A Specially Designed Initiative to Encourage Young Talent by



TALLENTEX 2018 : (08, October 2017)



and the second





Answer Sheet No.

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

- This Booklet is your Question Paper. DO NOT break seal of Booklet until the invigilator instructs to do so. 1.
- Fill your TALLENTEX Roll No. & Answer Sheet No. in the space provided on the cover page. 2.
- Carefully fill your **PAPER CODE** and present **CLASS** in space provided (Serial No. 6 & 12) of optical response sheet. 3.
- Please make sure that paper you received is of your class only. 4.

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- Please make sure that the Paper Code Printed on the Test Booklet Cover Page and Inner Pages are the same. In case of 5. discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of Test Booklet.
- The Answer Sheet is provided to you separately which is a machine readable Optical Response Sheet (ORS). You have to mark your 6 answers in the ORS by darkening bubble, as per your answer choice, by using black or blue ball point pen.
- After breaking the Question Paper seal, check there are 15 pages in the booklet. This Question Paper contains 80 MCQs with 4 7. choices (Subjects: Mental ability: 1-20, Physics: 21-40, Chemistry: 41-60, Biology: 61-80 / Maths: 61-80)
 - Important: Attempt Only One Subject from Biology / Mathematics.
- 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 guestion paper after the test is over. * Fill appropriate circle of subject in column no. 12 of ORS, otherwise your ORS will be treated as invalid.

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CLASS-XI / Paper Code - W

SECTION-A : 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. If 'P\$Q' means 'P is father of Q'; 'P # Q' means 'P is mother of Q'; 'P * Q' means 'P is sister of Q', then 1. how is D related to N in N # A \$ B * D? (1) Nephew (2) Grandson (3) Granddaughter (4) Either (2) or (3) A – B means B is the child of A, A+B means B is the mother of A, $A \times B$ means A is the father of B, 2. $A \div B$ means B is the wife of A. What is the relation of Ashu with Santosh in the given equation Santosh – Dinesh \times Ashu \div Meena + Reshu (1) Grand son (2) Grand daughter (3) Cannot be determined (4) None of these 3. One evening before sunset two friends Tapan and Sapan were talking to each other face to face. If Tapan's shadow was exactly to his right side. Which direction was Sapan facing ? (1) North (2) South (3) West (4) East 4. If in a certain code language 'HORSE' is written as 'JMTQG', how would 'POWER' be coded in the same code ? (1) Q P X F S (2) N Q U G Q (4) R M Y C T (3) E M Z D S 5. In the given question three Statements I, II and III are given. You are required to find out which of the given statement (s) is/are sufficient to answer the question. Mark your answer accordingly. In which year was Tarun born? I. Tarun is 6 yr older than Robin, II. Robin's brother was born in 1982. III. Tarun's brother is 2 yr younger than Robin's brother who was 8 yr younger than him. (1) I and III (2) II and III (4) I and II (3) All I, II and III 6. Find the missing term. 24, 37, 48, 65, (?), 101 (1) 80(2) 90 (3) 92 (4) 947. How much does a watch gain or lose per day, if its hands coincide every 64 minutes? (2) $31\frac{8}{11}$ min gain (1) $32\frac{8}{11}$ min gain (3) $32\frac{3}{11}$ min gain (4) None of these



- 8. How many times in a day both the hands of a clock coincide ?
 - (1) 11 (2) 24 (3) 22 (4) 6
- 9. On what dates of April 2001 did wednesday fall ?
 (1) 4th, 11th, 18th, 24th, 31th
 (2) 4th, 11th, 18th, 25th
 - (3) 12^{th} , 18^{th} , 27^{th} , 6^{th} (4) 1^{st} , 8^{th} , 15^{th} , 22^{nd}
- **10. Direction :** The following question is based on a solid cube which has been shaded as shown on pairs of opposite faces.



How many small cubes are there in the middle layer?

(1) 6 (2) 8 (3) 9 (4) 12

11. Observe the dots on a dice (one to six dots) in the following figures. How many dots are contained on the face opposite to that containing four dots ?



