

**MAHARAJA RANJIT SINGH AFPI**

19 JANUARY 2020

Marks: 400

Time: 120 minutes

ROLL NO.: _____	NAME: _____
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INSTRUCTIONS FOR THE CANDIDATES	
1.	The question booklet contains English section (Q 1-40) and Mathematics Section (Q 41-100).
2.	Before attempting the paper carefully read all the Instructions & Examples given on Side 1 of Answer Sheet (OMR Sheet) supplied separately.
3.	At the start of the examination, please ensure that all pages of your Test booklet are properly printed; your Test booklet is not damaged in any manner and contains 100 questions. In case of any discrepancy the candidate should immediately report the matter to the invigilator for replacement of Test Booklet. No claim in this regard will be entertained at a later stage.
4.	An OMR Answer Sheet is being provided separately along with this Test booklet. Please fill up all relevant entries like Roll Number, Test Booklet Code etc. in the spaces provided on the OMR Answer Sheet and put your signature in the box provided for this purpose.
5.	Make sure to fill the correct Test booklet code on Side 2 of the OMR Answer Sheet. If the space for the Booklet Code is left blank or more than one booklet code is indicated therein, it will be deemed to be an incorrect booklet code & Answer Sheet will not be evaluated. The candidate himself will be solely responsible for all the consequences arising out of any error or omission in writing the test booklet code.
6.	This Test Booklet consists of 08 pages containing 100 questions. Against each question four alternative choices (1), (2), (3), (4) are given, out of which one is correct. Indicate your choice of answer by darkening the suitable circle with BLACK/BLUE pen in the OMR Answer Sheet supplied to you separately. Use of Pencil is strictly prohibited. More than one answer indicated against a question will be deemed as incorrect response.
7.	The maximum marks are 400. Each question carries four marks. There will be negative marking of minus one (-1) for each incorrect answer.
8.	Do not fold or make any stray marks on the OMR Answer Sheet. Any stray mark or smudge on the OMR Answer Sheet may be taken as wrong answer. Any damage to OMR Answer Sheet may result in disqualification of the candidate.
9.	On completion of the test, candidate must hand over the OMR Answer Sheet to the invigilator on duty in the room/hall. You may retain the Question Booklet.
10.	Use of Mobile phones, wrist watches and calculators etc. are not allowed.
11.	Keep all your belongings outside the Examination hall. Do not retain any paper except the ADMIT CARD.

