A Specially Designed Initiative to Encourage Young Talent by

ALLEN CAREER INSTITUTE
path to success
KOTA (RAJASTHAN)

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Tallentex Form No. 4

Answer Sheet No. T 4

TALLENTEX 2016 : (18, October 2015)

PAPER CODE

E

TALLENTEX 2016
ALLEN'S Talent Encouragement Exam

CLASS - 10th (X)

Duration: 2 Hrs. **Maximum Marks : 320**

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 Form No. & Answer Sheet No. in the space provided on the top of this page.
3. Fill your **PAPER CODE** in space provided (Point No. 6) of optical response sheet (ORS).
4. 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.
5. After breaking the Question Paper seal, check the following:
   a. There are **16 pages** in the booklet containing question no. 1 to 80 under 2 Parts i.e. Part-I & Part-II.
   b. Part-I contains total 20 questions of IQ (Mental Ability).
   c. Part-II contains total 60 questions under 4 sections, which are Physics, Chemistry, Biology & Mathematics.
6. Think wisely before darkening bubble as there is negative marking for wrong answer. Answer once marked by pen cannot be cancelled.
7. 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.
8. If you are found involved in cheating or disturbing others, then your ORS will be cancelled.
9. Do not put any stain on ORS and hand it over back properly to the invigilator.
10. You can take along the question paper after the test is over.

PART-I

IQ (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.

1. If P means ×, R means +, T means ÷ and S means –, then 18 T 3 P 9 S 8 R 6 = ?

(1) $-1\frac{1}{3}$ (2) $\frac{2}{3}$ (3) 46 (4) None of these

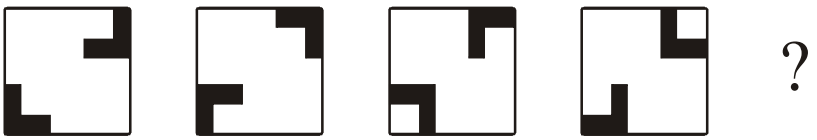
2. N ranks fifth in a class. S is eighth from the last. If T is sixth after N and just in the middle of N and S, then how many students are there in the class?

(1) 23 (2) 24 (3) 25 (4) 26

3. How much does a watch gain or lose per day, if its hands coincide every 64 minutes?

(1) $32\frac{8}{11}$ min (2) $31\frac{8}{11}$ min (3) $32\frac{3}{11}$ min (4) None of these

4. There are some figure which have some particular series. Find out the next figure ?



(1) 

(2) 

(3) 

(4) 

5. A watch gains 5 seconds in 3 minutes and was set right at 8 AM. If it shows 5:15 in the evening on the same day, what is the correct time?

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

6. A group of seven singers, facing the audience & audience are facing North are standing in a line on the stage as follows :

(i) D is to the immediate right of C

(ii) F is adjacent to G

(iii) B is to the immediate left of F

(iv) E is to the immediate left of A

(v) C and B have one person between them

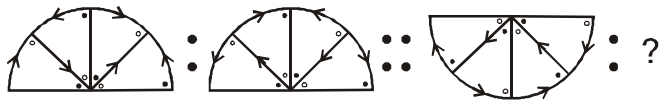
(vi) A and D have one singer between them

If we start counting from the left end of audience, on which number is C ?

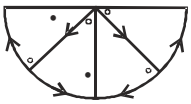
(1) 1st (2) 2nd (3) 3rd (4) 5th

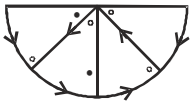
7. A solid cube painted red on two adjacent sides and black on the sides opposite to the red sides and green on the remaining sides is cut into 125 smaller cubes of equal size.
How many cubes have atleast one side red?
(1) 45 (2) 50 (3) 52 (4) 64

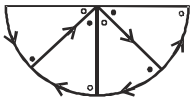
8. Two sets of figures are given in the question. Figures (A), (B), (C) and (D) are problem-figures and figures 1, 2, 3 and 4 are answer figures. There is a definite relationship between figures (A) and (B). Establish a similar relationship between (C) and (D) by choosing a figure from the answer-figures.

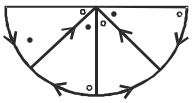


(A) (B) (C) (D)

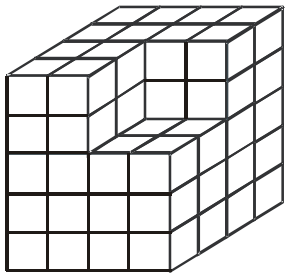
(1) 

(2) 

(3) 

(4) 

9. Some equal cubes are arranged in the form of a solid block as shown in the given figure. All the visible sufaces of the block (except the bottom) are then painted.



