CENTRE:								TIME: 09.00 a.m. 1.00 p.m.
	BM	DA	GR	T-	17	O-	GN	A

DATE:	0	4	1	1	2	0	1	8	Test Booklet No.

EXAM SEAT NO. :	3	6	1	9	0	0	0	7	2	8	2
EXAM SEAT NO. (in words)	three	six	one	nine	zero	zero	zero	seven	two	eight	two

NATIONAL TALENT SEARCH EXAMINATION 2018 (STD. X)

Instructions to the Candidates:

1) PART I Mental Ability Test Time 120 Minutes Maximum Marks 100

   PART II Scholastic Aptitude Test Time 120 Minutes Maximum Marks 100

2) Write your Seat No. both in figures and in words on this Question Booklet (above) as Well as on the Answer Sheet supplied to you.

3) Each question carries one Mark.

4) All questions are compulsory.

5) You have to mark your answers on Answer sheet provided with the Question Booklet. Each question is provided with four alternatives. Answer to each question is to be indicated by **encircling** the number of the correct alternative in the Answer sheet from amongst those given against the corresponding question in the Question Booklet.

6) The answer sheet have two parts:

   PART-I Mental Ability Test, PART II Scholastic Aptitude Test. Answers to questions of MAT (PART-I) are to be indicated in PART I Portion of the Answer Sheet. Answers to questions of SAT (PART–II) are to be indicated in PART–II portion of the Answer Sheet.

7) Rough work can be done any where in the question booklet.

Please Note the Centre Codes:

1.	Bicholim	0001
2.	Bardez	0002
3.	Pernem	0003
4.	Sattari	0004
5.	Tiswadi	0005
6.	Ponda	0006
7.	Salcete	0007
8.	Sanguem	0008
9.	Canacona	0009
10.	Quepem	0010
11.	Dharbandora	0011
12.	Mormugao	0012

128 JEO

128 JEO

Mental Ability Test

Std. X

Q Identify the missing number in the following sequence

5, 13, 41, 85, ?, 221 ,313

(1) 163 (2) 179 (3) 145 (4) 147

Q If $\frac{56}{31} = 10$ and $\frac{48}{18} = 4$ then $\frac{64}{16}$ _____

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

Q If $AR = 36$, $CM = 78$, $GP = 224$,then ES = _____

(1) 364 (2) 150 (3) 190 (4) 320

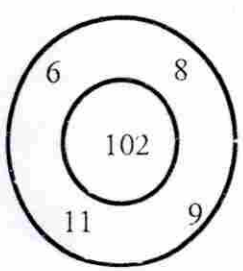
Q Boy facing east turned left and run 200 metres then turn left and run 200 metres and take turn 45° towards right and went straight to cover 350 metres. Now boy is in which direction from starting point?

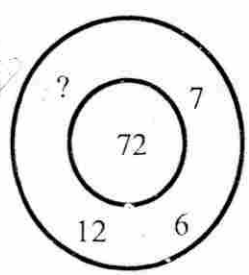
(1) North-East (2) North-West (3) South-East (4) South-West

Q In a basket the number of apples is five times the oranges and the number of bananas is six times the oranges. Which of the following can be the number of total fruits in the box ?

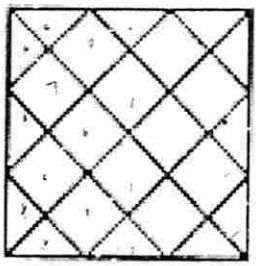
(1) 156 (2) 200 (3) 140 (4) 136

Q Find the missing number in the second figure on the basis of the number arranged in the first figure.





(1) 10 (2) 46 (3) 12 (4) 36

Q. 7	Rakesh has 6 friends to invite.In how many ways can he send invitation cards to them, if he has three servants to carry the cards? (1) 156 (2) 243 (3) 18 (4) 729
Q. 8	Find the number of triangles in the figure.  (1) 28 (2) 32 (3) 36 (4) 40
Q. 9	How many lines of symmetry does a hendecagon have? (1) 13 (2) 7 (3) 9 (4) 11
Q. 10	A candidate attempted 12 questions and secured full marks in all of them. If he obtained 60% in the test and all questions carried equal marks, then what is the number of questions in the test? (1) 20 (2) 25 (3) 36 (4) 42
	Directions:- (Q. No.:- 11-14) In each of the following questions there are some blanks given. Choose from the options the set of letters that best completes the given series
Q. 11	a _ c b c a _ a b _ b c _ c a c a b a b c (1) cbab (2) bcab (3) baba (4) ccca
Q. 12	9 9 9 5 _ 9 _ 9 5 _ 5 (1) 9595 (2) 5559 (3) 9995 (4) 5959

Q. 13	I I DII I I I II IIII D (1) IIID (2) IDID (3) DDDI (4) DIDI
Q. 14	WATCH:110::TIME:_____ (1) 112 (2) 54 (3) 68 (4) 94
Q. 15	Two people run around circular track and take 42 sec and 30 sec to make one complete round. If they start together after how much amount of time will they meet again in the same place? (1) 3min 30sec (2) 3min 20sec (3) 4min 30sec (4) 4min 20sec
Q. 16.	At noon and at midnight the long and short hands of the clock are together. Between noon and midnight how many times the long hand overtakes the short hand? (1) 12 (2) 11 (3) 10 (4) 9
Q. 17	Which of the following alternative will fit in place of T? 642, 1003, 1415, 1967, T, 32413 (1) 2569 (2) 2568 (3) 25611 (4) 25610
Q.18	Find the odd one out of the following terms FH144, KM 429, JL360, IK198 (1) FH144 (2) KM 429 (3) JL360 (4) IK198
Q.19	The calendar for the year 1993 will be same for the year: (1) 2004 (2) 1992 (3) 1998 (4) 2003
Q. 20	A watch which gains 5 seconds in 3 minutes was set right at 7 a.m. In the afternoon of the same day, when the watch indicated quarter past 4 o'clock, the true time is: (1) $59\frac{7}{12}$ min past 3 (2) 4 pm (3) $58\frac{7}{11}$ min past 3 (4) $2\frac{3}{11}$ min past 4

Q. 21 What was the day of the week on 28th May, 2006

(1) Thursday (2) Friday (3) Saturday (4) Sunday

Q. 22 A person needs to find the fastest two horses from 25 horses in a month .Only a race of 5 horses can be conducted at a time. What is the minimum number of races to be conducted to determine the fastest two?

(1) 7 (2) 6 (3) 5 (4) 10

Directions:- (Q. No.:-23-24)

Q. 23 Find from the alternative the number which will replace the question mark (?)

25	13	229
24	16	161
18	16	35
19	13	?

