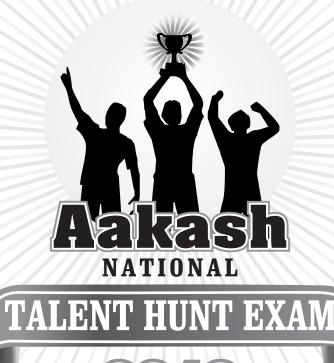
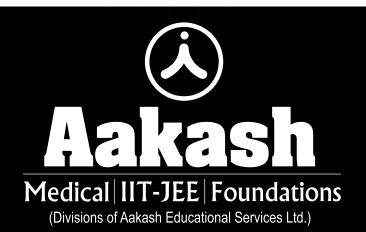
SAMPLE PAPER





Science & Mathematics Mental Ability & General Knowledge



Regd. Office: Aakash Tower, Plot No.-4, Sector-11, Dwarka, New Delhi-110075. Ph.: (011) 47623456

Sample Paper

Time: 2 Hours

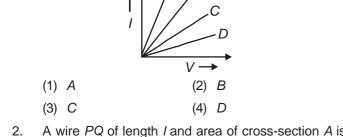
Science & Mathematics

Part - I

SECTION - A : SCIENCE

Choose the correct answer :

1. The *I*-*V* graph of four resistors *A*, *B*, *C* and *D* is given below. If all the four resistors are of the same length and same material, then the resistor having the minimum cross-sectional area is

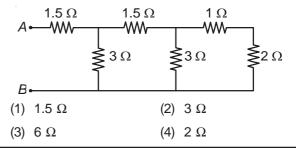


- A wire PQ of length I and area of cross-section A is connected to a supply of V volt as shown in the figure given below.
 - If the length of the wire is doubled and its area of

if the length of the wire is doubled and its area of cross-section halved, then the reading of the ammeter and the voltmeter respectively

- (1) Increases, increases
- (2) Increases, remains the same
- (3) Decreases, remains the same
- (4) Remains the same, remains the same

- 3. Bio-gas is rich in
 - (1) Methane (2) Propane
 - (3) Ethane (4) Butane
- 4. _____ between the different layers of water in the ocean is used to produced energy in *OTEC* plants.
 - (1) Tidal energy (2) Temperature difference
 - (3) Waves (4) Depth
- An AC generator can be converted into a DC generator by replacing
 - (1) Its armature with a coil
 - (2) Its concave magnets
 - (3) Its slip rings with split rings
 - (4) Two brushes with four brushes
- 6. If an alternating current changes its direction after
 - every $\frac{1}{120}$ s, then its frequency is
 - (1) 50 Hz (2) 45 Hz
 - (3) 60 Hz (4) 70 Hz
- 7. In the following circuit, the equivalent resistance between points *A* and *B* is

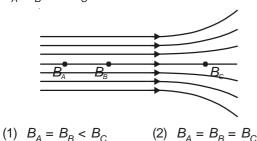


Space for Rough Work

Aakash National Talent Hunt Exam. 2012

MM: 480

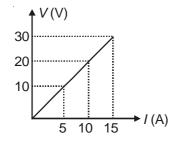
8. The given figure shows the magnetic field pattern in a region. Which of the following is the correct relation regarding the strength of the magnetic fields B_A , B_B and B_C ?



(3) $B_A = B_B > B_C$ (4) $B_A < B_B < B_C$ The V - I graph of a metal cube is shown in the

9.

figure. If the length of the conductor is 2 m, then resistivity of the material is



(1)	10 Ωm	(2)	2Ωm
-----	-------	-----	-----

- (3) 4 Ωm (4) 5 Ωm
- 10. Which of the following is correct?
 - (1) Magnetic force depends on the mass of charge
 - (2) Magnetic force acts in the direction of current
 - (3) Magnetic force does work on a moving charge
 - (4) Magnetic force can accelerate a charge
- 11. Anode mud is formed during
 - (1) Anodising (2) Electrolytic refining
 - (3) Galvanization (4) Corrosion