(1) 2
 (3) 6

- (4) Cannot be determined
- **12. Direction:** The figure given below is folded to form a box. Choose the box that is similar to the box formed from the given alternatives.



13. 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 more than one coloured face each ?

(1)
$$40$$
 (2) 36 (3) 44 (4) None of these

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- 14. Choose the correct mirror image of the given figure from amongst the four alternatives.





- **15.** A group of 630 children is arranged in rows for a group photograph session. Each row contains three fewer children than the row in front of it. What number of rows is not possible ?
 - (1) 3 (2) 4 (3) 5 (4) 6
- **16.** In a certain code language

"Al kin par" means "he is good". "Kin te pie" means "good and bad" and "lin pie par" means nobody is bad. So which word stands for 'nobody' in the same language?

- (1) Kin (2) Pie (3) Lin (4) Te
- 17. How many rectangles are there in the following figure?

(2) 66

(1) 34

(3) 98

(4) 100

18. Take the given statements as true and decide which of the conclusions logically follow from the statements

Statements : All the cats are rats.

Some dogs are rats.

Conclusions :

- (I) All the cats are dogs.
- (II) Some dogs are cats.
- (1) Only (I) conclusion follows
- (3) Either (I) or (II) follows

- (2) Only (II) conclusion follow
- (4) Neither (I) nor (II) follows

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19. Take the given statements as true and decide which of the conclusions logically follow from the statements
Statements :

(i) No magzine is cap.
(ii) All caps are camera.

Conclusion :

(i) No camera is magzine
(ii) Some camera are magzine.

(1) Only (i) conclusion follows (2) Only (ii) conclusion follows

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(3) Either (i) or (ii) follows (4) Neither (i) or (ii) follows

20. How many 4's are there preceded by 7 but not followed by 3? 5 9 3 2 1 7 4 2 6 9 7 4 6 1 3 2 8 7 4 1 3 8 3 2 5 6 7 4 3 9 5 8 2 0 1 8 7 4 6 3

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

SECTION-B : **PHYSICS**

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

- 21. A car is going from one city to another city by travelling 75 km North, 60√2 km North-West and 60 km East. The minimum distance between the two cities is :
 (1) 135 km
 (2) 137 km
 (3) 140 km
 (4) 170 km
- **22.** Block 'A' is hanging from a vertical spring and is at rest. Block 'B' strikes the block 'A' with velocity 'v' and sticks to it. Then the value of 'v' for which the spring just attains natural length is:



- 23. In a new system of units, unit of mass is 5 kg, unit of length is 2 m and unit of time is 10sec. Value of 5N in new system of units is
 - (1) 30 (2) 40 (3) 50 (4) 60
- 24. A heavy plank of length 10 m is moving with constant velocity of 10 m/s. A particle is projected from point A with minimum possible velocity u wrt plank so that it collides the another end B. The magnitude of velocity of particle wrt ground at the time of projection is



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25. Block A of mass m is moving with speed V_0 on a frictionless surface that ends in a rigid wall as shown in figure. Farther from the wall is a more massive block B of mass $M = \alpha m (\alpha > 1)$, initially at rest. The block A undergoes elastic collision with the block B and the wall. Condition on α for which the two blocks will undergo only one collision is :-

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(1) 50 m



27. A 1000 kg rocket is to be lunched with an initial upwards speed of 50.0 m/s. In order to assist its engines, the engineers will start it from rest on a ramp that rises 53° above the horizontal figure. At the bottom, the ramp turns upwards and launches the rocket vertically. The engines provide a constant forward thrust of 2000 N, and friction with the ramp surface is a constant 5000 N. How far from the base of the ramp should the rocket start, as measured along the surface of the ramp ?



28. In the figure shown, mass of person is 40 kg and mass of plank is 20 kg. If person starting from end A reaches the other end B of the plank in 2 seconds with constant velocity, then find the velocity of person (w.r.t. ground).Initially the system was at rest.