(1) 218 (2) 115 (3) 58 (4) 97

Q. 24

15 G	L	7 O
9 Y	R	25 I
?	P	13 Q

(1) 17 Q (2) 17 M (3) 17 R (4) 17 N

Q. 25 In a class there are 40 students out of which 30 are 10 years old and out of the remaining 50% are 11 years old.20% of the remaining are 12 years old and remaining students are 13 years old. What is the average age of the class?

(1) 11.50 (2) 12.25 (3) 10.475 (4) 14

Q. 26 Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn is not multiple of 3 and 5?

(1) 1/20 (2) 11/20 (3) 9/20 (4) 19/20

Q. 27 Ramesh was asked how many balls he had in a box. He replied that there were all tennis balls but dozen, all cricket ball but dozen and all TT balls but dozen. How many balls had he in all?

(1) 24 (2) 12 (3) 18 (4) 30

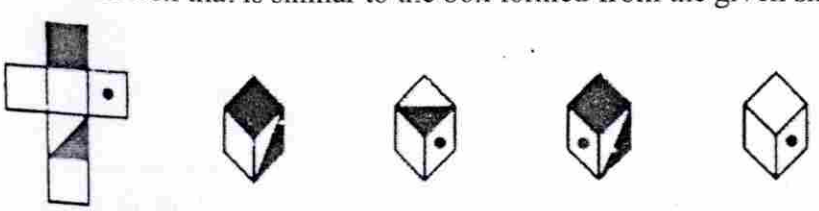
Q. 28 A five-digit number is formed by using digits 1, 2, 3, 4 and 5 without repetition. What is the probability that the number is divisible by 4?

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

Q. 29 Four dice are thrown simultaneously. Find the probability that all of them show the same face.

(1) 1/216 (2) 1/36 (3) 1/54 (4) 1/72

Q. 30 Choose the box that is similar to the box formed from the given sheet of paper (X).



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

(1) 1 and 3 only (2) 2, 3 and 4 only (3) 2 only (4) 3 and 4 only

Directions:- (Q. No.:- 31-33)
P, Q, R, S, T, U, V and W are sitting round the circle and are facing the centre:

P is second to the right of T who is the neighbour of R and V.

S is not the neighbour of P.

V is the neighbour of U.

Q is not between S and W. W is not between U and S.

Q. 31 Which two of the following are not neighbours?

(1) RV (2) UV (3) RP (4) QW

Q. 32 Which one is immediate right of V?

(1) P (2) U (3) R (4) T

Q. 33 Which one of the following is correct?

(1) P is to the immediate right of Q (2) R is between U and V (3) Q is to the immediate left of W (4) U is between W and S

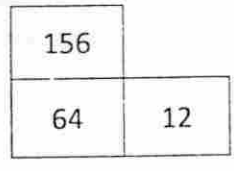
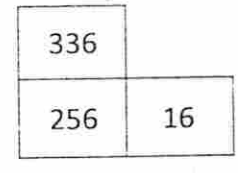
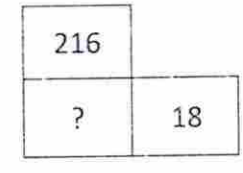
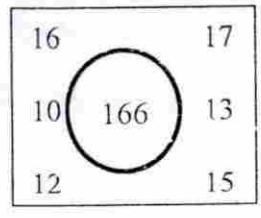
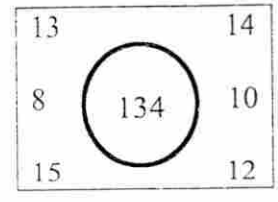
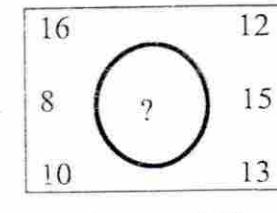
Q. 34 Integer y on dividing by 3 leaves remainder 2, on dividing by 5 leaves remainder 3 and on dividingby 7 leaves remainder 5.What could be the minimum value of the integer y from the following options?

(1) 36 (2) 68 (3) 136 (4) 56

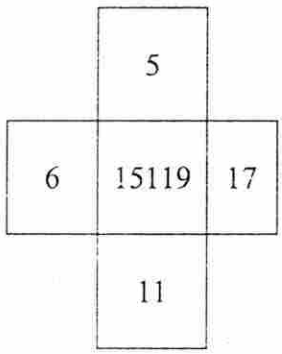
Directions:- (Q.No:- 35-37)
If $\geqslant$ stands for $+$, $\leqslant$ stands for $-$, $+$ stands for $\div$, $\wedge$ stands for $\times$, $-$ stands for $=$, $\times$ stands for $>$ and $=$ stands for $<$, then which of the following statement is correct in each question

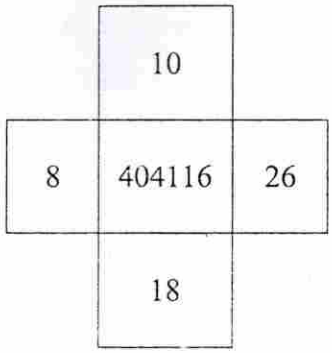
Q. 35 (1) $7 + 7 > 4 = 3$ (2) $8 > 8 < 8 + 8 = 17$ (3) $14 < 14 + 14 = 13$ (4) $6 \wedge 6 > 6 + 6 = 6$

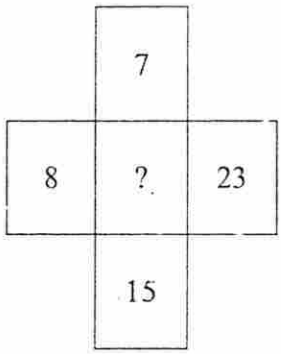
Q. 36 (1) $2 > 4 < 8 \wedge 6 = 32$ (2) $8 > 8 < 6 > 6 = 18$ (3) $6 \wedge 6 > 4 \wedge 4 > 2 \wedge 6 \wedge 4 = 104$ (4) All of the above

Q. 37	(1) $52 < 24 > 28 < 26 - 4 \wedge 5 > 1$ (2) $88 \div 4 > 4 + 4 \times 7 \wedge 2 \wedge 2 > 3 \wedge 2$ (3) $19 > 14 \wedge 2 < 46 + 2 = 25$ (4) $3 \wedge 10 < 5 > 4 < 7 \times 8$
Q. 38	Amar is at 10^{th} position from top position in a class of 40 students. There are 5 students between Amar and Archita.How many students may be there between Archita and last student in the class? (1) 13 or 27 (2) 24 or 36 (3) 23 or 17 (4) 22 or 18
Q. 39	In a certain code, "REASON" is coded as 8,"BELOVED" is coded as 9.How would "GOVERNMENT" be coded? (1) 16 (2) 14 (3) 10 (4) 12
Q. 40	At what angle are the hands of a clock inclined at 30 minutes past 6? (1) 30° (2) 15° (3) 45° (4) (7.5)°
Q. 41	**Directions:- (Q. No.:- 41-44)** The numbers in the first two figures are according to some order. Choose the correct answer from the alternatives and write at the place of question mark(?) for third figure    (1) 64 (2) 49 (3) 81 (4) 196
Q. 42	   (1) 208 (2) 314 (3) 510 (4) 145