How many cubes have only one face painted ?
(1) 24 (2) 26 (3) 30 (4) 36

10. Two statements are given followed by two conclusions numbered I & II. Assume the given Statement to be true, even if they seem to be at various with commonly known facts.

Statements :

All Terrorists are human

All Human are bad

Conclusion :

I. All Terrorists are bad.

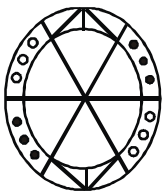
II. No human can be a Terrorist.

(1) Only Conclusion I follows (2) Only Conclusion II follows

(3) If Neither I nor II follows (4) If Both I and II follow

11. Read the information given below and answer the question.
Six families A, B, C, D, E and F stay on six different floors (1st to 6th) of multi-storey building.
(I) There is a gap of one floor between B and D.
(II) E stays on 3rd floor, just above B.
(III) A and C are at extreme ends.
(IV) There is a gap of one floor between A and D.
On which of the following floors does F stay
(1) 6th (2) 5th (3) 4th (4) 2nd

12. In the given question, a complex figure is given. Find out which of the simple figure given in the alternatives is hidden in the complex figure

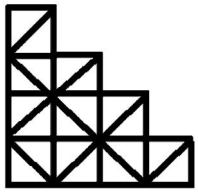


(1) 
(2) 
(3) 
(4) 

13. Three statements are given followed by three conclusions numbered I, II and III. You have to take the given statements to be true even if they seem to be at variance from the commonly known facts and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.
Statements :
No rabbit is lion.
Some horses are lions.
All rabbits are tables.
Conclusion :
I. Some tables are lions.
II. All horses are rabbits.
III. No table is lion.
(1) Only III follows (2) Either I or III follows
(3) Only II and III follow (4) None of these

14. X and Y are sisters. Y is wife of Z, P is son of Q, M is daughter of Y. N is husband of X, Q is father of Y. O is daughter of L, K is wife of L. X is mother of L. Who is the cousin of L?
(1) M (2) Z (3) X (4) P

15. How many squares are there in the following figure ?



(1) 12 (2) 14 (3) 16 (4) 22

16. 'P Δ Q' means 'P is the brother of Q', 'P # Q' means 'P is the father of Q', 'P ⬭ Q' means 'P is the mother of Q'. Which of the following would mean 'R is the son of M' ?

(1) M Δ R # S (2) M # S ⬭ R

(3) M ⬭ R # S (4) M # S # R

17. If Sunday falls on 4^{th} october, 2015. What was the day on 20 june, 2014?

(1) Thursday (2) Wednesday

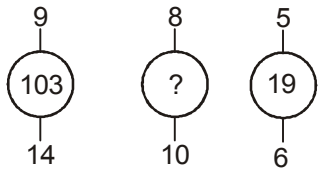
(3) Friday (4) Saturday

18. A clock is so placed that at 10:30 am, its minute hand points towards South-West. In which direction does its hour-hand point at 4:15 pm ?

(1) North (2) South

(3) East (4) West

19. Which one number can be placed at the sign of interrogation ?



(1) 62 (2) 102 (3) 84 (4) 74

20. In a certain code language APPLE is written as 21517116, then how is GRAPE written in that language?

(1) 7162156 (2) 8172156

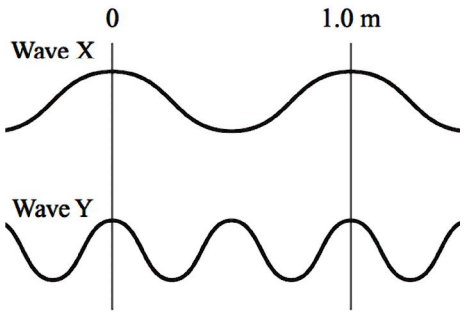
(3) 7152155 (4) 8170156

PART-II

SECTION-A : PHYSICS

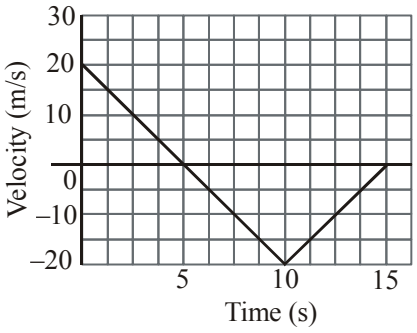
This section contains **15 Multiple Choice Questions.** Each question has four choices (1), (2), (3) and (4) out of which ONLY ONE is correct.