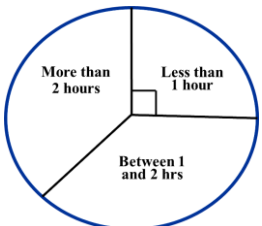
<b>Directions (Question 1 to 7).</b> In these questions, out of the four alternatives, choose the one which best expresses the meaning of the given word.	
1	Trespass (1) overrule (2) walk over (3) offend (4) inform
2	Lethal (1) deadly (2) wrong (3) lovely (4) suicidal
3	Divulge (1) divert (2) reveal (3) explore (4) narrate
4	Drowsy (1) Sluggish (2) lethargic (3) lazy (4) sleepy
5	Credence (1) reward (2) award (3) belief in (4) prize
6	Gaffe (1) Robbery (2) joke (3) blunder (4) gossip
7	Watershed (1) Waterfall (2) decisive (3) fire brigade (4) turning point
<b>Directions (Question 8 to 12).</b> Fill in the blanks with a word from amongst the choices given.	
8	In spite of our best efforts we failed to _____ any new facts from him. (1) evoke (2) elicit (3) provoke (4) eject
9	The passengers and crew members of the aircraft had a _____ escape when it was taking off from the runway. (1) dangerous (2) slight (3) narrow (4) huge
10	No country can _____ to practice a rigid foreign policy. (1) allow (2) afford (3) policy (4) say
11	This book is a useful _____ to our library. (1) arrival (2) discovery (3) thing (4) addition
12	He made a slight _____ of judgment, of which he had to repent later. (1) Error (2) blunder (3) decision (4) slip
<b>Directions (Question 13 to 16).</b> In these questions, out of the four alternatives, choose the one which can be substituted for the given words/sentences.	
13	An office with no work but high pay (1) aristocratic (2) sinecure (3) dictator (4) president
14	Constant effort to achieve something (1) perseverance (2) achiever (3) quitter (4) winner
15	That which happens once a year. (1) calendar (2) perennial (3) annual (4) eclipse
16	One who is all knowing. (1) versatile (2) specialist (3) student (4) omniscient
<b>Directions (Question 17 to 18).</b> Find the correctly spelt word out of the four words given	
17	(1) rupaiyah (2) rupee (3) ruppee (4) ruppe
18	(1) ocasion (2) ocasion (3) occassion (4) ocaasion
<b>Directions (Question 19 to 23).</b> Four alternatives are given for the idiom/phrase in italics in the sentence. Choose the one which best expresses the meaning of the idiom/phrase	
19	The doctor came and saved the patient <i>at the eleventh hour</i> . (1) late at night (2) at the last moment (3) before midnight (4) very quickly
20	He is in the habit of <i>blowing his own trumpet</i> . (1) works in a band (2) trumpet major (3) indulges in self praise (4) talks too much
21	He is the <i>apple of his parent's eyes</i> . (1) red like an apple (2) tasty like an apple (3) very dear to his parents (4) very happy parents
22	He likes to <i>call a spade a spade</i> (1) a gardener (2) plays cards (3) tells lies always (4) to speak truly
23	That was a play <i>of the first water</i> . (1) of top quality (2) sailor (3) pirate (4) swimmer
<b>Directions (Question 24 to 27).</b> In these questions, out of the four alternatives, choose the one which is opposite to the meaning of the given word.	
24	Laxity (1) harsh (2) persistence (3) polite (4) strictness

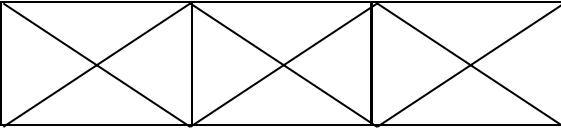
25	Odd (1) strange      (2) funny      (3) wise      (4) even
26	Rigid (1) hard      (2) flexible      (3) brittle      (4) silky
27	Triumph (1) defeat      (2) give up      (3) surrender      (4) trophy
<b>Directions (Question 28 to 29).</b> A part in the following sentences is underlined, which may or not be correct. Improve the sentence by choosing one of the options. If no improvement is possible choose the option accordingly.	
28	The winter has <u>set in</u> and the days are cold. (1) set      (2) set out      (3) set up      (4) no improvement
29	The writing is already <u>at</u> the wall. (1) in      (2) on      (3) with      (4) no improvement
<b>Directions (Question 30 to 32).</b> Reorder P,Q,R,S to make a meaningful sentence.	
30	While P: some people live      Q: to eat and drink and wear R: many have not even enough      S: in luxury (1) PQRS      (2) SQPR      (3) QRPS      (4) PSRQ
31	At least P: early today      Q: five persons were killed and 32 injured R: when a passenger train rammed into      S: a stationary goods train (1) QRSP      (2) PSQR      (3) QSPR      (4) SPRQ
32	When he P: did not know      Q: he was nervous and R: heard the hue and cry at midnight      S: what to do (1) RPSQ      (2) SQRP      (3) RQPS      (4) SPRQ
<b>Directions (Question 33 to 40).</b> In these questions, you have two brief passages with 4 questions following each passage. Read the passage carefully and choose the best answer out of the four alternatives.	
<b>PASSAGE – 1</b>	
When the canals were made and enabled coal to be readily conveyed along them at comparatively moderate rates, the results were immediately felt in the increased comfort of the people. Employment became more abundant and industry sprang up in their neighborhood in all directions. The transport of all articles being reduced to about one fourth of their previous rates, articles of necessity and comfort such as had formerly been unknown except to the wealthier classes came into common use among the people.	
33	Common people benefitted because: - (1) water was available      (2) more coal was used (3) articles of necessity and comfort were available to them      (4) By not getting angry
34	Canals caused - (1) to move the ships freely      (2) convey the coal along them at cheaper rates (3) to share the water equally      (4) to restore water transport
35	The word 'abundant' means (1) abandon      (2) always ready      (3) more than enough      (4) jobs
36	Employment became abundant because - (1) more ships were pressed in use      (2) more offices were established (3) people moved out of their houses      (4) industry sprang in the neighborhood
<b>PASSAGE – 2</b>	
When I had finished, George asked if the soap was in. I said I did not care if the soap was in or whether it wasn't. I closed the case and strapped it and found that I had packed my tobacco pouch in it, and had to reopen it. I finally shut it up at 10.05 PM. Now we had to pack up the basket. Harris said that we had to start in less than 12 hours time, so he and George had better to do the rest. I agreed and sat down and they started packing the basket.	
37	Who finally packed the basket? (1) George and Harris      (2) George (3) the narrator sat down and packed      (4) George, Harris and the narrator
38	Why did the narrator reopen the case (1) George asked him to do so      (2) he liked to pack and repack (3) they were to start in 12 hours      (4) he had packed his tobacco pouch in it
39	What did George ask when the narrator had finished? (1) he asked to repack      (2) is the soap in the pack? (3) why are you so slow?      (4) get soap from the market