Q. 43

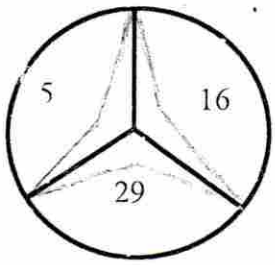


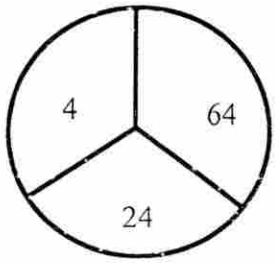


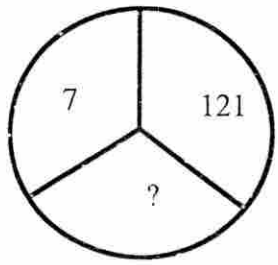


(1) 45281 (2) 33648 (3) 28141 (4) 13243

Q. 44







(1) 60 (2) 45 (3) 42 (4) 14

Q. 45 In a school 40 girls have registered for singles badminton tournament. Each match eliminates one player. How many matches are to be played to determine the champion?

(1) 36 (2) 39 (3) 40 (4) 20

Directions:- (Q. No.:- 46-47)

Each of these questions is based on the following information:

M % N means M is the son of N.

M @ N means M is the sister of N.

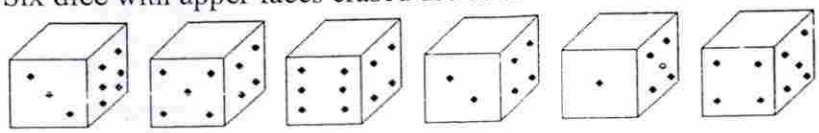
M $ N means M is the father of N.

Q. 46 Which of the following shows the relation that C is the granddaughter of E?

(1) C % B $ F $ E (2) B $ F $ E % C (3) C @ B % F % E (4) E % B $ F $ C

Q. 47 Which of the following shows the relation that S is the father of Q?

(1) S @ P $ Q (2) Q @ P % S (3) Q $ S @ P (4) None of these

Q. 48	In a group of buffaloes and ducks the numbers of legs are 24 more than twice the number of heads. What is the number of buffaloes in the group? (1) 6 (2) 18 (3) 12 (4) 24
Q. 49	A sum of Rs.1890 has to be used to give 9 prizes to the customers of a super market for their overall academic purchases. If each prize is Rs.30 less than its preceding price, what is the least value of the price ? (1) 90 (2) 95 (3) 85 (4) 80
Q. 50	In a cricket match, five batsmen P, Q, R, S and T scored an average of 36 runs. S Scored 5 more than T; T scored 8 fewer than P; Q scored as many as S and T combined; and Q and R scored 107 between them. How many runs did T score ? (1) 20 (2) 29 (3) 28 (4) 24
Q. 51	A man fills a basket with eggs in such a way that the number of eggs added on each successive day is the same as the number already present in the basket. This way the basket gets completely filled in 24 days. After how many days the basket was 1 / 4th full? (1) 27 (2) 22 (3) 26 (4) 32
Q. 52	A person has 4 coins each of different denomination. What is the number of different sums of money the person can form (using one or more coins at a time)? (1) 16 (2) 18 (3) 15 (4) 20
	Directions:- (Q.No:- 53-55) Six dice with upper faces erased are as shows.  (I) (II) (III) (IV) (V) (VI) The sum of the numbers of dots on the opposite face is 7.
Q. 53	If even numbered dice have even number of dots on their top faces, then what would be the total number of dots on the top faces of their dice? (1) 12 (2) 14 (3) 18 (4) 24

Q. 54	If the odd numbered dice have even number of dots on their top faces, then what would be the total number of dots on the top faces of their dice? (1) 8 (2) 10 (3) 12 (4) 14
Q. 55	If the even numbers of dice have odd number of dots on their top faces and odd numbered dice have even of dots on their bottom faces, then what would be the total number of dots on their top faces? (1) 12 (2) 14 (3) 16 (4) 18
Q. 56	A person traveled a distance of 50 km in 8 hours. He covered a part of the distance on foot at the rate of 4 km per hour and a part on a bicycle at the rate of 10 km per hour. How much distance did he travel on foot? (1) 32km (2) 28km (3) 24km (4) 20km
Q. 57	A person X has four notes of Rupee 1, 2 , 5 and 10 denomination. The number of different sums of money she can form from them is _____ (1) 45 (2) 15 (3) 25 (4) 35
Q. 58	A person travels 12 km due North, then 15 km due East, after that 15 km due West and then 15 km due South. How far is he from the starting points? (1) 6km (2) 10km (3) 15km (4) 12km
Q. 59	A question paper had ten questions. Each question could only be answered as True (T) or False (F). Each candidate answered all the questions. Yet, no two candidates wrote the answers in an identical sequence. How many different sequences of answers are possible? (1) 1024 (2) 2048 (3) 512 (4) 256
Q. 60	Four metal rods of lengths 78 cm, 104 cm, 117 cm and 169 cm are to be cut into parts of equal length. Each part must be as long as possible. What is the maximum number of pieces that can be cut? (1) 36 (2) 28 (3) 24.5 (4) 42.5

Directions:- (Q. No.:- 61-63)
Study the pattern and find the missing in each of the following series.

				1				
			2	3	4			
		5	6	7	8	9		
	10	11	12	13	14	15	16	
17	18	19	20	21	22	23	24	25

Q. 61 1,2,7,12,?

(1) 18 (2) 6 (3) 20 (4) 21

Q. 62 17,10,19,12,21,14,?

(1) 15 (2) 22 (3) 27 (4) 23

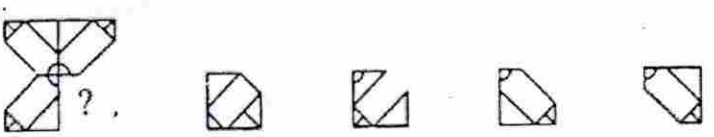
Q. 63 10,14,12,22,14,20,?

(1) 18 (2) 19 (3) 16 (4) 14

Directions:- (Q. No.:- 64-66)

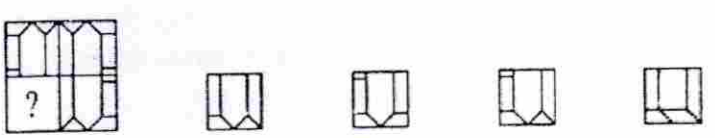
In each of the following questions, select a figure from amongst the four alternatives, which when placed in the blank space of figure (X) would complete the pattern.