(3) 200 m

(2) 100 m

(4) 500 m

30. Let two particles 1 and 2 are connected by an inextensible string. If $v_1 = 10$ m/sec then find v_2



(1) 5 m/sec (2) 10 m/sec (3) $5\sqrt{3}$ m/sec (4) $5\frac{\sqrt{3}}{2}$ m/sec

31. A small ball is projected up a smooth inclined plane with an initial speed of 9.8 m/s along the direction at 30° to the bottom edge of the slope. It returns to the edge after 2 s. The ball is in contact with the inclined plane throughout the process. What is the inclination angle of the plane?



32. The centre of mass of a non uniform rod of length L whose mass per unit length λ varies as $\lambda = \frac{k \cdot x^2}{L}$ where k is a constant & x is the distance of any point from one end, is (from the same end)

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

33. Windshield of the given car is inclined at an angle 60° with it's floor. Rain is falling vertically down wards with speed 10 m/s then speed of the car so that rain drops hit the windshield perpendicularly is



34. The displacement of a body of mass 2 kg is given as $S = t^2 - 6t$. Magnitude of work done on it in last second of motion before stop-

(1) Zero
(2) 1J
(3) 4J
(4) 36J
35. The amount of heat produced in an electric circuit depends upon the voltage (V), resistance (R) and time (t). If the error made in the measurements of the above quantities are 1%, 2% and 1% respectively then the maximum possible error in the total heat produced will be

(1) 5%
(2) 6%
(3) 0%
(4) 1%

36. A ball is thrown vertically upward. Which graph represents speed-time graph of ball during its flight (air resistance neglected) :



- **37.** Potential energy of a pendulum of mass 1kg is given as $PE = 2x x^2$. Mechanical energy of pendulum is 3J. The velocity of pendulum at mean position is-(1) Zero (2) 1 m/s (3) 2 m/s (4) 3 m/s
- **38.** A car is moving uniformly on a road and a dog suddenly appears at t = 0 in front of the car at a distance d m. When the driver sees the dog, he brakes the car immediately. The following is the velocity-time graph of car. The car stops at a distance 1 m from the dog. Find d.



(1) 22 m	(2) 15 m	(3) 29 m	(4) 28 m
The spring constant	of spring is 100 N/m	The notential energy st	tored in spring is

39. The spring constant of spring is 100 N/m. The potential energy stored in spring is-



40. A particle start from rest from origin with constant acceleration a m/s², after $\frac{1}{a}$ sec another particle

start with constant speed u m/s in same line to catch the first particle, find the minimum value of 'u' so that first particle can be caught by the second particle.

- (1) 2 m/s (2) 4 m/s
- (3) 1 m/s

(4) Depends on the value of 'a'

SECTION-C : CHEMISTRY

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

41.	The maximum speed of moving electron havin	g its de-broglie wavelength in visible range is-
	(Given visible range 400 nm - 700 nm) (Take l	$n = 6.6 \times 10^{-34} \text{ J-s}$
	(1) 1.1×10^3 m/s	(2) 1.8×10^4 m/s
	(3) 1.1×10^4 m/s	(4) 1.8×10^3 m/s

42. Iron forms two oxides, in first oxide 56 gram of Iron is found to be combined with 16 gram oxygen and in second oxide 112 gram of Iron is found to be combined with 48 gram oxygen. This data satisfy the law of -

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- (1) Conservation of mass (2) Reciprocal proportion
- (3) Multiple proportions (4) Combining volume
- 43. Give the correct order of initials True (T) or False (F) for following statements. (I) Number of electrons having l = 0 is 10 in Pd.
 - (II) The value of Z_{eff} for 3d electron of Cr & 3d electron of Mn is same as number of electrons in 'd' subshell of Cr & Mn are same.
 - (III) Spin multiplicity of Fe is equal to Ni^{2+} .