51	A cricketer had a certain average of runs for his 64 innings. In his 65th inning, he is bowled out for no score. This brings down his average by 2 runs. His new average of runs is:  (1) 130      (2) 128      (3) 132      (4) 70
52	The list price of a clock is Rs. 160. A customer buys it for Rs. 122.40 after two successive discounts. If first discount is 10%, the second is  (1) 10%      (2) 12%      (3) 15%      (4) 18%
53	If a number x is 10% less than another number y and y is 10% more than 125, then x is equal to  (1) 123.25      (2) 125      (3) 137.50      (4) 123.75
54	Cards marked with number 2 to 101 are placed in a box and mixed thoroughly. One card is drawn from the box. Then the probability of card having number a perfect cube is:  (1) $\frac{5}{101}$ (2) $\frac{4}{101}$ (3) $\frac{3}{101}$ (4) $\frac{3}{100}$
55	The product of two whole numbers is 24. The smallest possible sum of all these numbers is:  (1) 10      (2) 12      (3) 8      (4) 9
56	In a group of 40 singers and 80 dancers, 20% of the singers are less than 25 years of age and 40% of the entire group is less than 25 years of age. What %age of dancers are less than 25 years of age?  (1) 25%      (2) 30%      (3) 50%      (4) 15%
57	The area of a square field is 8 hectares. Then time taken by a man to cross it diagonally by walking at the rate of 4 kmph is?  (1) 8 Min      (2) 5 Min      (3) 6 Min      (4) None of these
58	If $(x+1/x)^2 = 3$ then the value of $(x^{72} + x^{66} + x^{54} + x^{36} + x^{24} + x^6 + 1)$ is  (1) 1      (2) 2      (3) 3      (4) 4
59	The radius of a sphere is doubled. Which of the following will increase by a factor of 4?  (1) Only the surface area      (2) Only the volume (3) Both the volume and surface area      (4) None of these
60	If an article is sold at a gain of 5% instead of being sold at a loss of 5%, one gets Rs. 5 more. What is the cost price of the article?  (1) 105      (2) 110      (3) 50      (4) None of these
61	The sides of an equilateral triangle are $(x+3y)$ cm, $(3x+2y-2)$ cm and $(4x + \frac{y+1}{2})$ cm. Then length of each side is:  (1) 12 cm      (2) 15cm      (3) 10cm      (4) None of these
62	The income of C is 20% more than B and the income of B is 25% more than A. How much per cent is C's income more than A's ?  (1) 150%      (2) 50%      (3) 25%      (4) 35%
63	If $\text{LCM}[p(x), q(x)] = 24x^2y$ , $\text{HCF}[p(x), q(x)] = 24xy$ and $p(x) = 8xy$ , then $q(x)$ is:  (1) $3x^2y$ (2) $6x^2$ (3) $6x^2y$ (4) $3x^2$
64	Three numbers which are co-prime to each other are such that the product of first two numbers is 42 and product of last two numbers is 78. Then, the sum of all the three numbers are:  (1) 25      (2) 32      (3) 26      (4) 13
65	The smallest positive value of $\theta$ satisfying the equation $\tan \theta = 2\sin \theta$ is  (1) 0      (2) $\infty$ (3) $60^\circ$ (4) None of these