Q. 64 .



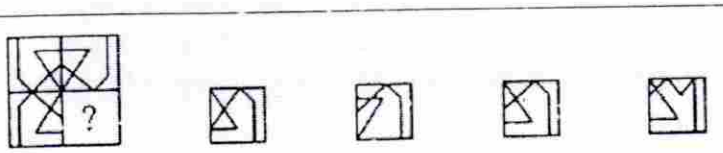
(X) (1) (2) (3) (4)

Q. 65

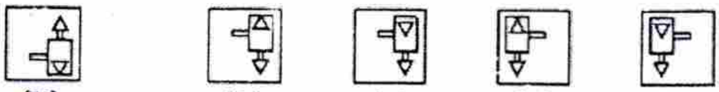
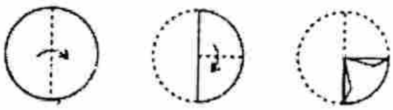
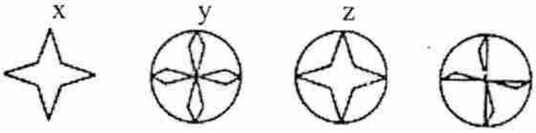
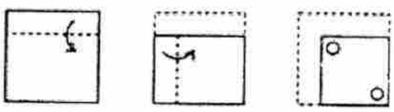
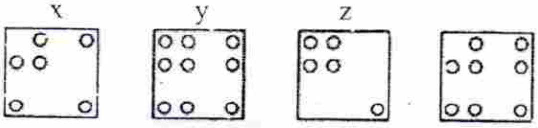


(X) (1) (2) (3) (4)

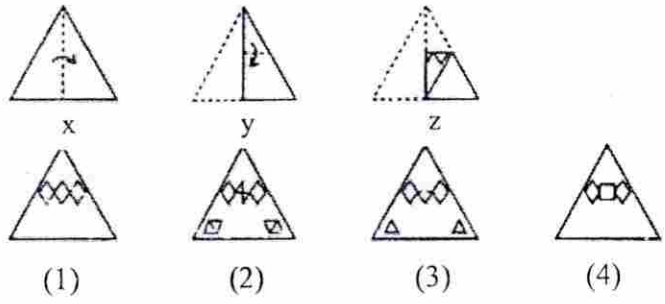
Q. 66



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

	Directions:- (Q. No.:- 67-68) In each of the following questions, choose the water image of the Fig.(X) from amongst the four alternatives (1), (2), (3) and (4) given along with it.
Q. 67	 (X) (1) (2) (3) (4)
Q. 68	 (X) (1) (2) (3) (4)
	Directions:- (Q.No:- 69-70) **Choose the correct water images from the option given**
Q. 69	GR98AP76ES 
Q. 70	US91Q4M5W3 
	Directions:- (Q. No.:- 71-73) Each of the following questions consists of a set of three figures X, Y and Z showing a sequence of folding of a piece of paper. Figure (Z) shows the manner in which the folded paper has been cut. These three figures are followed by four answer figures from which you have to choose a figure which would most closely resemble the unfolded form of figure (Z).
Q. 71	 x y z  (1) (2) (3) (4)
Q. 72	 x y z  (1) (2) (3) (4)

Q. 73



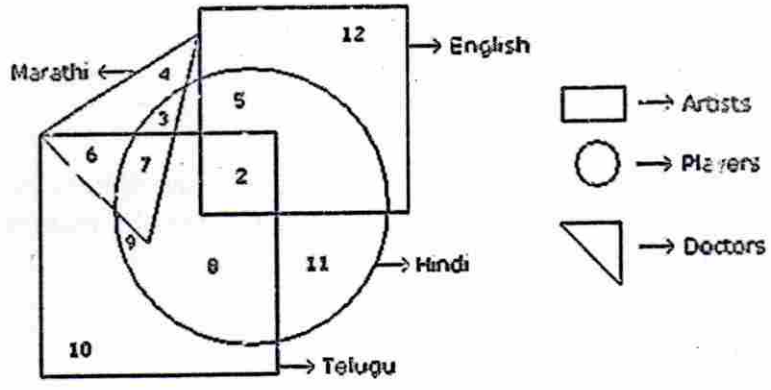
(1) (2) (3) (4)

Q. 74 A train overtakes two persons walking along a railway track. The first one walks at 4.5 km/hr. The other one walks at 5.4 km/hr. The train needs 8.4 and 8.5 seconds respectively to overtake them. What is the speed of the train if both the persons are walking in the same direction as the train?

(1) 66km/hr (2) 72km/hr (3) 78km/hr (4) 81km/hr

Directions:- (Q. No.:- 75-79)

In the following figure small square represents the persons who know English, triangle to those who know Marathi, big square to those who know Telugu and circle to those who know Hindi. In the different regions of the figures from 1 to 12 are given.



Q. 75 How many persons can speak English and Hindi both the languages only?

(1) 5 (2) 8 (3) 7 (4) 18

Q. 76 How many persons can speak Marathi and Telugu both ?

(1) 10 (2) 11 (3) 13 (4) 15

Q. 77 How many persons can speak only English ?

(1) 9 (2) 12 (3) 7 (4) 19

Q. 78	How many persons can speak English, Hindi and Telugu ? (1) 8 (2) 2 (3) 7 (4) 5
Q.79.	How many persons can speak all the languages? (1) 1 (2) 8 (3) 2 (4) none
Q. 80	In a certain code language COMPUTER is written as RFUVQNPC. How will MEDICINE be written in that code language? (1) MFEDJJOE (2) EOJDEJFM (3) MFEJDJOE (4) EOJDJEFM
Q. 81	In a certain code language, '134' means 'good and tasty'; '478' means 'see good pictures' and '729' means 'pictures are faint'. Which of the following digits stands for 'see'? (1) 9 (2) 2 (3) 1 (4) 8
Q. 82	If FRIEND is coded as HUMJTK, how is CANDLE written in that code ? (1) EDRIRL (2) DCQHQK (3) ESJFME (4) DEQJQM
Q. 83	If Z= 2197 and R= 729. How would J be written in that code? (1) 216 (2) 124 (3) 512 (4) 125
Q. 84	**Directions:- (Q. No.:- 84-86)** **In each of the following questions some statements are given. On the basis of statements which conclusion/s is/are true.** **Statements:** Maths is tough . I don't study maths **Conclusions:** I. I study easy subjects II. I have failed in maths (1) Only I follows (2) Only II follows (3) Either I or II follows (4) Neither I nor II follows