(IV) Value of $\left(\frac{\ell}{n}\right)$ for last electron of element having atomic number 57 is 0.4. (1) T T T T (2) F T T T (3) T F T F (4) F F F T The element having highest percentage by weight in $Fe_2(SO_4)_3$ is : 44. (At.wt. Fe = 56, S = 32, O = 16) (1) Fe (2) S (3) O(4) cannot say **45**. The ionic radius of Cr is minimum in which of the following compounds -(1) CrF_{3} (2) $CrCl_3$ (3) Cr_2O_3 (4) K_2CrO_4 The compressibility factor of a gas is less than unity at 1 atm and 273 K. Therefore, **46**. (1) $V_m > 22.4 L$ (2) $V_m < 22.4 L$ (3) $V_m = 22.4 L$ (4) $V_m > 44.8 L$ 47. A gaseous hydrocarbon X was burnt in excess of oxygen. A 0.112 dm³ sample of X, at 1atm & 273K gave 0.88 gm of CO₂. Number of C-atoms in one molecule of X are -(1) 1(2) 2(3) 3 (4) 4X ml of He gas effuses through a hole in a container in 10 seconds. The time taken for the effusion of **48**. the same volume of gas specified below under identical conditions is/are-(1) 20 seconds : CH_4 (2) 28.28 seconds : O_2 (3) 40 seconds : SO_2 (4) All of the given are correct. The ionization potential IP_1 , IP_2 , IP_3 , IP_4 and IP_5 of an element are 7.1, 14.3, 34.5, 46.8, 162.2 eV **49**. respectively. The element is likely to be (3) F (1) Na (2) Si (4) Ca 50. The ionization energy of hydrogen atom (in the ground state) is x kJ. The energy required for an electron to jump from 2nd orbit to the 3rd orbit will be (3) 7.2x(4) 5x/36(1) x/6(2) 5xThe amount of energy released for the process $X_{(g)}$ + $e^{-} \rightarrow X^{-}_{\ (g)}$ is minimum and maximum 51. respectively for (a) F (b) Cl (c) N (d) B Correct Answer is -(1) c & a (2) d & b (3) a & b (4) c & b

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52. The portion of orbital diagrams representing the electronic configuration of certain elements shown below. Which of them violate Pauli's Exclusion principle?



- (1) the mass of all the gases is same
- (2) the pressure of all the gases is same but temperature is different
- (3) temperature and pressure of all the flasks are same
- (4) temperature, pressure and masses same in the flasks

- 58. Which of the following contains an atom that does not obey the octet rule ?
 - (1) HBr (2) CO_2 (3) CIF_3 (4) $IC\ell$
- **59.** If for two gases having different molecular weight M_A and M_B at different temperatures T_A and T_B , $T_A M_B = T_B M_A$, then which property has the same magnitude for both the gases ?
 - (1) Density (2) Pressure
 - (3) Kinetic energy per mole (4) Root mean square speed
- **60.** Sodium carbonate crystals lose water molecules on exposure to atmosphere. The related property is called :-
 - (1) deliquescence (2) fluorescence (3) efflorescence (4) luminescence

Attempt any one of the Section-D (Biology) OR Section-E (Mathematics) SECTION-D : BIOLOGY

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. Blood groups in human beings are due to presence of :
 - (1) Specific antigens in blood plasma.
 - (2) Specific antibodies on the surface of RBCs.
 - (3) Specific antibodies dissolved in blood plasma.
 - (4) Specific antigens on surface of *Erythrocytes* and their corresponding antibodies dissolved in blood plasma.
- 62. The most important feature of all living system is to-
 - (1) Produce gametes (2) Replicate the genetic information
 - (3) Utilize oxygen to generate energy (4) Utilize solar energy for metabolic activities
- 63. Find out all the proteins that make eukaryotic flagellum ?
 - (1) Tubulin, Nexin, Dynein and flagellin.
 - (3) Nexin, Tubulin and Flagellin
- (2) Dynein, Tubulin and Nexin
- (4) Actin, Myosin, Dynein, Nexin and Tubulin
- **64.** 'A' and 'B' are sister cells. 'A' is enucleated and is the main conducting element for the transport of sucrose. 'A' and 'B' in *Indigofera* are
 - (1) Vessels and companion cells
 - (3) Sieve tube members and companion cells (4) Sie
- **65.** Match the following:

	Class		Characters
a.	Reptilia	(i)	Usually viviparous
b.	Aves	(ii)	Oviparous with non-cleidoic eggs
c.	Chondrichthyes	(iii)	Bony plates
d.	Amphibia	(iv)	Keel