21. Which of the following correctly compares the two waves?



(1) Wave X has half the amplitude of wave Y.
(2) Wave X has twice the amplitude of wave Y.
(3) Wave X has a lower frequency and longer wavelength than wave Y.
(4) Wave X has a higher frequency and shorter wavelength than wave Y.

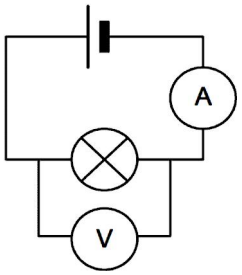
22. The graph below represents a particle moving along a straight line. What is the total distance travelled by the particle from t = 0 to t = 10 s ?



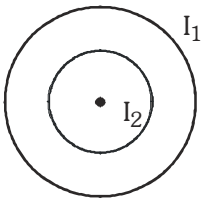
(1) 0 m (2) 50 m (3) 100 m (4) 200 m

23. Consider the closed circuit represented below. How will the ammeter and voltmeter readings change, if the bulb burns out ? (Both meters are ideal)

	Ammeter reading	Voltmeter reading
(1)	increases	increases
(2)	becomes zero	becomes zero
(3)	does not change	does not change
(4)	becomes zero	does not change



24. Two concentric current carrying circular coils are shown in figure. B_1 is the magnitude of magnetic field due to bigger coil at its centre, B_2 is the magnitude of magnetic field due to smaller coil at its centre and B_{net} is the magnitude of net magnetic field at the centre of two concentric coils. Then match the following columns and choose correct option



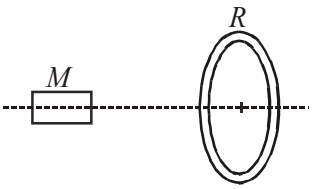
COLUMN - I		COLUMN - II	
I	If $B_{net} < B_1$ and its direction is inside the plane of paper. Also given that $B_2 < B_1$, then direction of electric current in bigger coil and smaller coil is	p	Clock-wise and Anti clock-wise respectively
II	If $B_{net} > B_1$ and its direction is inside the plane of paper. Also given that $B_2 < B_1$, then direction of electric current in bigger coil and smaller coil is	q	Anti Clock-wise and clock-wise respectively
		r	Both Clock-wise
		s	Both Anti clock-wise

(1) I-p, II-r (2) I-p, II-q (2) I-q, II-p (4) I-q, II-s

25. The resistivity of aluminium is twice that of copper and its density one-third that of copper. The ratio of the resistance of aluminium to copper wires having the same length and same mass per unit length is

(1) 3 : 2 (2) 2 : 1 (3) 2 : 3 (4) 4 : 9

26. A conducting ring *R* is placed on the axis of a bar magnet *M*. The plane of *R* is perpendicular to this axis. *M* can move along this axis, then



(1) *M* will repel *R* when it is moving towards *R*.

(2) *M* will attract *R* when it is moving towards *R*.

(3) *M* will repel *R* when moving towards as well as away from *R*.

(4) *M* will attract *R* when moving towards as well as away from *R*.

27. Three cylindrical wires of same material are connected to a battery. If the ratio of length of wires is 1:2:3 and ratio of their area of cross section is 2:4:1, then the ratio of power consumed by them in series combination and in parallel combination is respectively

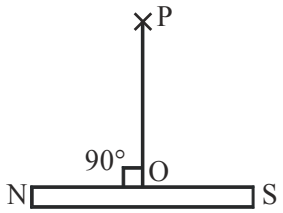
(1) 1:6:6 and 6:1:1 (2) 1:1:6 and 6:6:1 (3) 6:6:1 and 1:1:6 (4) 6:1:1 and 1:6:6

28. A curtain hanging in a moving aeroplane hits the face of the passenger sitting behind it. At this particular time, the aeroplane is

(1) accelerating forward (2) accelerating backward

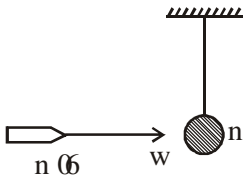
(3) moving forward with uniform speed (4) being braked upon

