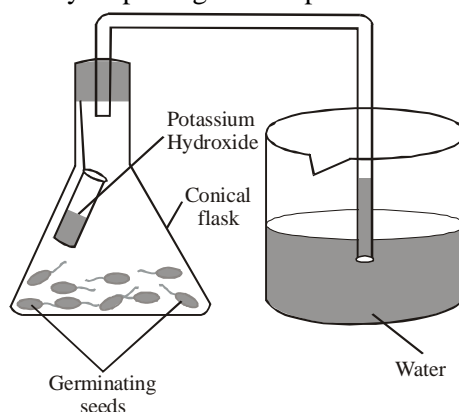
(1) Aerobic respiration by germinating seed.   (2) Anaerobic respiration by germinating seed.

(3) Potassium hydroxide is necessary for respiration.   (4) None of these

42. Which of the following is a set of viral diseases ?

(1) AIDS, influenza, T.B.   (2) AIDS, influenza, common cold

(3) Influenza, Typhoid, T.B.   (4) Influenza, cholera, typhoid

43. The diagram below shows the main organs of nitrogenous waste excretion and their blood supply. Arrows in the diagram below show blood flow direction then labelled structure '1' represents
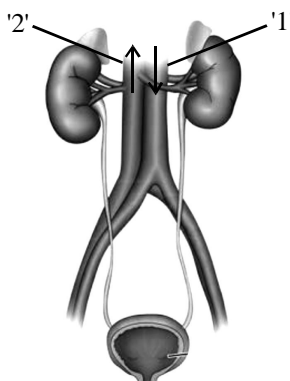
(1) Renal vein   (2) Vena cava   (3) Dorsal aorta   (4) Hepatic vein

44. The table below lists ways that four organisms obtain energy.

Organism	Method
1. Oak tree	Make food by photosynthesis.
2. Mushroom	Absorbs nutrients from dead plants and animals.
3. Cotton tail rabbit	Eats grasses.
4. Mountain lion	Eat deer, fox etc.

Which organism obtain energy without depending on other organism?

(1) Oak tree   (2) Mushroom   (3) Cotton tail rabbit   (4) Mountain lion

45. Which of the following phylums contains malpighian tubule as a excretory system?

(1) Cnidaria   (2) Arthropoda   (3) Porifera   (4) Both (2) and (3)

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. How many positive integers less than 100 have reciprocals with terminating decimal representations?

(1) 13   (2) 14   (3) 21   (4) 25

47. Ram, Shyam, Tarun and Varun together had a total amount of Rs 240 with them. Ram had half of the total amount with the others. Shyam had one-third of the total amount with the others. Tarun had one-fourth of the total amount with the others. Find the amount with Varun (in Rs).

(1) 64   (2) 70   (3) 52   (4) 58

48. The condition that $x^3 - ax^2 + bx - c = 0$ may have two of the roots equal to each other but of opposite signs is

(1) $ab = c$ (2) $\dfrac{2}{3}a = bc$ (3) $a^2b = c$ (4) None of these

49. The total number of propositions in the book 'Elements' are

(1) 460   (2) 465   (3) 13   (4) 55

50. Find the value of x in the figure given below.
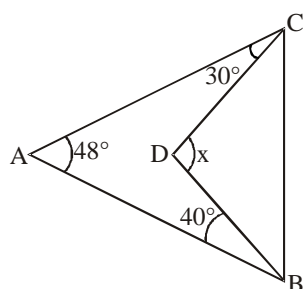
(1) 118°   (2) 20°   (3) 72°   (4) 223°

51. In the figure given below, ABC is an equilateral triangle and PQRS is a square of side 6 cm. By how many cm² is the area of the triangle more than that of the square?
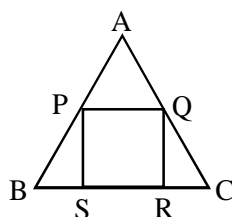
(1) $\dfrac{21}{\sqrt{3}}$ (2) 21   (3) $21\sqrt{3}$ (4) 63