- 12. If a solution turns blue litmus red, its pH is likely to be
 - (1) 4 (2) 8

(3) 10 (4) 13

- The brown surface of copper becomes black on heating in air. When hydrogen gas is passed over this black surface, it turns
 - (1) Brown (2) Green
 - (3) Red (4) White
- 14. $3MnO_2 + bAI \longrightarrow 3Mn + aAl_2O_3 + Heat$

The values of a and b for the above reaction are

- (1) 4, 2 respectively (2) 2, 4 respectively
- (3) 2, 2 respectively (4) 4, 3 respectively
- 15. During the electrolytic refining of copper, the anode is made up of
 - (1) Pure copper (2) Impure copper
 - (3) Graphite (4) Pure tin
- 16. Apart from sodium, which element among the following is kept immersed in kerosene oil?
 - (1) Magnesium (2) Zinc
 - (3) Potassium (4) Lead
- 17. How many molecules of water of crystallisation are present in one molecule of gypsum?
 - (1) 10 (2) 2
 - (3) $\frac{1}{2}$ (4) 5
- 18. Which of the following is a sulphide ore?
 - (1) Haematite (2) Bauxite
 - (3) Cinnabar (4) Magnetite

Sai	nple Paper			Aakash National Talent Hunt Exam. 2012
19.	$xPb(NO_3)_2 \longrightarrow xPbO +$	$yNO_2 + zO_2$	25.	The initiating step in photosynthesis is the
	The values of x, y and z	respectively are		(1) Formation of ATP and NADPH
	(1) 2, 2, 4	(2) 2, 4, 1		(2) Reduction of carbon dioxide to glucose
	(3) 2, 4, 2	(4) 1, 2, 1		(3) Photolysis of water
20.		per yellow, then the pH range		(4) Absorption of light energy by chlorophyll
	of the solution is	(2) 5-6	26.	Stomatal pores open, when the guard cells
	(1) 1 - 2(3) 8 - 9	(2) 5 - 6 (4) 7 - 8		(1) Swell up due to endosmosis
21.		impervious to water, gases		(2) Shrink due to exosmosis
21.	and nutrients due to the			(3) Swell up due to exosmosis
	(1) Lignin	(2) Suberin		(4) Shrink due to endosmosis
	(3) Pectin	(4) Oxalic acid	27.	The very first enzyme to act on starch, present in food, is secreted by
22.	5 , 1 ,			(1) Pancreas (2) Gastric glands
	proteins is produced by a structure 'Y', which is located inside another organelle 'Z'. Identify X, Y		(3) Small intestine (4) Salivary glands	
	and Z.		28.	Sphygmomanometer reading of a patient as mentioned
	(1) X-RER, Y-Nucleolus			by a doctor is 140/60. 140 and 60 represent
	(2) X-RER, Y-Golgi app			(1) Normal systolic and diastolic pressure
	(3) X-Nucleolus, Y-Nucl(4) X-Ribosome, Y-Nucl			(2) Abnormal systolic and diastolic pressure
23.		elements is necessary to		(3) Normal systolic and abnormal diastolic pressure
20.	prevent goitre?	clements is necessary to		(4) Abnormal systolic and normal diastolic pressure
	(1) Calcium	(2) Iron	29.	The contraceptive device copper-T, is placed in the
	(3) Iodine	(4) Copper		(1) Vagina (2) Uterus
24.	Which of the following is	s incorrect?		(3) Ovary (4) Fallopian tube
	(1) Vena cava carries d	eoxygenated blood	30.	Which part of the brain is damaged if a person is
	(2) Nephron is the basi	c filtration unit of kidneys		unable to maintain the balance and posture of his body?
	(3) Bile juice is stored i	-		(1) Cerebrum (2) Medulla
	(4) Both kidneys are pr the same height	esent in the pelvic region at		(3) Cerebellum(4) Pons