29. The magnetic field at P due to the magnet shown below is



(1) along OP (2) along PO (3) parallel to NS (4) parallel to SN

30. A bullet of mass m/5 moving horizontally with velocity v collides against a pendulum bob of mass m and gets embedded in it. The maximum height reached by the pendulum-bullet system is

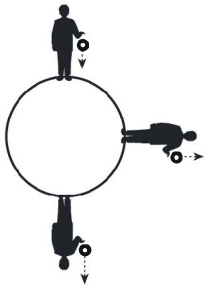


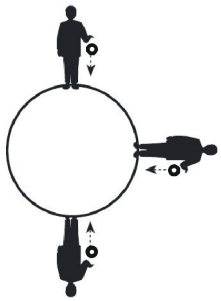
(1) $v^2/12\ g$ (2) $v^2/6\ g$ (3) $v^2/36\ g$ (4) $v^2/72\ g$

31. The diagram below shows a person holding a ball standing at three different places on Earth. If the person drops the ball, gravity will make it fall. Which of the following diagrams best shows the direction the dropped ball will fall at the three different positions ?

(1) 

(2) 

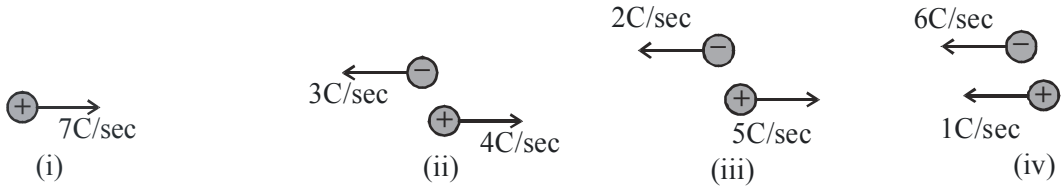
(3) 

(4) 

32. The force necessary to stop a hammer having a momentum of 25 N-s in 0.05 seconds is

(1) 25 N (2) 50 N (3) 1.25 N (4) 500 N

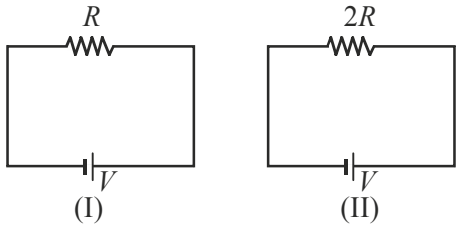
33. Following figures show four situations in which positive and negative charges moves horizontally through a region and give the rate at which each charge moves. Rank the situations according to the effective current through the region (greatest first).



(1) i = ii = iii = iv (2) i > ii > iii > iv

(3) i = ii = iii > iv (4) i = ii = iii < iv

34. In the (I) circuit shown below, if the electric energy consumed in a given time is '*X*' units, then the electric energy consumed in (II) circuit in the same time is



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

35. A rope ladder with a length ℓ carrying a man with a mass m at its end is attached to the basket of a balloon with a mass M. The entire system is in equilibrium with the air. As the man climbs up the ladder into the balloon, the balloon descends by a height h. Then the potential energy of the man

(1) increases by mg (ℓ – h) (2) increases by mgℓ

(3) increases by mgh (4) increases by mg (2ℓ – h)

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.

36. Select the correct option in which the number of atoms are same as number of molecules contained in 32g of O_2 .

(1) 16 g of O_2 (2) 71 g of Cl_2 (3) 28 g of N_2 (4) 2 g of H_2

37. If 10^{21} molecules are removed from 200 mg of CO_2, then the number of moles of CO_2 left are

(1) 2.88×10^{-3} (2) 1.66×10^{-3} (3) 4.54×10^{-3} (4) 1.66×10^{-2}

38. $^{14}_{6}R$ and $^{15}_{7}R$ are the symbol of two elements. They are

(1) Isotopes (2) Isotones

(3) Isobars (4) Isoelectronic

39. Which of the following statements is **FALSE**?
(1) A sample of water boils over the range 90°C to 110°C is an impure sample.
(2) Cooking of food is faster on hilly areas.
(3) Melting point of ice lowers on adding common salt.
(4) During freezing of a liquid, kinetic energy decreases.