52. In the figure, AP = PM = MY, PQ = 1, QZ = 8. Find AM
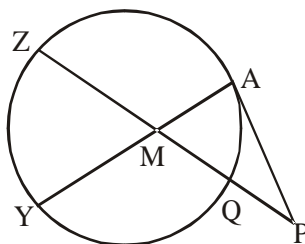
(1) $\dfrac{18}{3}$ (2) $\dfrac{16}{3}$ (3) 4 (4) 9

53. In a triangle if each side of a triangle is halved, then what is the percentage change in its area.
(1) 75% increase (2) 75% decrease
(3) 25% increase (4) 25% decrease

54. A rectangular tank has an inner length and breadth of 24 m and 20 m respectively. Water flows through an inlet pipe at 180 m per minute.The cross-sectional area of the pipe is 0.5 m². The tank takes half an hour to get filled. Find the depth of the tank (in m).
(1) 4.625 (2) 6.125 (3) 5.625 (4) 5.125

55. If a two digit number is chosen at random, find the probability that the number chosen is not a prime number.

(1) $\dfrac{13}{30}$ (2) $\dfrac{23}{30}$ (3) $\dfrac{17}{30}$ (4) $\dfrac{29}{30}$

56. Which of the following is true?
(1) $\tan^2 x + \sec^2 x = \sin^2 x + \cos^2 x$ (2) $\operatorname{cosec}^2 x + \cot^2 x = \tan^2 x - \sec^2 x$
(3) $\sin^2 x + \cos^2 x = \tan^2 x - \sec^2 x$ (4) $\operatorname{cosec}^2 x - \cot^2 x = \sec^2 x - \tan^2 x$

57. If $\cos^2\theta + 2\sin^2\theta + 3\cos^2\theta + 4\sin^2\theta + ...(200)$ terms $= 10025$, where θ is an acute angle, then the value of $\sin\theta - \cos\theta$ is

(1) $\dfrac{1-\sqrt{3}}{2}$ (2) $\dfrac{1+\sqrt{3}}{2}$ (3) $\dfrac{\sqrt{3}-1}{2}$ (4) 0

58. The mean of 90 items was found to be 45. Later on, it was discovered that two items were misread as 26 and 19 instead of 62 and 09 respectively. The correct mean is (approximately)
(1) 49.0 (2) 45.0 (3) 45.3 (4) 49.3

59. In the figure given below O is the centre of the circle. Line AB intersects the circle only at point B and line DC intersects the circle only at point C. If the circle has a radius of 2 cm, then AC is

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

60. The sum of all the coefficients of the polynomial $(x - 2)^6 (x - 4)^2 + (x + 1)^3 (x - 2)^3 + (x + 1)^2 (x - 4)^3$ is
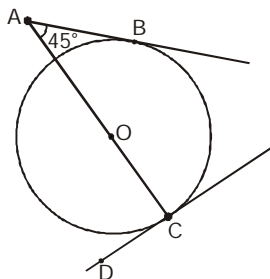(1) −45 (2) −107 (3) −152 (4) −83

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.

61. Select the correct combination of mathematical signs to replace * signs and to balance the given equation:

$$18 * 6 * 3 * 12 * 24$$

(1) $\div, -, =, \times$ (2) $\times, \div, -, =$ (3) $+, \div, \times, =$ (4) $\times, =, \div, +$

62. In a row of students, Deepak is seventh from the left and Madhu is twelfth from the right. If they interchange their positions, Deepak becomes twenty-second from the left. How many students are there in the row ?

(1) 19   (2) 31   (3) 33   (4) Can't be found

63. A watch was set correct at 12'O clock. It loses 10 minutes per hour. What will be the angle between the two hands of the clock after 1 hour ?

(1) 75°   (2) 85°   (3) 90°   (4) 105°

64. Pick up from the answer figures, one which will continue the series to the problem figures.
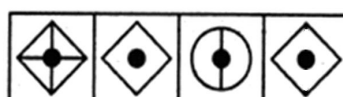

(1)   (2)   (3)   (4)
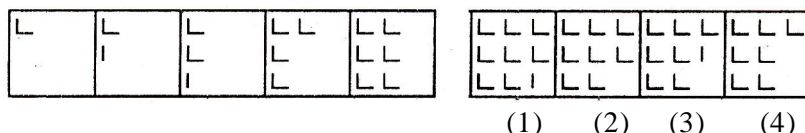
65. There are two clocks A and B. The hands of the clock A moves normally as clockwise while in clock B (due to reverse connection) they move anticlockwise. Initially the two hands of both clocks are at mark showing 12. If after some time, the angle between the directions of two hour hands is 90° (for the first time), then at the same instant the angle between the directions of minute hand will be

(1) 0°   (2) 60°   (3) 120°   (4) 180°

66. A, B, C, D, E, F and G are playing cards sitting around a circular table.
D is not the neighbour of C or E.   A is neighbour of B and C.
G who is second to the left of D, is the neighbour of E and F.
Which of the following is correct ?