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

- (2) Sieve cells and albuminous cells
- (4) Sieve tubes and albuminous cells

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

66.	Which one of the fo	ollowing is an exalbumin	ous seed?						
	(1) Wheat seed	(2) Maize seed	(3) Castor seed	(4) Pea seed					
67.	Life span of organis	sms depends on :							
	(1) The size and shape of organisms.								
	(2) Genetic make up and surroundings of organisms.								
	(3) Surroundings an	d type of food of organis	sms.						
	(4) Cellular organis	ation and type of reprodu	iction.						
68.	Number of malpigh	ian tubules in cockroach	ı is–						
	(1) 10–20	(2) 20–40	(3) 6-8	(4) 100–150					
69.	Which of the follow	ving statement is/are corre	ect for Sepia ?						
	(i) Closed type of c	irculatory system							
	(ii) Having metame	ric segmentation.							
	(iii) Body is protect	ed by internal shell made	up of calcium carbonate	2					
	(iv) Feather like gill	ls are present as a respira	tory organ.						
	(1) Only (i), (iii) and	d (iv)	(2) Only (i), (ii) and	(iii)					
	(3) Only (iii) and (i	v)	(4) Only (iii)						
70.	Cells which are not	dividing are likely to be	at–						
	(1) G ₁	(2) S	(3) G ₂	(4) G ₀					
71.	Read the given stat	ement carefully and give	the answer :-						
	(A) Phellem, phello	(A) Phellem, phellogen and phelloderm are collectively called periderm							
	(B) Bark is a non-technical term that refers to all tissues interior to vascular cambium								
	 (C) In dicot stem vascular cambium is completely secondary in origin (D) Monopole and dicots differ in type, number and location of vascular bundles 								
	Ontion ·								
	(1) A. C - correct :	B. D - incorrect	(2) A. B - correct :	C. D - incorrect					
	(1) A, D - correct :	B, C - incorrect	(4) B. C - correct :	A . D - incorrect					
72.	Which of the follow	ving statement is incorre	ect?	,					
	(1) Small cells are metabolically active as they have higher surface area : volume ratio								
	(2) A large cell has lower nucleocytoplasmic ratio.								
	(3) The volume of	the cell determines the ar	nount of absorption and	the amount of release of waste					
	products by the	products by the cell, whereas, the surface are determines the amount of chemical activity of cells							
	per unit time.								
	(4) A large cell has smaller cell	proportionately smaller	surface and a higher vol	ume : surface area ratio than a					
73.	Select the correct st	atement about S phase :-							
	(1) (1)	c 11 1		1					

(1) Shortest phase of cell cycle.

- (2) DNA in the cell does not replicate.
- (3) Amount of DNA per cell doubles.
- (4) All of the above.

74. Which is the characteristic of nerve cord in nonchordate, animals ? (1) Single and without gangila (2) Double, ventral and commonly with ganglia (3) Single, dorsal and without ganglia (4) Double, dorsal and commonly with ganglia 75. Male cockroach differs from female cockroach in having-(1) Antennae (4) Anal styles (2) Labrum (3) Maxillae 76. An Indian class X student is evolutionarily most related to (1) A Chinese snake (2) An African buffalo (3) An Indian frog (4) An Australian pigeon 77. Given below are four statements (A-D) regarding cell structure's (A) Chloroplast is a smaller cell organelle of all living cells and involved in O₂, CO₂ balancing in nature. (B) Ribosomes are membrane bound 'organelle within an organelle' and are found in mitochondria, plastids and E.R. (C) Chromatin is a complex of DNA, Histones, RNA and Non-Histones. (D) Chloroplast is not included in endo-membrane system of cell. Which of the above two statements are incorrect ? (1) A, B (2) A, D (3) C, D (4) A, C Which of the following animal species is terrestrial? 78. (1) Cuttle fish (3) Silver fish (4) Sea horse (2) Jelly fish During cell division, the spindle fibres attach to the chromosome at a region called-79. (1) Centriole (2) Chromosome (3) Kinetochore (4) Chromomere 80. About how many times does the nymph of the Periplaneta americana undergoes moulting before becoming an adult? (1) 4(2) 2(3) 17 (4) 13 **SECTION-E : MATHEMATICS** This section contains 20 Multiple Choice Questions. Each question has four choices (1), (2), (3) and (4) out of which ONLY ONE is correct.