40. A gas jar filled with bromine gas (denser than air) was placed over a gas jar containing air. The gases were allowed to settle for four hours. What do we observe?
(1) Bromine remains on the top
(2) Bromine settles at the bottom
(3) Bromine gets diffused in the air
(4) Bromine starts moving towards the top

41. In a solution of pH = 5, more acid is added in order to reduce the pH = 2. The increase in hydrogen ion concentration is
(1) 100 times (2) 1000 times (3) 3 times (4) 5 times

42. Choose the neutral salt among the following.
(1) $KHSO_4$ (2) Na_2SO_4 (3) NaOH (4) HF

43. Study the following statements about dilute sulphuric acid.
(i) A white precipitate is formed when aqueous barium chloride is added.
(ii) The solution turns anhydrous copper(II) sulphate from white to blue.
(iii) Addition of a Universal Indicator shows that the solution has a pH value of less than 7.0.
(iv) The solution reacts with copper(II) oxide, forming a blue solution.
Which of the following statements confirm the acidic nature of the dilute sulphuric acid ?
(1) (i) and (ii) only (2) (i) and (iii) only
(3) (i), (iii) and (iv) only (4) (iii) and (iv) only

44. Study the following statements
(i) Calcination and roasting of ores are the steps of metallurgy.
(ii) Calcination and roasting reduce the ore to metal.
(iii) Alkali metals are extracted by electrolytic reduction.
(iv) Alkali metals are easily reduced.
Which of the following statements are correct ?
(1) (i) & (iii) only (2) (ii) & (iv) only (3) (ii) & (iii) only (4) All are correct

45. Which of the following pairs of substances would produce a brown precipitate if their aqueous solutions were mixed?
(1) $CuSO_4$ & NaOH (2) $Fe_2(SO_4)_3$ & KOH (3) $AgNO_3$ & NaI (4) None of these

46. Among the following groups which represents the collection of isoelectronic species ?
(1) NO^+, C_2^{2-}, O_2^-, CO (2) N_2, C_2^{2-}, CO, NO
(3) CO, NO^+, CN^-, C_2^{2-} (4) NO, CN^-, N_2, O_2

47. An element X has atomic number 9 and mass number 19. Its anion is represented by
(1) X^{2-} (2) X^- (3) X^{2+} (4) X^+

48. 50 g of 15% [w/w] sodium hydroxide solution is prepared in the laboratory. Calculate the volume of water utilized if density of water is 0.9 g/cc at the experimental conditions.
(1) 42.5 cm^3 (2) 7.5 cm^3 (3) 382.5 cm^3 (4) 47.22 cm^3

49. The following reaction is used for the preparation of oxygen gas in the laboratory.

$$2KClO_3(s) \xrightarrow{Heat} 2KCl(s) + 3O_2(g)$$

Which of the following statement about the reaction is correct ?

(1) It is a decomposition reaction and endothermic in nature.

(2) It is a combination reaction.

(3) It is a decomposition and accompanied by release of heat.

(4) It is a photochemical decomposition reaction and exothermic in nature.

50. Which of the following compound imparts red colour to the flame and decomposes on heating to give oxygen and a brown gas ?

(1) $CaCO_3$ (2) $Mg(NO_3)_2$ (3) $MgCO_3$ (4) $Ca(NO_3)_2$

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.

51. In cells showing a large amount of protein synthesis one would always observe a large number of

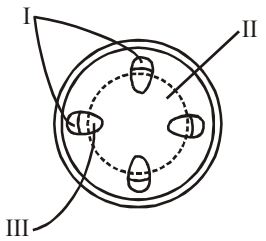
(1) Ribosomes (2) Lysosomes (3) Golgi apparatus (4) Vacuoles

52. Which pairing is correct?

(1) Sericulture – Fish (2) Pisciculture – Birds

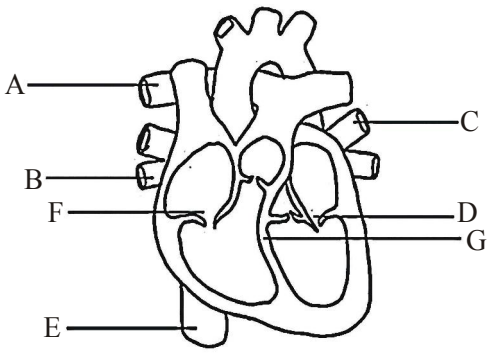
(3) Apiculture – Honeybee (4) Aquaculture – Mosquito

53. The diagram below shows a transverse section of a dicotyledon stem. Which part(s) is/are involved in carrying water and minerals up the stem?