Sample Paper

		SECTION - B :	MAT	HEMATICS		
31.		the zeroes of the polynomial	37.	What percent of 1	15 is 15 percent of 1?	
	$6x^3 + 5x^2 + 4x - 1, 1$	hen the value of $k^{-1} + t^{-1} + m^{-1}$ is		(1) 0.01	(2) 0.001	
	(1) $\frac{-1}{4}$	(2) $\frac{5}{6}$		(3) 0.0001	(4) 1	
	(1) 4	⁽²⁾ 6	38.	The number of int	egral divisors of 720 is	
	(3) $\frac{4}{6}$	(4) 4		(1) 15	(2) 20	
	0			(3) 25	(4) 30	
32.	subsequently offer	arks their clothes up by 60% ing a discount of 30%. The net n after offering the discount is	39.	45 kg. If the aver	ght of Anil, Mohan and Sohan is rage weight of Anil and Mohan is Mohan and Sohan is 43 kg, then	
	(1) 7.5%	(2) 10%		the weight of Moh	•	
	(3) 12%	(4) 15%		(1) 31 kg	(2) 34 kg	
33.	If $(1 + \cot A - \cos A)$ then the possible v	ecA) (1 + $tanA$ + $secA$) = $2x^2$, alue of x is		(3) 35 kg	(4) 38 kg	
		. 1	40.	In an acute angle	ed $\triangle ABC$, if $\sin(A + B - C) = \frac{\sqrt{3}}{2}$,	
	(1) 0	(2) $\frac{1}{\sqrt{2}}$		then angle C is e	<u> </u>	
	(3) 1	(4) 2		(1) 30°	(2) 45°	
34.		angle ABC, D is a point on side		(3) 60°	(4) 90°	
		$\frac{1}{4}BC$. The ratio of AD^2 and AB^2	41.	If a five digit number is written as <i>pqrst</i> , then t difference of <i>pqrst</i> and <i>prsqt</i> will always be divisit by		
	(1) 11 : 16	(2) 7:9		(1) 9	(2) 18	
	(3) 9:16	(4) 13:16		(3) 45	(4) All of these	
35.		ifferent positive integers lying 10 ¹⁶ , the sum of whose digits is	42.	LCM of the three r	mbers taken pairwise is 2. If the numbers is 59976, then the product pers taken together is	
	(1) 16	(2) 24		(1) 2592	(2) 46656	
	(3) 36	(4) 64		(3) 31426	(4) 239904	
36.	For getting a 'less t	han' Ogive, we plot the graph of	43.		non-zero numbers is zero. Out of	
		quency with upper limits		them at least, how	w many numbers may be greater	
	(2) Cumulative free	quency with lower limits		than zero?		
		quency with classmark		(1) 0	(2) 1	
	(4) Cumulative free	uency with range		(3) <i>n</i> /2	(4) <i>n</i> −1	