66	The sum of two digits of a number and the number obtained by reversing its digits is a square number. How many such numbers are there? (1) 4                      (2) 6                      (3) 7                      (4) 8
67	In $\triangle ABC$ , right angled at C, having sides a,b,c opposite to A,B,C respectively. Then $\tan A + \tan B$ is: (1) $\frac{b^2}{ac}$ (2) $\frac{a+b}{ac}$ (3) $\frac{a^2}{bc}$ (4) $\frac{c^2}{ab}$
68	Teja Singh gets 3 marks for each correct sum and loses 2 marks for each wrong sum. He attempts 30 sums and obtained 40 marks. The number of sums solved correctly is (1) 15                      (2) 20                      (3) 25                      (4) 10
69	The equation $kx^2 - 6x - 2 = 0$ has real roots for: (1) $k \geq -19/2$ (2) $k \geq -9/2$ (3) $k \leq -19/2$ (4) $k \leq -9/2$
70	In a race of one kilometer, A gives B a start of 100 meters and still wins by 20 seconds. But if A gives B a start of 25 seconds, B Wins by 50 meters. The time taken by A to run one kilometer is (1) 17 sec    (2) $\frac{500}{29}$ sec                      (3) $\frac{1200}{29}$ sec                      (4) $\frac{700}{29}$ sec
71	Circle A touches circle B through the centre of circle B. If the area of circle A is $100 \text{ cm}^2$ , then the area of circle B is: (1) $200 \text{ cm}^2$ (2) $300 \text{ cm}^2$ (3) $400 \text{ cm}^2$ (4) $500 \text{ cm}^2$
72	In $\triangle ABC$ , $\angle BCA = 90^\circ$ and $CD \perp AB$ , with $AD = 4 \text{ cm}$ and $BD = 9 \text{ cm}$ , then the value of DC is: (1) 8cm                      (2) 6cm                      (3) 4cm                      (4) 10cm
73	If two adjacent sides of a square paper are reduced by 20% and 40% respectively, by what % does the new area decrease? (1) 50%                      (2) 52%                      (3) 62%                      (4) 58%
74	A man builds a circular pool of radius 5 m inside circle of radius 12m. In order to compensate the area lost by construction of pool, he extends the radius by "r" while keeping the garden still circular, so that the area of garden remains the same. The value of "r" in meter is: (1) 1                      (2) $\sqrt{5}$ (3) $\sqrt{7}$ (4) $\frac{5}{\pi}$
75	A cone of height "h" and radius R, whose base is fixed, is squeezed by applying a force at its tip so that the height of the squeezed solid became h/2. What is the radius of the new circular face (frustum) generated: (1) $\frac{\sqrt{5}}{2} R$ (2) $\frac{(\sqrt{5}-1) R}{2}$ (3) $\frac{(\sqrt{5}+1) R}{3}$ (4) $\frac{(\sqrt{5}+1) R}{2}$
76	The mean of a set of 20 observations is 19.3. The mean is reduced to 0.5, when a new observation is added to the set. The new observation is: (1) 19.8                      (2) 9.8                      (3) 9.2                      (4) 8.8
77	The hundred digit of a three digit number is 7 more than the unit digit. The digits of the number are reversed and the resulted number so obtained, is subtracted from the original three digit number. The unit digit of the final number so obtained is: (1) 0                      (2) 1                      (3) 2                      (4) 3
78	At what angle the hands of a clock (in degree) are inclined at 15 minutes past 6? (1) $27 \frac{1}{2}$ (2) $97 \frac{1}{2}$ (3) $25 \frac{1}{2}$ (4) $72 \frac{1}{2}$
79	Jay, Babita, Keshav and Deepa are standing on four different corners of square. Jay moves toward Keshav and reaches at his position in $20\sqrt{2}$ steps. Now Keshav will reach on Deepa's position in (1) $20\sqrt{2}$ steps                      (2) 20 steps                      (3) 10 steps                      (4) data is inadequate