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

54. Observe the following figure and identify the correctly labelled parts.



(1) D-Mitral valve, C- Pulmonary vein (2) A-Superior vena cava, E-Inferior vena cava

(3) F-Tricuspid valve, C- Pulmonary artery (4) B- Pulmonary artery, G - Septum

55. Suppose you were a neuroscientist and had been given a sample of a new snake venom. You test its effect on action at a synapse, and find that it increases the magnitude of the normal depolarizing excitatory response. The most likely explanation for this is that the venom is

(1) Blocking release of the neurotransmitter from the vesicles

(2) Binding with the neurotransmitter receptors to interfere with neurotransmitter binding

(3) Binding with the neurotransmitter receptors to mimic the action of the neurotransmitter

(4) Acting to break-down the neurotransmitter in the synaptic cleft

56. What route does carbon dioxide follow as it leaves the body?

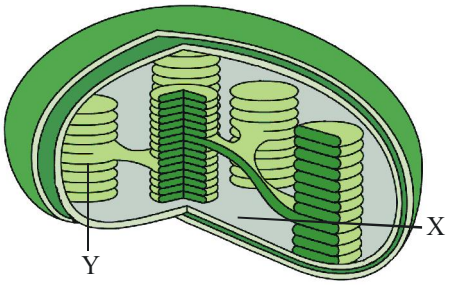
(1) pulmonary vein → alveolus → bronchus → bronchiole

(2) pulmonary artery → alveolus → bronchus → bronchiole

(3) pulmonary vein → alveolus → bronchiole → bronchus

(4) pulmonary artery → alveolus → bronchiole → bronchus

57. Which one of the following correctly identifies X and Y and shows their functions?



	X		Y	
	Structure	***Function***	***Structure***	***Function***
(1)	Grana	Photolysis of water	Stroma	CO_2 fixation
(2)	Grana	CO_2 fixation	Stroma	Photolysis of water
(3)	Stroma	Photolysis of water	Grana	CO_2 fixation
(4)	Stroma	CO_2 fixation	Grana	Photolysis of water

58. Which of the following is not true for excretion in plants?

(1) In plants no definite excretory system or organ is present for removal of the wastes.

(2) In higher plants the waste materials are deposited in various body parts.

(3) CO_2 and O_2 are produced as wastes during respiration by plants.

(4) Tannin, essential oils, latex, gums are examples of plant waste products.

59. Which one of the following groups of the three animals each is correctly matched with their one characteristic morphological feature?

Animals	***Morphological feature***
(1) Liver fluke, Sea anemone, Sea cucumber	Bilateral symmetry
(2) Centipede, Prawn, Sea urchin	Possess nematoblast
(3) Scorpion, Spider, Cockroach	Jointed appendages
(4) Cockroach, Locust, Taenia	Metameric segmentation

60. Match the columns and select the correct option.

Column-I		Column-II	
(A)	Tendon	(p)	Fluid connective tissue
(B)	Blood	(q)	Blood clotting
(C)	WBC	(r)	Connects muscle to bone
(D)	Thrombocytes	(s)	Protection against disease causing microbes

(1) A-s ; B-p ; C-q ; D-r
(2) A-r ; B-p ; C-s ; D-q
(3) A-p ; B-q ; C-r ; D-s
(4) A-r ; B-p ; C-q ; D-s

61. When a person breathes in, what happens to the diaphragm and to the ribs ?

	Diaphragm	**Ribs**
(1)	Becomes flat	Moves downwards and inwards
(2)	Becomes flat	Moves upwards and outwards
(3)	Becomes more curved	Moves upwards and outwards
(4)	Becomes more curved	Moves downwards and inwards

62. Match the columns and select the correct option.

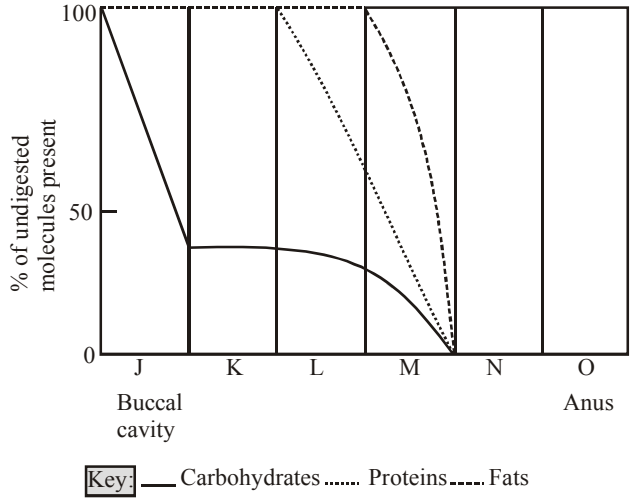
Column -I	**Column-II**
(P) Sexually transmitted disease	(1) Tuberculosis
(Q) Droplet infection	(2) Cholera
(R) Animal bites	(3) Rabies
(S) Sand fly	(4) Syphilis
(T) Housefly	(5) Kala azar