(1) B is between A and D   (2) D is between F and G

(3) F is a neighbour of B   (4) C is a neighbour of D

67. The outer border of width 1 cm of a cube with side 5 cm is painted yellow on each side and the remaining space enclosed by this 1 cm path is painted pink. This cube is now cut into 125 smaller cubes of each side 1 cm. The smaller cubes so obtained are now separated.

How many smaller cubes have at least one face coloured :

(1) 27   (2) 98   (3) 48   (4) 121

68. Select a suitable figure from the Answer Figures that would replace the question mark (?).

Problem Figures: Answer Figures:

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

69. A solid cube has been painted yellow, blue and black on pairs of opposite faces. The cube is then cut into 36 smaller cubes such that 32 cubes are of the same size while 4 others are of bigger sizes. Also no faces of any of the bigger cubes is painted blue.

How many cubes do not have any of their faces painted yellow ?

(1) 0   (2) 4   (3) 8   (4) 16

70. Two statements followed by four conclusions numbered I, II, III and IV. You have to take the given two statements to be true even if they seem to be at variance from commonly known facts. Read the conclusions and then decide which of the conclusions logically follows from the two given statements.

Statements :

        I. Some doors are mangoes.

        II. All mangoes are bananas .

Conclusions :

   **I.** All bananas are mangoes .

        II. All doors are bananas.

        III. Some doors are bananas .

        IV. Some mangoes are doors .

(1) Only I and II follow   (2) None follows

(3) All follow   (4) Only III and IV follow

71. Each of the 6 friends - A, B, C, D, E, and F wears a different brand shirt among Polo, Reebok, Adidas, Gap, Milan and Lava of six different colors among Red, Blue, Green, White, Pink and Black not necessarily in the same order. C wears a red color shirt which is neither Polo nor Lava. A wears Reebok shirt which is neither black nor pink in color. Either E or F wears white shirt. B wears Gap shirt which is not pink in color. D wears either Adidas or blue shirt. E wears blue shirt which is not Lava. Of which brand is F's shirt ?

(1) Lava   (2) Polo   (3) Adidas   (4) Milan

72. A Figure (X) is given, followed by four complex figures in such a way that Figure is embedded in one of them. Choose that one.
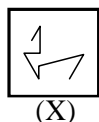
73. Some statements are given and these statements are followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read the conclusions and then decide which of the given conclusions logically follows from given statements, disregarding commonly known facts.

**Statements:**

Some pearls are stones.

Some stones are diamonds

No diamond is a gem

Conclusions:

I. Some gems are pearls.   II. Some gems are diamonds.

III. No gem is a diamond.   IV. No gem is a pearl.

(1) Only I and II follow   (2) Only III and IV follow

(3) Only III and either I or IV follow   (4) Only either I or IV and either II or III follow

74. Introducing Reena, Monika said, "She is the only daughter of my father's only daughter." How is Monika related to Reena ?

(1) Aunt (2) Niece (3) Mother (4) Sister

75. Count the number of triangles and squares in the given figure.
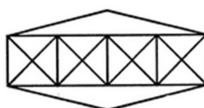
(1) 36 triangles, 7 squares (2) 38 triangles, 9 squares

(3) 40 triangles, 7 squares (4) 42 triangles, 9 squares

76. If, A + B means A is the mother of B ;

A / B means A is the brother of B ;

A × B means A is the son of B and

A – B means A is the daughter of B.

Which of the following means C is the niece of D ?

(1) D – P / C (2) D × P – C (3) C – P / D (4) P + D / C

77. What day of the week was on 25th November 1959 ?

(1) Saturday (2) Wednesday (3) Friday (4) Monday

78. One evening before sunset two friends Sumit and Mohit were talking to each other face to face. If Mohit's shadow was exactly to his right side, which direction was Sumit facing ?