Q. 85	**Statements:** All dogs are reptiles Some cats are reptiles **Conclusions:** I. Some dogs are cats II. Some cats are not reptiles (1) Only I follows (2) Only II follows (3) Both I and II follows (4) Neither I nor II follows
Q. 86	**Statements:** Cricket is sports Sports is passion **Conclusions:** I. Cricket is passion II. Passionate people play cricket. (1). Only I follows (2). Only II follows (3). Both I and II follows (4). Neither I nor II follows
Q. 87	If A + B = 2C and C ÷ D = 2A, then (1) A ÷ C = B ÷ D (2) A ÷ C = 2D (3) A ÷ D = B ÷ C (4) A ÷ C = 2B
Q. 88	Find out the two signs to be interchanged for making following equation correct 5 + 3 x 8 - 12 ÷ 4 =3 (1) ÷ and − (2) − and ÷ (3) + and × (4) ÷ and ÷
Q. 89	If Q means 'add to', J means 'multiply by', T means 'subtract from' and K means 'divide by' then 30 K 2 Q 3 J 6 T 5 = ? (1) 18 (2) 28 (3) 31 (4) 103

Q. 90	A, B, C, D and E play a game of cards. A says to B, "If you give me three cards, you will have as many as E has and if I give you three cards, you will have as many as D has." A and B together have 10 cards more than what D and E together have. If B has two cards more than what C has and the total number of cards be 133, how many cards does B have ? (1) 22 (2) 23 (3) 25 (4) 35
Q. 91	A number of friends decided to go on a picnic and planned to spend Rs. 96 on eatables. Four of them, however, did not turn up. As a consequence, the remaining ones had to contribute Rs. 4 each extra. The number of those who attended the picnic was____ (1) 8 (2) 12 (3) 16 (4) 24
Q. 92	Two bus tickets from city A to B and three tickets from city A to C cost ₹ 77 but three tickets from city A to B and two tickets from city A to C cost ₹ 73. What are the fares for cities B and C from A ? (1) ₹ 4, ₹ 23 (2) ₹ 13, ₹ 17 (3) ₹ 15, ₹ 14 (4) ₹ 17, ₹ 13
Q. 93	A bus starts from city X. The number of women in the bus is half of the number of men. In city Y, 10 men leave the bus and five women enter. Now, number of men and women is equal. In the beginning, how many passengers entered the bus ? (1) 15 (2) 30 (3) 36 (4) 45
Q. 94	A student got twice as many sums wrong as he got right. If he attempted 48 sums in all, how many did he solve correctly? (1) 12 (2) 16 (3) 18 (4) 24
Q. 95	The last two digits of 2151^{415} ? (1) 81 (2) 61 (3) 51 (4) 91

Q. 96.	Find the Value of ? $5.11^{2.2} + 5.55^{3.3} + 6.3^{1.4} + 7.2^{2.001} = ? \times 3.34$ (1) 55 (2) 48 (3) 73 (4) 89
Q. 97.	If A ÷ B means A is the mother of B; A - B means A is the brother B; A % B means A is the father of B and A x B means A is the sister of B, which of the following shows that P is the maternal uncle of Q? (1) Q - N ÷ M x P (2) P ÷ S x N - Q (3) P - M ÷ N x Q (4) Q - S % P
Q. 98.	B5D means B is the father of D. B9D means B is the sister of D. B4D means B is the brother of D. B3D means B is the wife of D. Which of the following means F is the mother of K? (1) F3M5K (2) F5M3K (3) F9M4N3K (4) F3M5N3K
Q. 99.	If In a certain code 16 ÷ 13 = 13,15 ÷ 8 = 17 then 19 ÷ 7 =? (1) 22 (2) 32 (3) 12 (4) 18
Q.100	Two friends A and B simultaneously start running around a circular track . They run in the same direction. A travels at 6 m/s and B runs at b m/s. If they cross each other at exactly two points on the circular track and b is a natural number less than 30, how many values can b take? (1) 3 (2) 4 (3) 7 (4) 5

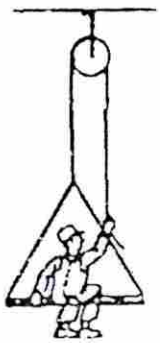
Scholastic Aptitude Test

Part: II Time: 11.00 a.m. to 1.00 p.m. Marks: 100

Q. 1. A solid cube of aluminum (density 2.7 g/cm3) has a volume of 0.20 cm3. How many aluminum atoms are contained in the cube? (27gm of Aluminum contains 6.023×10^{23})

1) 12×10^{2} 2) 1.2×10^{22} 3) 2.4×10^{22} 4) 24×10^{22}

Q. 2. A painter of mass 80 kg sits in a bosun's chair of mass 10 kg. He pulls on the rope he is holding in order to accelerate himself up. In so doing, he presses down on the seat with a force of 392 N. Which is the following two statements are true?



A) The seat pushes the painter upwards with force 392N.

B) The tension in the rope held by painter is downwards.

C) The tension in the rope held by painter is upwards.

D) The painter lifts with acceleration 9.8 m/sec^2

1) Statement (B) & (D) are true. 2) Statement (A) & (C) are true.

3) Statement (A) & (B) are true. 4) Statement (C) & (D) are true.

Q. 3. A woman is wearing her seat belt while driving 60km/h. She finds it necessary to slam on her brakes, and she slows uniformly to a stop in 1.60 s. What is the average acceleration experienced by her?

1) $-10.4\ m/sec^2$ 2) $10.4\ m/sec^2$ 3) $1.04\ m/sec^2$ 4) $-1.04\ m/sec^2$

Q. 4. For a particle executing uniform circular motion, which of the following statementis correct-

A) Velocity is radial, acceleration is transverse and the force is towards centre

B) Velocity is radial, acceleration is transverse and the force is radially outwards

C) Velocity is transverse, acceleration is radial and the force is towards centre.

D) Velocity is transverse, acceleration is radial and the force is radially outwards.

1) Statement (B) is true. 2) Statement (A) is true.

3) Statement (D) is true. 4) Statement (C) is true.

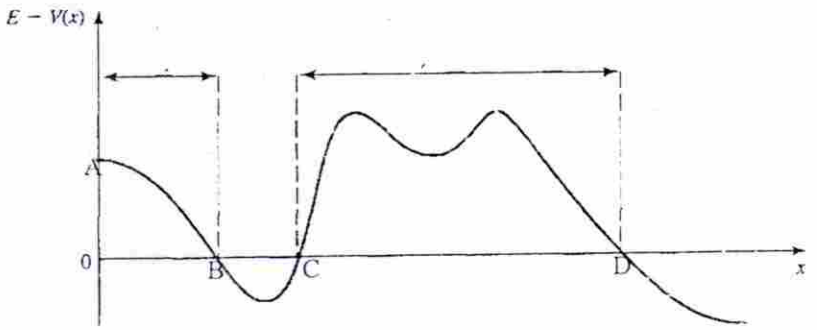
Q. 5. If the radius of the earth were to shrink by 1% and its mass remaining the same, the acceleration due to gravity on earth's surface would –

1) decrease
2) increase
3) remain unchanged
4) will decrease by 9.8%

Q. 6. A cannon of mass 1200 kg fires a 64-kg shell with a muzzle velocity of 62 m/s (this is the speed of the shell with respect to the cannon). Immediately after firing, what is the velocity V of the cannon and the velocity v of the shell with respect to the earth?