(1) P-2, Q-4, R-1, S-3, T-5
(2) P-3, Q-5, R-1, S-2, T-4
(3) P-4, Q-1, R-5, S-3, T-2
(4) P-4, Q-1, R-3, S-5, T-2

63. A biologist studied the concentration of urine produced by a terrestrial mammal, a freshwater fish and a marine fish. Which row of observations would be the most likely for these organisms in their natural environment?

	Terrestrial mammal	Freshwater fish	Marine fish
(1)	Produces dilute urine	Produces concentrated urine	Produces dilute urine
(2)	Produces concentrated urine	Produces dilute urine	Produces dilute urine
(3)	Produces dilute urine	Produces concentrated urine	Produces concentrated urine
(4)	Produces concentrated urine	Produces dilute urine	Produces concentrated urine

64. The given graph shows where carbohydrates, proteins and fats are digested as food moves along the different parts of the alimentary canal from J to O. Which of the following correctly identifies K, L, M and N ?



	K	L	M	N
(1)	Stomach	Small intestine	Small inestine	Large intestine
(2)	Oesophagus	Small intestine	Large intestine	Rectum
(3)	Stomach	Small intestine	Large intestine	Rectum
(4)	Oesophagus	Stomach	Small intestine	Large intestine

65. The table shows the speed at which nerve impulses travel in axons (nerve fibers) of different diameters.

Axon Type	Diameter (mm)	Speed (m/s)
A	13–20	80–120
B	6–12	35–75
C	1–5	5–35
D	0.2–1.5	0.5–2.0

A reasonable hypothesis based on these data is that as the diameter of an axon increases

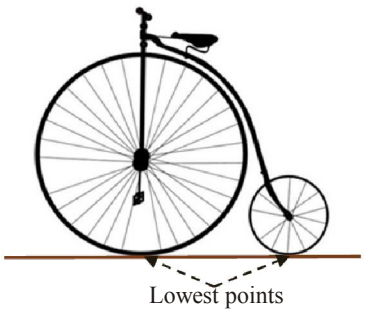
(1) the sensitivity of the nerve decreases (2) the sensitivity of the nerve increases

(3) the speed of nerve transmission decreases (4) the speed of nerve transmission increases

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.

66. The perimeter of the big wheel of this bicycle is 4.2m. The perimeter of its small wheel is 0.9m. At a certain moment, the valves of both wheels are at their lowest points. The bicycle starts rolling to the left. How many metres will the bicycle pass until both valves are at the same time at their lowest point, for the first time again?



(1) 4.2 (2) 6.3

(3) 12.6 (4) 25.2

67. One equation of a pair of inconsistent linear equations is x–3y –5 = 0, then the second equation can be

(1) 2x – 6y = 10 (2) –2x +6y = 5 (3) 3x +9y = 5 (4) x + 3y = 5

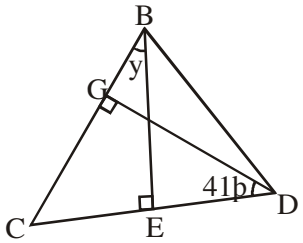
68. If α, β, be the zeroes of the quadratic polynomial $f(x) = x^2 + px + 45$ and $(\alpha - \beta)^2 = 144$, then p is equal to

(1) $p = \pm 12$ (2) $p = \pm 16$ (3) $p = \pm 18$ (4) $p = \pm 14$

69. The ratio length : breadth : thickness of the brick (used in Indus valley civilization) was found to be in the ratio of

(1) 4 : 3 : 1 (2) 4 : 3 : 2 (3) 4 : 2 : 1 (4) None of these

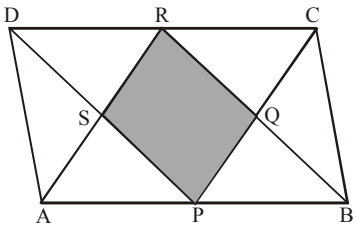
70. Consider the following figure



What is the measure of angle x?