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61. A recursive pattern for $\{a_n\}$ is defined as $a_{n+1} = a_n^2 + a_n$ for $n \in \mathbb{N}$. If $a_1 = 2$, then the sum of $6 \times \sum_{n=1}^{\infty} \frac{1}{a_{n+1}}$

is equals to (1) 2 (2) 3 (3) 4 (4) 0

62. Let α , β be the roots of the equation $x^2 - 5x + r = 0$ and $\frac{\alpha}{3}$, 3β be the roots of the equation $x^2 - 3x + r = 0$, then the value of r is -

(1) $\frac{9}{4}$ (2) $\frac{4}{9}$ (3) $\frac{5}{4}$ (4) $\frac{4}{5}$

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63.	The number of integral values of x satisfying $\sqrt{-x^2 + 10x - 16} < x - 2$ is									
	(1) 0	(2) 1	(3) 2	(4) 3						
64.	Let α_i , $i = 1, 2, 3, 4$ be the roots of $z^4 - 2z^3 + z^2 + z - 7 = 0$ then $\prod_{i=1}^4 (\alpha_i^2 + 1)$ is equal to									
	(1) 56	(2) 57	(3) 58	(4) 59						
65.	If α is the solution of the equation $\sqrt{\sin x} + 2^{\frac{1}{4}} \cos x = 0$ then the value of $\tan^{50} \alpha + \cot^{51} \alpha$ is									
	(1) 2	(2) 1	(3) 0	(4) 101						
66.	If the vertices P and Q of a triangle PQR are given by (2, 5) and (4, -11) respectively, and the point R moves along the line N : $9x + 7y + 4 = 0$, then the locus of centroid of triangle PQR is :									
	$(1) \ 27x + 21y + 8 = 0$		$(2) \ 27x - 21y + 8 = 0$							
	(3) $21x + 27y - 8 = 0$	1	(4) 27x + 21y - 8 = 0	alle terre and distinct a sinte						
0/.	If straight line $y = 2x + $ then number of integral	- K cuts the circle 4x ⁻ + 4y	$7^{-} - 4x - 8y - 15 = 0$ exa	ictly two real distinct points,						
	(1) 11	(2) 10	(3) 9	(4) 8						
(0			· · · · · · · · · · · · · · · · · · ·	(/						
08.	The possible solution s	set of x which satisfy th	equation (x-1)(x-2)	(x-3) = x - 2x - 1 :						
	(1) (2, 3)	(2) [1,2]	$(3) (-\infty, 1)$	(4) [-2, 0)						
69.	The smallest integral value of k for which the equation $(k^2 - k + 11)x^4 - (2k + 1)x^2 + 1 = 0$ has at least									
	(1) 1	(2) 2	(3) 3	(4) 4						
70.	For each positive intege	er m, the curve $y = (m^2 + m^2)$	$m)x^2 - (2m + 1)x + 1c$	cuts the x-axis at two points.						
		•	10	•						
	If d_m denotes the distant	nce between the two point	s then the value of $\sum_{m=1}^{10} d_r$	_n , is						
	(1) $\frac{11}{10}$	(2) $\frac{10}{11}$	$(3) \frac{11}{20}$	(4) $\frac{20}{11}$						
	10		20							
71.	Equation of tangent to x	$x^2 + y^2 - 4x - 4y - 1 = 0$	from point $(5, 8)$ is -	(4) x + x - 2 = 0						
72	(1) $x + y + 3 = 0$ Let the controid and the	(2) $x - y - 5 = 0$	(5) $X = 3$	(4) $x + y - 5 = 0$ 1) and (2, 0) respectively. If						
12.	the points H H H H	F represent the orthocentr	es of $AABC$ AHBC AH	CA and $AHAB$ respectively.						
	the points $\Pi_1, \Pi_1, \Pi_2, \Pi_3$	AHHH is		CA and MIAD respectively,						
	and the orthocolitie of	<u> </u>								
	(1) (1, 2)	(2) (0, 3)	(3) (0, 0)	$(4)\left(\frac{3}{2},\frac{3}{2}\right)$						
73.	If x, y satisfies 2x – y <	$\leq 0, \ 3x + y \leq 10 \ \text{and} \ x \geq 0$	0, then maximum value o	f 9x + 2y is -						
	(1) 15	(2) 32	(3) 26	(4) 18						