1) V = -3.14 m/sec; v = 58.9 m/sec
2) V = 3.14 m/sec; v = -58.9 m/sec
3) V = 58.9 m/sec; v = -3.14 m/sec
4) V = - 58.9 m/sec; v = 3.14 m/sec

Q. 7. The following graph shows a plot of total energy minus potential energy of the particle as a function of position. Which of the statement/s are true?



A) The graph is also a plot of Kinetic energy of the particle as a function of position.

B) The allowed region is between AB and BC

C) The allowed region is between AB and CD

D) The allowed region is between BC

1) Statement (B) & (D) are true.
2) *Statement* (A) & (C) are true.
3) Statement (A) & (B) are true.
4) Statement (C) & (D) are true.

Q.8. Which of the following two statements are true?

A) Pressure is vector quantity as P = F/A, as force is vector.

B) Pressure is scalar quantity as P = F/A, as pressure acts in all possible direction.

C) Pressure gauge reading of a flat tyre will be zero.

D) Pressure gauge reading of a flat tyre will show atmospheric pressure.

1) Statement (B) & (D) are true.
2) Statement (A) & (C) are true.
3) Statement (B) & (C) are true.
4) Statement (C) & (D) are true.

Q.9. Which of the option shows correct match of the following pairs?

Waves	Description
a) Mexican wave	i) A self-reinforcing wave
b) Tsunami wave	ii) A ripple in the space
c) Gravitational wave	iii) A harbour wave
d) Soliton wave	iv) A human wave

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

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

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

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

Q.10. If you are having two cells each of 12 V and 1 A each. If 24 W power is required to be delivered to the load, then it has to be connected as ----------

(i) (ii) (iii) (iv)

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

Q.11. Light travelling from vacuum enters water. Which of the following characteristics of light will remain unchanged?

1) velocity 2) amplitude 3) frequency 4) wavelength

Q.12. The buoyancy depends on:

1) Mass of liquid displaced

2) Viscosity of the liquid

3) Pressure of the liquid displaced

4) Depth of immersion

Q.13. If two bodies one light and other heavy have equal kinetic energies, which one has a greater momentum

1) Heavy body 2) Light body

3) Both have equal momentum 4) It depends on the actual velocities

Q.14. Which of the following oxide is most acidic ?

1. BeO 2. MgO 3. CaO 4. BaO

Q. 15. As compared to nitrogen, oxygen is

1. Less electronegative and less reactive
2. More electronegative and less reactive
3. More electronegative and more reactive
4. Less electronegative and more reactive

Q. 16. Which hybrid state cannot be shown by Carbon ?

1. Sp^3d 2. Sp 3. Sp^2 4. Sp^3

Q. 17. Two oxides of an element contain 57.1% and 72.7% of oxygen. If the first oxide is M he second oxide is _____

1. MO 2. M_2O 3. MO_3 4. M_2O_3

Q. 18. The number of water molecules present in a drop of water weighing 0.018 g is _____

1. 6.02×10^{26} 2. 6.02×10^{23} 3. 6.02×10^{20} 4. 6.02×10^{22}

Q. 19. The pH of a solution is 5.9. If the hydrogen ion concentration is decreased hundred tin the solution will be

1. more acidic 2. neutral 3. basic 4. of the same ac

Q. 20. Which of the following is most stable ?

1. $BeCO_3$ 2. $SrCO_3$ 3. $MgCO_3$ 4. $CaCO_3$

Q. 21. A solid compound 'X' on heating gives CO_2 gas and a residue. The residue mixed with ıter forms 'Y'. On passing an excess of CO_2 through 'Y' in water, a clear solution 'Z' is ob ed. On boiling 'Z', compound 'X' is formed. The compound 'X' is _____

1. Na_2CO_3 2. $CaCO_3$ 3. K_2CO_3 4. $Ca(HCO_3)_2$

Q. 22. The IUPAC name of the following compound $CH_3 - \underset{\underset{C_2H_5}{|}}{CH} - \underset{\underset{C_2H_5}{|}}{CH} - CH_3$ is __

1. 2,3—Diethyl butane
2. 2,3 — Dimethyl pentane
3. 2,3 — Dimethyl hexane
4. 3,4 — Dimethyl hexane

Q. 23. The general formula of cycloalkane is ---------

1. C_nH_{2n} 2. C_nH_{2n-1} 3. C_nH_{2n-1} 4. C_nH_{2n-2}

Q. 24. An atom has electronic configuration 2,8,7.

To which of the following elements would it be chemically similar ?

(Atomic numbers are given in parentheses)

1. N(7) 2. P(15) 3. F(9) 4. Ar(18)

Q. 25. The fragrance of flowers is due to the presence of some steam volatile organic compounds called essential oils. These are generally insoluble in water at room temperature but are miscible with water vapour in vapour phase. A suitable method for the extraction of these oils from the flowers is --------

1. Distillation
2. Crystallisation
3. Distillation under reduced pressure
4. Steam distillation

Q. 26. According to Mendeleev's Periodic Table element which was discovered later having properties similar to Eka—aluminium is ---------

1. scandium 2. gallium 3. platinum 4. germanium

Q. 27. Kidney stones are mainly formed by which of the following compound ?

1. Sodium chloride 2. Silicates 3.Calcium bicarbonate 4. Calcium Oxalate

Q. 28. Who discovered the Polio vaccine ?

1. Louis Pasteur 2. Jonas Salk 3. Konrad Zuse 4. Eli Whitney

Q. 29. Exchange of genetic material takes place in

1. vegetative reproduction
2. asexual reproduction
3. sexual reproduction
4. budding

Q. 30. Which of the following is an abiotic component ?

1. animals 2. Plants 3 micro-organisms 4. soil

Q. 31. Salivary glands secrete which of these enzymes ?

1. Amylase 2. Lipase 3. Pepsin 4. Trypsin

Q. 32. In our country vast tracts of forests are cleared and a single species of plants is cultivated. This practice promotes ____

1. biodiversity in that area
2. growth of natural forest
3. monoculture in that area
4.preserve the natural ecosystem in the area