(1) 20° (2) 30° (3) 40° (4) 50°

71. In the adjoining figure ABCD, P and R are the mid-points of the sides AB and CD. ABCD is a parallelogram. What is the ratio of the shaded to the unshaded region ?



(1) 1/2 (2) 1/3 (3) 1/4 (4) none of these

72. AB, AC are two radii of circle inclined at an angle of 60°. Upon AC a point P is taken such that a circle can be described with centre P to touch the first circle internally and also to touch the circle with AB as diameter, externally. If AB = 2 cm, then the length of AP is

(1) $\frac{4}{5}$cm (2) $\frac{8}{5}$cm (3) $\frac{3}{2}$cm (4) $\frac{4}{3}$cm

73. The base of an isosceles right triangle is 30 cm. Its area is

(1) 225 sq. cm (2) $225\sqrt{3}$ sq. cm (3) $225\sqrt{2}$ sq cm (4) 450 sq. cm

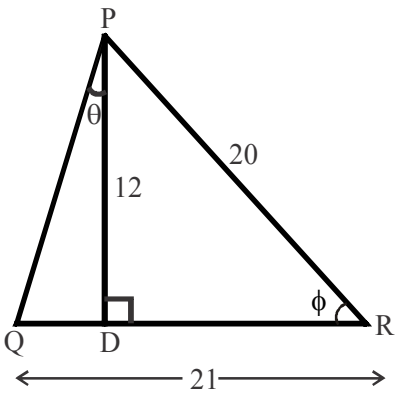
74. If the weight of a spherical shell is $\frac{7}{8}$th of what it would be if it were a solid sphere. The ratio of inner to outer radii of the shell is

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

75. From a well shuffled pack of 52 cards, three cards are drawn at random. Find the probability of drawing an ace, a king and a jack.

(1) $\frac{16}{5525}$ (2) $\frac{16}{625}$ (3) $\frac{16}{3125}$ (4) None

76. Use the information given in the following figure to evaluate : $\frac{10}{\sin\theta} + \frac{6}{\sin\phi} - 6\cot\phi$



(1) 16 (2) 20 (3) 24 (4) 28

77. The central pole of a conical tent is 3/2 m high. The pole is supported by ropes tied to its top and nails on the ground. If on the ground from the foot of the pole, the distances of the surface of the tent and the nail(s) are in the ratio of 1 : 3 and if the angles of depression from the top of the pole of the nails and the surface of the tent are in the ratio of 1 : 2, then the length of one such rope is

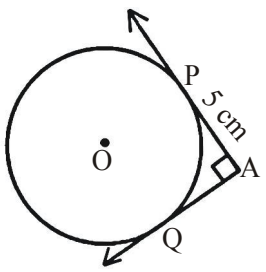
$\left(\tan 2\theta = \frac{2\tan\theta}{1-\tan^2\theta}\right)$

(1) 2 m (2) 6 m (3) $3\sqrt{2}$ m (4) 3 m

78. The mean of a set of 20 observations is 8 and of another set of 30 observations is 10. The mean of combined set is

(1) 9.2 (2) 10.8 (3) 11.2 (4) 9.8

79. In the adjoining figure, the pair of tangents AP and AQ are drawn from an external point A to a circle with centre O are perpendicular to each other. If the length of tangent AP is 5 cm, then the radius of the circle is



(1) 10 cm (2) 7.5 cm

(3) 5 cm (4) 2.5 cm

80. If x + 2a is a factor of $x^5 - 4a^2x^3 + 2x + 2a + 3$, then the value of 2a is _____

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

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Answer Key

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Class- 10th (X)

Held on : 18 October 2015

Q. No.	Ans.
1	4
2	2
3	1
4	4
5	3
6	4
7	1
8	3
9	3
10	1
11	2
12	4
13	2
14	1
15	2
16	3
17	3
18	2
19	1
20	2

Q. No.	Ans.
21	3
22	3
23	4
24	1
25	3
26	1
27	2
28	1
29	3
30	4
31	4
32	4
33	3
34	2
35	1
36	1
37	1
38	2
39	2
40	3

Q. No.	Ans.
41	2
42	2
43	4
44	1
45	2
46	3
47	2
48	4
49	1
50	4
51	1
52	3
53	3
54	1
55	3
56	4
57	4
58	3
59	3
60	2

Q. No.	Ans.
61	2
62	4
63	4
64	4
65	4
66	3
67	2
68	3
69	3
70	2
71	2
72	2
73	1
74	1
75	1
76	4
77	4
78	1
79	3
80	4

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