(1) North (2) South (3) West (4) Data inadequate

79. Find the missing term.

11	7	49
12	8	54
15	4	?

(1) 60 (2) 45 (3) 0 (4) 15

80. A word is represented by only one set of number as given in any one of the alternatives. The sets of numbers given in the alternative are represented by two classes of alphabets as in the 2 matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II from 5 to 9. A letter from these matrices can be represented first by its row and next by column number. For eg. 'B' can be represented by 11, 30 etc. 'U' can be represented by 58, 89 etc.

MATRIX I					
	0	1	2	3	4
0	M	L	F	H	B
1	H	B	M	L	F
2	L	F	H	B	M
3	B	M	L	F	H
4	F	H	B	M	L

MATRIX II					
	5	6	7	8	9
5	L	K	S	U	N
6	U	N	I	K	S
7	K	S	U	N	I
8	N	I	K	S	U
9	S	U	N	I	K

Identify the set for the word FISH.

(1) 22, 81, 14, 69 (2) 33, 86, 88, 41

(3) 33, 88, 67, 22 (4) 02, 67, 34, 88

SPACE FOR ROUGH WORK

ALLEN System

Orientation Session

Classroom Session
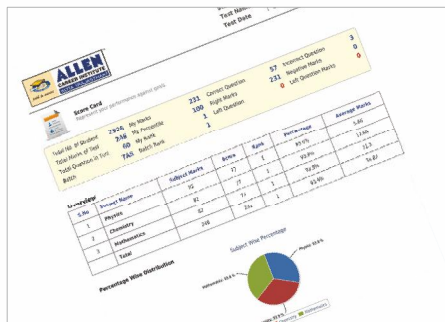

Prarthana

Open Session & Medal Distributions

Regular Test

Test Result - (CSAT)

Continuous Communication

Doubt Removal Counters

Online Practice Lab

Comprehensive Study Material	Ultimate Care	Board Work Sheets, Booklets
RACE : Regular Analysis through Continuous Exercise	Best Faculties	Expert Counselling

संस्कार महोत्सव एवं कल्याणोत्सव, कोटा

International Chemistry Olympiad

48th International
Chemistry Olympiad
IChO-2016
TBILISI, GEORGIA

Silver Medal
SHARVIK MITTAL

International Physics Olympiad

47th International
Physics Olympiad
IPhO-2016
SWITZERLAND

Silver Medal
DIVYANSH GARG
(Classroom)

International Biology Olympiad

27th International
Biology Olympiad
IBO-2016
HANOI, VIETNAM

Gold Medal
LAJJA BEN PATEL
(Classroom)

Silver Medal
VIDUSHI VARSHNEY
(Classroom)

International Earth Science Olympiad

10th International
Earth Science Olympiad
(IESO) 2016
JAPAN

Silver Medal
AMARJIIT VIKAS PANDE
(Classroom)

ALLEN Results : Pre-Nurture & Career Foundation (2015-16)

STAGES OF OFFICIAL OLYMPIADS MENTORED BY HBCSE

IJSO

STAGE 1
35 Selections in NSEJS
STAGE 2
16 Selections in INJSO
STAGE 3
3 Selections in OCSC
NISHANT ABHANGI
AYUSHMAN TRIPATHY
GAURANG
selected for IJSO 2016

International
Junior Science
Olympiad

IBO

STAGE 1
3 Selections in NSEB
STAGE 2
3 Selections in INBO
STAGE 3
3 Selections in OCSC
VIDUSHI VARSHNEY
Got Silver Medal In
IBO 2016

International
Biology
Olympiad

JEEVESH is the
youngest in the
country so far to
qualify stage-1 of
IBO

IChO

STAGE 1
1 Selection in NSEC
DHYEY SANKALP GANDHI
is the youngest in the
country so far to
qualify stage-1 of
IChO

International
Chemistry
Olympiad

IOAA

STAGE 2
RAYYAN SHAHID
selected in
INJAO 2016

International
Astronomy
Olympiad
Junior

IMO

STAGE 1
190 Selections
from Gujarat & 11 from
Maharashtra for RMO
through PRE RMO.
3 STUDENTS SECURED
100% MARKS
STAGE 2
14 Selections in RMO
for INMO