Q. 33. Which of the following is a group of invertebrate animals ?

1. mammals 2. pisces 3. reptiles 4. arthropods

Q. 34. The number of daughter cells formed at the end of meiosis from a cell __

1. 2 haploid cells 2. 2 diploid cells 3. 4 haploid cells 4. 4 diploid cells

Q. 35. Breakdown of pyruvate to yield CO_2, H_2O and energy takes place in

1. cytoplasm 2. Mitochondrion 3. chloroplast 4. nucleus

Q. 36. Which among the following is not a component of respiratory system in humans ?

1. pharynx 2. Larynx 3. hypothalamus 4. trachea

Q. 37. How many of the following are involved in Nitrogen fixation ?

Nostoc, Anabaena, Rhizobium, Azotobacter

1. 1 2. 2 3. 3 4. 4

Q. 38. The primary source of synthesis of carbohydrates in plants is

1. atmospheric CO_2 2. Lipids 3. fats 4. proteins

Q. 39. Insectivorous plants digest the bodies of insects by secreting which type of enzymes ?

1. carbohydrases 2. Esterases
3. proteolytic enzymes 4. none of these

Q. 40. Which one among the following vitamins is necessary for blood clotting ?

1. Vitamin – A 2. Vitamin - D
3. Vitamin – K 4. Vitamin - C

Q. 41. Which of the following is the book of Gandhiji ?

1) My Experiment with Truth 2) Hind Swaraj
3) Discovery of India 4) Main Kampf

Q. 42. Who among the following proved that the Earth is round by circumnavigating it?

1) Bartholomew Dias 2) Fernando Magellan
3) Vasco da Gama 4) Christopher Columbus

Q. 43. It issued a warning to the miners when the levels of Carbon dioxide in the mines would increase and there was a danger to their lives.

(1) Safety lamp
(2) Steam Locomotive Rocket
(3) Power Loom
(4) Mule

Q. 44. At which place Gandhiji started the Satyagraha movement against the indigo plantation system?

(1) Champaran
(2) Porbandar
(3) Chilka
(4) Assam

Q. 45. Which among the following was the reason for Indian opposition to the Rowlatt Act-1919?

(1) It was passed hurriedly.
(2) It gave the government enormous powers.
(3) Local leaders were picked up and arrested.
(4) It authorised the government to imprison people without trial.

Q. 46. Who initiated a reign of terror in France after the execution of king Louis XVI in 1793?

(1) Napoleon Bonaparte
(2) Louis XIV
(3) Robespierre
(4) Louis XV

Q. 47. Who was the first Secretary of the Indian National Congress established in 1885?

(1) Kashinath Trimbak Telang
(2) Allan Octavian Hume
(3) Peter Alvares
(4) Dr. Ram Hegde

Q. 48. Dhangars were an important pastoral community in_____.

(1) Uttar Pradesh
(2) Maharashtra
(3) Himachal Pradesh
(4) None of these

Q. 49. Why did feeding the cattle became a persistent problem for the Massais?

(1) Because continuous grazing in small area deteriorated the quality of pasture.
(2) Because Massais were confined to a small area.
(3) Because Massais lived in an arid zone without any grass.
(4) Because Massais began to cultivate pastoral land.

Q. 50. Who among these offered Chancellorship to Hitler in Germany?

(1) Churchill
(2) Goebbels
(3) Helmuth
(4) Hindenburg

Q. 51. Which of the following country was referred as 'the mother of the Industrial Revolution'?

(1) Germany (2) France (3) England (4) Italy

Q. 52. Who wrote the book "The Invisible Man"?

(1) Jane Austen (2) Charles Dickens (3) H.G.Well (4) Jonathan Swift

Q. 53. The revolutionaries in Bengal raided the Chittagong Armouries under the leadership of _____.

(1) Surya Sen (2) Khan Abdul Gaffar Khan

(3) Abbass Tyabji (4) Sukhdev

Q. 54. Who was the "Father of Goa's freedom movement"?

(1) Purushottam Kakodkar (2) Luis de Menezes Braganca.

(3) P.P. Shirodkar (4) Dr. T.B. Cunha

Q. 55. On 19th October 1781, in the Battle of Yorktown, George Washington accepted the surrender on the side of British forces from_____.

(1) Lord Dalhousie (2) Lord Cornwallis (3) Lord Wellesley (4) Lord Curzon

Q. 56. Which factor is not a physical factor influencing land use in an area ?

1. Slope of the land 2. Absence of soil cover

3. Drainage of the land 4. Population density

Q. 57. Which one of the following minerals is formed by the decomposition of rocks leaving a residual mass of weathered material ?

1. Coal 2. Bauxite 3. Gold 4. Zinc

Q. 58. Which of the following is a new arrival on the transportational map of India ?

1. Pipeline transportation Network 2. Waterways transportation network

3. Railways transportation network 4. Airlines transportation network

Q. 59. Which one of the following rivers is also known as 'Dakshin Ganga' ?

1. Krishna 2. Mahanadi 3. Godavari 4. Kavery

Q. 60. Which one of the following states share a common border with Goa ?

1. Gujarat and Maharashtra 2. Karnataka and Kerala

3. Maharashtra and Karnataka 4. Maharashtra and Madhya Pradesh

Q. 61. The Alpine grasslands of the Himalayas are extensively used for grazing by nomadic tribes called ----------

1. Masai 2. Bakarwals 3. Bedouins 4. Kirghiz

Q. 62. The magnitude of population growth refers to ----------

1. Total population of an area
2. The rate at which population increases
3. The number of females per thousand males
4. The number of persons added each year

Q. 63. Which one of the following is the characteristic of cold weather season ?

1. North East trade winds prevail over the country
2. South West trade winds prevail over the country
3. Low pressure develops in the northern part of the country
4. Clear skies and rise in temperature

Q. 64. A 'mushroom rock' is a landform caused by the action of ----------

1. Sea waves 2. Moving ice 3. Wind erosion 4. Running water

Q. 65. Hanging valleys are carved out by the action of ----------

1. Rivers 2. Glaciers 3. Wind 4. Ocean waves

Q. 66. The earth's axis is inclined to the plane of the orbit at an angle of ----------

1. $66\frac{1}{2}^0$ 2. $23\frac{1}{2}^0$ 3. 90^0 4. 45^0

Q. 67. The largest units of Coir industries are located in ----------

1. Andhra Pradesh 2. Kerala
3. Gujarat 4. Kolkata

Q. 68. Most of the weather phenomena occur in the layer of atmosphere called -----

1. Exosphere 2. Ionosphere 3. Stratosphere 4. Troposphere

Q. 69. What is the time at Chennai 80^0 East longitude, when it is noon at Greenwich ?

1. 3.20 p.m. 2. 3.20 a.m. 3. 5.20 p.m. 4. 5.20 a.m.

Q. 70. Which of the following ports is an inland riverine tidal port ?

1. Kolkata 2. Vishakapatnam 3. Kandla 4. Kochi

Q. 71. Which of these is not a good reason to say that Indian election is democratic?

1) India has the largest number of voters in the world.
2) Indian Election Commission is very powerful.
3) In India, everyone above the age of 18 has a right to vote.
4) In India, the losing parties accept the electoral verdict.