Sample Paper

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44.	$f(x) = x^2 - 6x + 8$, then the value of		49.	If $f(x)$ is a quadratic polynomial such that $f(2) = -3$ and $f(-2) = 21$, then the coefficient of x in $f(x)$ is		
	$\frac{a^{-1}+b^{-1}}{a^{-1}}+\frac{a^{-1}-b^{-1}}{b^{-1}}$ is			(1) 4	(2) 7	
	u <i>N</i>			(3) - 6	(4) - 3	
	(1) $\frac{3}{2}$ (2) $\frac{5}{2}$		50.	•	which $AB = 2AD$. P and Q	
	(3) 5 (4) $\frac{10}{3}$	-			d <i>AB</i> respectively. If <i>BP</i> and in the ratio of the area of <i>AP</i>)	
45.	Two ogives for a particular data, and other 'more than' type, inte			(1) 1:5	(2) 4:2	
	a point P(a, b). The value of b is	5		(3) 8:3	(4) 7:2	
	(1) Median of the data				20	
	(2) Frequency of the data		51.	If $0 < \theta < 90^\circ$, $\sin\theta +$	$\cos\theta = p \text{ and } q = \frac{2p}{p^2 - 1},$	
	(3) Half the frequency of the dat	a		then <i>q</i> is equal to		
40	(4) Half the median of the data			(1) $\sin\theta - \cos\theta$	(2) $\cos\theta + \sec\theta$	
46.	Which of the following can be th two numbers?	HEF and LEW OF		(3) $\sec\theta + \csc\theta$	(4) $\csc\theta - \cos\theta$	
	(1) HCF = 15, LCM = 155		52.		If diagonals AC and BD perimeter of $\triangle AOB = 30$ cm	
	(2) $HCF = 24$, $LCM = 1008$				$ar(\Lambda \Lambda \cap B)$	
	(3) HCF = 24, LCM = 252			and perimeter of $\triangle COD$	$P = 15 \text{ cm}, \text{ then } \frac{a(\Delta AOD)}{ar(\Delta COD)}$	
	(4) HCF = 22, LCM = 422			is		
47.	If $\cos\theta + \sin\theta = \sqrt{2}\cos\theta$, then d	cosθ – sinθ is equal		(1) 2:1	(2) 1:2	
	to			(3) 4 : 1	(4) 1:4	
	(1) $\sqrt{2}$ (2) $\sqrt{2}$	sinθ		П		
	(3) $\sqrt{2} \tan \theta$ (4) $\sqrt{2}$	2 cotθ	53.	If $A + B = \frac{\pi}{2}$, then $(\tan A)$	(1 + 1) (tan $B + 1$) is equal to	
48.				(1) cosecA secA		
	with lines $3x + y = 3$ and $2x + $ then the ratio of areas of Δ_1 to Δ_2			(2) 2 + cosecA + secA		
	(1) 7:3 (2) 6:	7		(3) 2 cosecA secA		
	(3) 6:49 (4) 36	: 7		(4) 2 + cosec <i>A</i> sec <i>A</i>		

Aal	kash National Talent Hu	nt Exam. 2012			Sample Paper	
54.	The value of $\sqrt{\frac{\sec \theta - 1}{\sec \theta + 1}}$	$+\sqrt{\frac{\sec\theta+1}{\sec\theta-1}}$ is	58.	If $p + \frac{1}{p} = q$, then for p	> 0	
	 2/cosecθ 	(2) cosecθ		(1) $q = 0$		
	(3) 2cosecθ	(4) sinθ		(2) $q \ge 0$		
55.		atch for Rs. 144 and got a		(3) $-2 < q < 2$		
	percentage of profit equal to the cost price, then the cost price of the watch is			(4) $q \leq -2$		
	(1) Rs. 80	(2) Rs. 88	59.		In the angled at B and M , N are and BC , then $4(AN^2 + CM^2)$ is	
	(3) Rs. 84	(4) Rs. 83		equal to		
56.	If $x + y = 1$, then the va	lue of $x^3 + y^3 + 3xy$ is		(1) 4 <i>AC</i> ²	(2) 5 AC^2	
	(1) 1	(2) 0		(3) 6 <i>AC</i> ²	(4) AC^{2}	
	(3) 2	(4) 3	60.	60. The ratio of inradius to the circumradius of a		
57.		des 2^{32} + 1, then which of sible by the same number?		equilateral triangle is		
	(1) 2 ⁹⁶ + 1	(2) $2^{16} - 1$		(1) 1:2	(2) 1:√2	
	(3) 2 ¹⁶ + 1	(4) 7×2^{33}		(3) 2:5	(4) $\sqrt{2}:\sqrt{3}$	
		Part	- I	I		
	_		_			