International
Maths
Olympiad

IESO

STAGE 1
NET – 6 Selections
Conducted by
Geological
Society of India

International
Earth Science
Olympiad

IJSO

12th International
Junior Science Olympiad
(IJSO) 2015
KOREA

Gold Medal
BHASKAR GUPTA
(Classroom)

Gold Medal
LAKSHYA SHARMA
(Classroom)

Silver Medal
VIDUSHI VARSHNEY
(Classroom)

International
Junior
Science
Olympiad

APTITUDE IN SCIENCE / MATHEMATICS

NSO

571 Selections in NSO (Level-1)

NISHANT ABHANGI: AIR-1 (Level-2)

NSO National Science Olympiad

Conducted by Science Olympiad Foundation, New Delhi

STSE 2015

36 Selections for Scholar Certificate

155 Selections for Distinction Certificate

STSE State Talent Search Examination

Conducted by Rajasthan Board of Secondary Education

NSTSE

232 Selections in NSTSE (Level-1)

63 Selections in NSTSE (Level-2)

NISHANT ABHANGI: AIR-1 (Level-2)
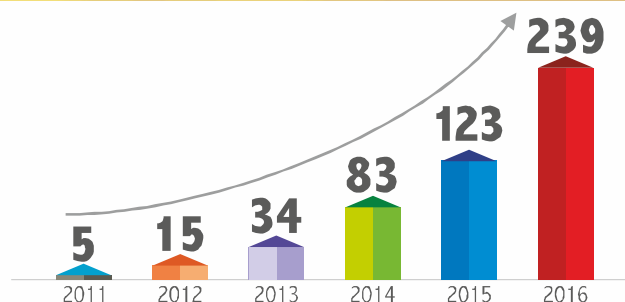
NSTSE National Science Talent Search Examination

Conducted by Unified Council, Hyderabad

NTSE

239 Students Selected From ALLEN

NTSE 2016 (STAGE-2)

2011	2012	2013	2014	2015	2016
5	15	34	83	123	239

APTITUDE IN MATHEMATICS

APTITUDE IN INFORMATION TECHNOLOGY

NMTC

274 Selections in NMTC (Prelim)

17 Selections in NMTC (Final)

NMTC National Mathematics Talent Contest

Conducted by Association of Mathematics Teachers of India, Chennai

IMO (SOF)

370 Selections in IMO (Level-1)

IMO International Mathematics Olympiad

Conducted by Science Olympiad Foundation, New Delhi

UCO

140 Selections in UCO (Level - 1)

59 Selections in UCO (Level - 2)

UCO Unified Cyber Olympiad

Conducted by Unified Council, Hyderabad

SCIENTIFIC APTITUDE

LANGUAGE PROFICIENCY

WORKSHOP/CONFERENCES

BALSHREE HONOUR

14 Selections in Balshree in Local Round Rajasthan-7 | Gujrat-5 Madhya Pradesh-2)

Consist of Plaque, Citation, ₹15000 & Literature set

Conducted by National Bal Bhavan

TRINITY GESE

38 Selections in TRINITY GESE
Distinction : 21
Merit : 17

GESE Grade Examination for Spoken English

Conducted by Trinity College, London

NMC

9 Selections in NMC Including Ranks 1,2,3 & 4

NMC National Maths Conference

Conducted by Association of Mathematics Teachers of India, Chennai

APTITUDE IN INTELLIGENCE QUATIENT (IQ)

TECHNOTHLON PRELIMS 2015

20 Students (10 Teams) Selected for Techniche

29 Selections for Silver Certificate in Technothlon Prelims

Conducted by IIT Guwahati

Technothlon the international school championship
.....Inspiring Young minds!

TECHNICHE 2015

2 Students (1 Team)
KHUSHI TIBAREWAL
STUTI SHAH
won Junior Squad in Techniche

Conducted by IIT Guwahati

Techniche Indian Institute of Technology Guwahati

TECHKRITI

7 Students (Including AIR-1 & AIR-3) Selected in Techkriti

Conducted by IIT Kanpur

TSC

Answer Key

Class- 10th (X)

Held on : 09 October 2016

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