Q. 72. Union council of Ministers include following types of Ministers. Choose the correct option.

i) Cabinet Ministers.
ii) Chief Minister.
iii) Minister of State with independent charges.
iv) Minister of State

1) (i) and (ii)
2) (ii)
3) (iii)
4) (i) (iii) and (iv)

Q. 73. Which is the main productive activity in village across India ?

1) Transportation 2) Small scale 3) Fishing 4) Farming

Q. 74. Economic activities have two parts market activities and _____

1) Same activities 2) Post activities 3) Profit activities 4) First activity

Q. 75. Rural Employment Generation programme was launched in _____

1) 1990 2) 2000 3) 1991 4) 2002

Q. 76. Hunger is another aspect indicating _____

1) Pool insecurity 2) Paint insecurity 3) Flood insecurity 4) Food insecurity

Q. 77. The term BMI stands for _____

1) Boy mass Index 2) Body mass Index
3) Body movement Index 4) Body message Index

Q. 78. Workers in the _____ sector do not produce goods.

1) Primary 2) Secondary 3) Tetany 4) Final

Q. 79. In a barter system goods are directly exchanged without the use of

1) Funny 2) Honey 3) Money 4) People

Q. 80. Rapid integration between countries is called _____

1) Nationalisation 2) Mutual share 3) Globalisation 4) Open share

Mathematics

Q. 81 The sum of all the possible remainders which can be obtained when square of a natural number is divided by 3 is _____

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

Q. 82 The sum of zeros of a polynomial $(3x^2 + x^3 - 35 - 29x) + (x + 5)(x - 7)$

(1) 31 (2) 70 (3) -31 (4) -70

Q. 83 A boat running upstream takes 4 hours 150 minutes to cover a certain distance 2 hours, 88minutes and 120 seconds less to cover the same distance running downstream. The ratio of speed of the boat in downstream to the speed of the boat in upstream..

(1) 13:6 (2) 19:7 (3) 17:8 (4) 11:5

Q. 84 Two quadratic equations $x^2 - 9x + c = 0$ and $x^2 - bx - 18 = 0$ have common roots. If the sum of the remaining roots of first and second equation is -2 then the common root is _____

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

Q. 85 A small terrace at a uphill temple has 100 steps each of which is 108 m long and built of solid concrete. Each step has a rise of $\frac{1}{3}m$ and has a tread of $\frac{2}{3}m$.The total volume of the concrete required to build the terrace will be_____

(1) $188100m^3$ (2) $256000m^3$ (3) $144000m^3$ (4) $121200m$

Q. 86 If one side of an isosceles triangle inscribed in a circle passes through the centre of a circle with radius $\frac{p}{4}$then perimeter of a triangle is _____

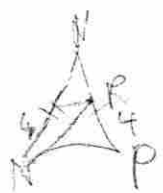
(1) $\frac{p(\sqrt{2}+1)}{2}$ (2) $\frac{p(\sqrt{2}-1)}{4}$ (3) $\frac{p(2\sqrt{2}-1)}{6}$ (4) $\frac{p(\sqrt{2}+2)}{2}$

Q. 87 If α and β are complementary angles and $18\sin^2\alpha - 12\sin\alpha = -2$ then $\sin\beta$ is _____

(1) $\frac{2\sqrt{2}}{3}$ (2) $\frac{\sqrt{14}}{4}$ (3) $\frac{5\sqrt{2}}{6}$ (4) $\frac{2\sqrt{10}}{7}$

Q. 88	If m and n are the roots of the quadratic equation $pt^2 + qt + r = 0$ with coefficient of t^2 as 3, coefficient of t as -4 and constant term as -8 then the equation for which the roots are $\frac{2}{m}$ and $\frac{2}{n}$ is _____ (1) $3y^2 - y - 4 = 0$ (2) $2y^2 + 2y - 3 = 0$ (3) $y^2 - 2y - 24 = 0$ (4) $4y^2 - y - 3 = 0$
Q. 89	Positive integers from 5 to 40 are arranged in four groups of 9 integers each in some particular order. The highest possible mean of the medians of these four groups is _____ (1) 29 (2) 22.5 (3) 28.5 (4) 19
Q. 90	PQR is a field in the form of an equilateral triangle. Two vertical poles of height 50 metres and 32 metres are erected at P and Q respectively. The angles of elevation of the top of the two poles from are complementary to each other. There is a point S on PQ such that from it the angles of the top of the two poles are equal then QS is _____ (1) $15\frac{25}{41}$ (2) $18\frac{17}{40}$ (3) $19\frac{21}{23}$ (4) $16\frac{19}{25}$
Q. 91	A solid metallic block of volume 2 cubic metres is melted and recast into a rectangular bar of length 32 metres having a square base. If the weight of the block is 160kg and the biggest cube is cut off from the bar then the weight of the cube is _____ (1) 3.5kg (2) 4 kg (3) 6kg (4) 2.5kg
Q. 92	If a and b are two non-negative integers such that $16b + 24a - 128 = 0$. The product of the maximum and minimum values of $a + b$ is _____ (1) 36 (2) 42 (3) 54 (4) 48
Q. 93	R is any point on the graph $9x - 3y = 12$. The coordinates of point T are (5,-3), If N divides MT in the ratio 1:3 then coordinates of R are _____ (1) (4,0) (2) (2,-5) (3) (-1,-7) (4) (4,-5)
Q. 94	MNP is an isosceles triangle with MN = NP. Point R is on NP such that PR = 4 cm. Then length of NR is _____ (1) $2\sqrt{5} - 2$ (2) $6\sqrt{3} + 1$ (3) 5 (4) 6.2

Q. 95	The last two digits of the expression $2^{12n} - 6^{4n}$ where n is a positive integer are _____ (1) 12 (2) 28 (3) 00 (4) 63
Q. 96	If $3^{2x+1} - 3^x = 3^{x+3} - 3^7(4^2 + 5^{0.4})^0$ where x is a negative integer then the value of $2x - 3$ is _____ (1) -12 (2) -5 (3) -16 (4) -19
Q. 97	If $a^x = b$ then in logarithmic form it is written as $\log_a b = x$. Also $\log_y m^n = n \log_y m$. Then the value of $\log_4 64$ is _____ (1) 3 (2) 4 (3) 12 (4) 9
Q. 98	In an examination minimum of marks is to be scored in each six subjects to pass. In how many ways can a student fail? (1) 6 (2) 63 (3) 7 (4) 64
Q. 99	If in a race over some fixed distance P can beat Q by 25 metres. Q can beat R by 15 metres and P can beat R by 35 metres. Then twice the fixed distance is _____ (1) 50 (2) 100 (3) 150 (4) 200
Q. 100	Three circles each of diameter $2x$ are drawn inside an equilateral triangle with perimeter 3y such that each circle touches the other two and also other two sides then the ratio of radius of a circle to side of a triangle is ____ (1) 5 (2) $\sqrt{5} + \sqrt{2}$ (3) $3(\sqrt{3} + 2)$ (4) $2(\sqrt{3} + 1)$



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