Mental Ability & General Knowledge

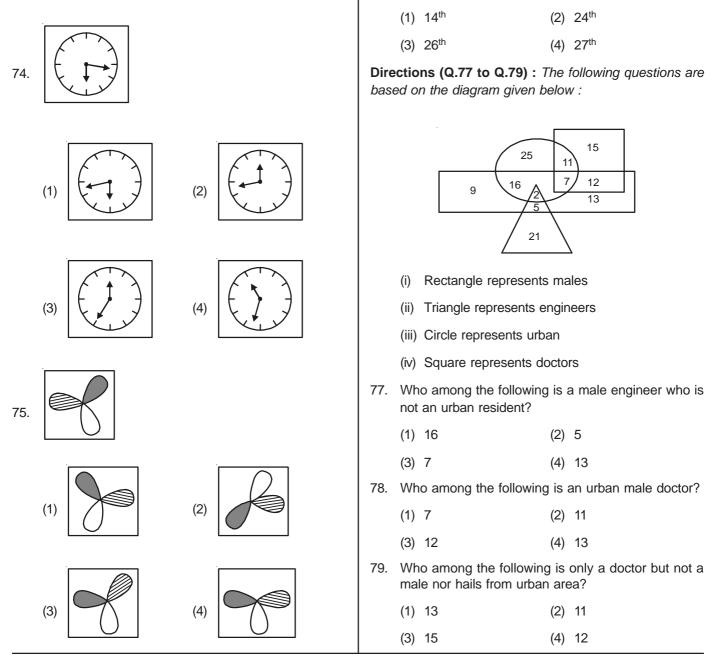
SECTION - A : MENTAL ABILITY

This section contains 40 multiple choice questions numbered 61 to 100. Each question has 4 choices (1), (2), (3) and (4), out of which **ONLY ONE** is correct.

61.	If LADI is coded as 52, t (1) 100	hen TERG is coded as (2) 50	63.	sequence?	ncorrect nu 3, 26, 37, 50	mber in the following
62.	(3) 25If the day before yesterd will Friday be?	(4) 75 ay was Sunday, then when	64.	 (1) 18 (3) 37 	(2) (4)	26 50 nen MONK is coded as
	 (1) Two days after today (3) Tomorrow 	(2) Three days after today(4) Day after tomorrow		(1) OMLI(3) OKLI	(2)	

Sar	nple Paper			Aakash Na	tional Talent Hunt Exam. 2012
65.		d as 019658, then PIAJRO is	Dire	ections (Q.70 & Q.71):
	coded as			(i) P + Q means F	P is the son of Q
	(1) 690185(2) 691805			(ii) P – Q means P	is the wife of Q
	(2) 091803(3) 691080			(iii) $P \times Q$ means P	is the brother of Q
	(4) 691085			(iv) P ÷ Q means P	is the mother of Q
66.		Beautiful I peacock saw" is given		(v) P = Q means F	P is the sister of Q
00.	by "ACDE", "girl bea	autiful nature" is given by "AFB",	70.	What does A + C -	B mean?
		ck" is given by "GEC" and "Saw by "EDA". Which of the following		(1) B is the father of	of A
	is the code for "Pea	cock I beautiful"?		(2) B is the son of	A
	(1) AEG	(2) GAE		(3) B is the uncle of	of A
	(3) GDA	(4) CDA		(4) B is the brother	of A
67.		g 3:30 pm. If at that instant, of the clock is pointing in the	71.	What does A = C +	B mean?
	North-East direction	, then the hour hand is pointing		(1) A is the aunt of	fB
	towards	(2) M		(2) A is the daught	er of B
	(1) North(3) North-West	(2) West (4) South-West		(3) A is the niece of	of B
68.		tree is the fifteenth from either		(4) A is the sister of	of B
00.		w many trees are there in the	72.	South-East of the	th-West of B and C is 60 m B, then C is in which direction
	(1) 28	(2) 29		w.r.t. A?	
	(3) 30	(4) 31		(1) East	(2) West
69.	How many squares of	does the following figure contain?		(3) North-East	(4) South
			73.	even numbers are to by their immediate p	nber sequence, how many such there which are exactly divisible preceding number but not exactly mediate following number?
				47826793	6 5 0 2 4 6 8 1
	(1) 17	(2) 19		(1) 0	(2) 2
	(3) 21	(4) 27		(3) 3	(4) 1

Directions (Q.74 & Q.75) : Choose the correct mirror image of the given figure from among the four given alternatives.