74. If the line $y = \sqrt{3}x$ cuts the curve $x^3 + y^3 + 3xy + 5x^2 + 3y^2 + 4x + 5y - 1 = 0$ at the points A, B, C, then OA. OB. OC is equals to(where O is the origin):-

T**ALLEN**TEX

- (1) $\frac{4}{13} \left(3\sqrt{3} 1 \right)$ (2) $\left(3\sqrt{3} + 1 \right)$ (3) $\frac{2}{\sqrt{3}} + 7$ (4) None
- **75.** Let $a, b \in \mathbb{R}^+$ and $2ab^3 + a^2b^3 + b^3 = 243$. If 2a + 3b + 2 assumes its least value, then a + b is equal to -(1) 1(2) 2(3) 4(4) 5
- 76. Area of region enclosed by locus of z given by $\operatorname{Arg}(z + i) \operatorname{Arg}(z i) = \frac{2\pi}{3}$ and imaginary axis is (where $i = \sqrt{-1}$)-
 - (1) $\frac{2\pi}{9} \frac{1}{\sqrt{3}}$ (2) $\frac{4\pi}{9} \frac{1}{\sqrt{3}}$ (3) $\frac{2\pi}{9} \frac{2}{\sqrt{3}}$ (4) $\frac{4\pi}{9} \frac{2}{\sqrt{3}}$
- 77. Circles are drawn passing through the origin O to intersect the co-ordinate axes at point P and Q such that mOP + n.OQ = k, (where m, n & k are fixed non-zero constants), then the fixed point which always lies on circle, is :
 - (1) (m,n) (2) $\left(\frac{m^2}{k}, \frac{n^2}{k}\right)$
 - $(3) \left(\frac{mk}{m^2 + n^2}, \frac{nk}{m^2 + n^2}\right) \tag{4} (k, k)$
- **78.** If $\frac{2\sin\alpha}{\{1+\cos\alpha+\sin\alpha\}} = y$, then $\frac{\{1-\cos\alpha+\sin\alpha\}}{1+\sin\alpha}$ is equals to : (1) 1/y (2) y (3) 1-y (4) 1+y
- 79. Modulus of non-zero complex number z satisfying $\bar{z} + z = 0$ and $|z|^2 4zi = z^2$ is equal to
 - (1) 4 (2) 1 (3) 2 (4) 3

80. If the equation of a circle is $ax^2 + (2a - 3)y^2 - 4x - 1 = 0$ then its centre is

(1) (2, 0) (2) $\left(\frac{2}{3}, 0\right)$ (3) $\left(-\frac{2}{3}, 0\right)$ (4) None of these



SPACE FOR ROUGH WORK

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ANSWER KEY : 08-10-2017 CLASS – XI COI										COD	E : W				
Q.No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	1	2	4	3	1	1	3	2	3	1	4	3	3	4
Q.No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	3	4	4	3	1	1	2	3	2	1	2	1	1	2	2
Q.No.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	4	1	1	3	1	1	3	3	4	1	4	3	4	3	4
Q.No.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	2	4	4	2	4	2 or 4	1	2	3	4	1	3	3	4	3
Q.No.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ans.	4	2	2	3	3	4	2	4	1	4	3	3	3	2	4
Q.No.	76	77	78	79	80	61	62	63	64	65	66	67	68	69	70
Ans.	2	1	3	3	4	В	1	4	3	3	4	3	2	В	2
Q.No.	71	72	73	74	75	76	77	78	79	80					
Ans.	3	2	3	1	4	2	3	2	3	2					