Space for Rough Work

Sample Paper

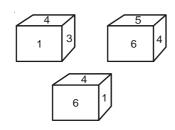
76. Rajesh is 7 ranks ahead of Sumit in a class of 49.

Rajesh's rank from the start?

If Sumit's rank is seventeenth from the last, what is

	ple Paper	Aakash National Talent Hunt Exam. 2012
80. F	Find the missing number.	84. DTP : FWT : : STD : ?
	<u> </u>	(1) UWH (2) VWI
	286/ 16/	(3) UVE (4) UWF
	142 34	85. How many such pairs of letters are there in the word 'PRAKASHAN' each of which have as many letters between them as in the English Alphabet?
	\sim	(1) None (2) One
((1) 68 (2) 70	(3) Two (4) Three
((3) 66 (4) 62	86. Find the odd one out.
Direc	tions (Q.81 & Q.82) : Insert the correct missing	, (1) Mango (2) Banana
numb	er from the choices given below :	(3) Apple (4) Carrot
81.		87. Complete the series.
	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
	(1) 61 (2) 67	\mathbf{X}
((3) 72 (4) 84	
82.	2 4 6 3 5 ?	
l	8 24 54	
((1) 7 (2) 8	
((3) 9 (4) 12	
83. \	Weaver : Cotton : : Tailor : ?	
((1) Fibre (2) Thread	
((3) Clothes (4) Food	

Directions (Q.88 to Q.90) : Given below are three positions of the same cube having numbers 1 to 6 written on its six faces. Answer questions 88 to 90 after a careful study of the three positions of the cube.



- 88. Which number is on the face opposite to 6?
 - (1) 2 (2) 3
 - (3) 4 (4) 1
- 89. The bottom face in the first figure is numbered

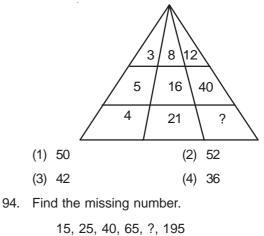
(1)	6	(2)	2
(3)	5	(4)	1

90. The number on the face opposite to 1 is

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

- 91. *A* and *B* can do a piece of work in 9 days, *B* and *C* can do it in 12 days and *A* and *C* can do it in 18 days. If *A*, *B* and *C* work together, then the work would be finished in
 - (1) 6 days (2) 7 days
 - (3) 8 days (4) 4 days
- 92. A clock is correctly set at 8 a.m. The clock gains10 minutes in 24 hours. When the clock indicates3 p.m. on the following day, the actual time is
 - (1) 2:50 p.m. (2) 3:10 p.m.
 - (3) 2:48 p.m. (4) 2:40 p.m.

93. The missing value in given arrangement is



(1)	115		(2)	110
(3)	90		(4)	105

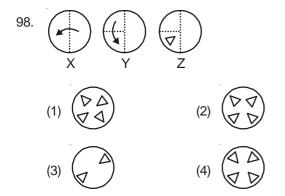
- 95. Four girls are sitting on a bench to be photographed. Shikha is to the left of Pinky. Manisha is to the right of Pinky. Anu is between Pinky and Manisha. Who would be second from right in the photograph?
 - (1) Manisha (2) Pinky
 - (3) Shikha (4) Anu
- 96. If in a certain language: white is called blue, blue is called red, red is called yellow, yellow is called green, green is called black, black is called violet, and violet is called orange. What would be the colour of human blood in that language?
 - (1) Red (2) Green
 - (3) Yellow (4) Blue
- 97. If 'p' stands for division, 'q' for multiplication, 'r' for addition and 's' for subtraction, then the value of 18p6q3r2s15p3 is
 - (1) 15
 (2) 11

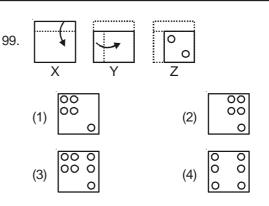
 (3) 8
 (4) 6

Sample Paper

Aakash National Talent Hunt Exam. 2012

Directions (Q.98 to Q.99) : These questions follow a set of three figures X, Y and Z showing a sequence of folding of a piece of paper. Z shows the manner in which the folder paper has been cut. These three figures are followed by the four answer figures. Out of these four you have to choose a figure which would most closely resemble the unfolded form of Z.





- 100. Having reached the place of meeting 20 minutes before 6:30 p.m., Prachi found herself 55 minutes earlier than the scheduled time. What was the scheduled time of meeting?
 - (1) 7:00 p.m. (2) 7:05 p.m.

(3) 7:15 p.m. (4) 7:25 p.m.

SECTION - B : GENERAL KNOWLEDGE

This section contains 20 multiple choice questions numbered 101 to 120. Each question has 4 choices (1), (2), (3) and (4), out of which **ONLY ONE** is correct.

101. Where is the National Physical Laboratory located? 104. The Parliament of USA is known as (1) Ahmedabad (2) Pune (1) Federal Assembly (2) Diet (3) New Delhi (4) Lucknow (3) Knesset (4) Congress 102. Which canal connects the Mediterranean Sea to the 105. Kourou city is well known for Red Sea? (1) Port facilities (1) Erie Canal (2) Indira Gandhi Canal (2) Racial problems (4) Suez Canal (3) Panama Canal (3) Satellite launching 103. Who was the last Mughal emperor of India? (4) Volcanic eruptions (1) Nadir Shah 106. Man passed from the food-gathering stage to the (2) Aurangzeb food-producing stage in the (3) Bahadurshah Zafar (1) Paleolithic age (2) Neolithic age (4) Jehangir (3) Chalcolithic age (4) Mesolithic age

Aakash National Talent Hun	nt Exam. 2012					Sample Paper
107. "Satyameva Jayate" has	been taken from	114.		ing the British era, w a before Delhi?	hich	n city was the capital of
(1) Mundak upanishad			(1)	Patna	(2)	Lucknow
(2) Rig veda			(3)	Calcutta	(4)	Bombay
(3) Katho upanishad		115.	Bisn	nillah Khan was a leg	geno	dary Maestro.
(4) Atharva veda			(1)	Sitar	(2)	Shehnai
108. The forest area known a	s 'silent valley' is in		• •	Tabla	``	Bansuri
(1) Kerala	(2) Uttarakhand	116.		national anthem was		c ,
(3) Nagaland	(4) Karnataka		. ,	1911	. ,	1913
109. Martyrs' day is celebrate	d on	117	• •	1936 author of book "The	• • •	1935
(1) 24 January	(2) 26 January			B.R. Ambedkar		Mahatma Gandhi
(3) 28 January	(4) 30 January		• •	J.L. Nehru	``	S.C. Bose
110. Angkor Wat temples are		1		ch Greek goddess o npic medals?	of vic	ctory is depicted on the
(1) Nilgiri Hills	(2) Belgium		-	Athena	(2)	Aphrodite
(3) Cambodia	(4) Palestine		(3)	Nike	(4)	Hera
111. The outermost layer of the	he Sun is	1			an ii	ndividual Olympic gold
(1) Corona	(2) Lithosphere		mec	dal is		
(3) Medulla	(4) Photosphere		(1)	Vijender Singh		
112. Who is called the 'Father	r of Indian Cinema'?		(2)	Rajyavardhan Singh	Rath	nore
(1) Ramanand Sagar	(2) Amitabh Bachchan		(3)	Abhinav Bindra		
(3) Dada Saheb Phalke	(4) Prithvirai Kapoor		(4)	Khashaba Jadav		
113. When is the Indepencelebrated?				o won the first India d championship?	n Gi	rand prix Formula One
(1) January 25	(2) August 14		(1)	Jenson Button	(2)	Mark Webber
(3) August 15	(4) August 16		(3)	Michael Schumacher	[.] (4)	Sebestian Vettel
	Space for F	Rough W	Nork			

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