80	If the average of six consecutive even numbers is 25, the difference between the largest and smallest number is:- (1) 8                      (2) 10                      (3) 12                      (4) 14
81	If a letter is drawn at random from the letters in the Word "PRORATA", then the letters which have equal probabilities of being drawn are: (1) A and R                      (2) P, O and T                      (3) R, O and A                      (4) both (1) and (2)
82	A container contains 80 L of milk. From this container, 8 L of milk was taken out and replaced by water. This process was further repeated two times. How much milk is now contained by the container? (1) 60L                      (2) 58.6 L                      (3) 58 L                      (4) 58.32L
83	The additive inverse of S, where $S=1-2+3-4+5-6+7\dots\dots\dots + 49-50$ , is: (1) -25                      (2) 1                      (3) 0                      (4) 25
84	If p and q are non-zero constants and the equation $x^2+px+q=0$ has roots $\alpha$ and $\beta$ , then the equation $qx^2+px+1=0$ has roots (1) $\alpha$ and $1/\beta$ (2) $1/\beta$ and $\alpha$ (3) $1/\alpha$ and $1/\beta$ (4) None of these
85	The following pie chart shows the hours spent for study at home per day by class 10 students. What percent of students study at least for one hour?  (1) 25%                      (2) 33%                      (3) 66%                      (4) 75%
86	In an office, there are 108 tables and 132 chairs. If $1/6$ of the tables and $1/4$ of the chairs are broken, how many people can work in the office, if each person requires one table and one chair? (1) 86                      (2) 90                      (3) 92                      (4) 99
87	A certain scheme of investment in simple interest declares that it trebles the investment in 8 years. If you want to quadruple the money through that scheme, for how many years you have to invest for: (1) 11 years 6 months                      (2) 10 years 8 months                      (3) 10 years                      (4) 12 years
88	$999 \frac{1}{7} + 999 \frac{2}{7} + 999 \frac{3}{7} + 999 \frac{4}{7} + 999 \frac{5}{7} + 999 \frac{6}{7}$ is simplified to (1) 5997                      (2) 5979                      (3) 5994                      (4) 2997
89	The area of a square inscribed in a circle of diameter p cm is (1) $p^2 \text{ cm}^2$ (2) $p^2/2 \text{ cm}^2$ (3) $p/2 \text{ cm}^2$ (4) $p^2/4\text{cm}^2$
90	The height of a room is $1/4^{\text{th}}$ of the sum of length and breadth. The cost of painting the wall at the rate of 50 paise per $\text{m}^2$ is Rs. 400. Then height of room is (1) 12m                      (2) 15m                      (3) 8m                      (4) 10m
91	A tower subtends an angle $\alpha$ at a point 'A' in the plane of its base and the angle of depression of the foot of the tower at a height 'b' just above point A is $\beta$ . Then the height of the tower is (1) $b \tan\alpha \cot\beta$ (2) $b \cot\alpha \tan\beta$ (3) $b \tan\alpha \tan\beta$ (4) $b \cot\alpha \cot\beta$
92	Two lines are said to be parallel. The equation of one of the lines is $4x+3y=14$ . The equation of second line is : (1) $3x+4y=14$ (2) $12x + 9y=42$ (3) $-12x=9y$ (4) None of these.

93	<p>How many different triangles are there in the figure shown below:-</p>  <p>(1) 28                      (2) 20                      (3) 24                      (4) 26</p>
94	<p>The average of the three numbers <math>x</math>, <math>y</math> and <math>z</math> is 45. <math>x</math> is greater than the average of <math>y</math> and <math>z</math> by 9. The average of <math>y</math> and <math>z</math> is greater than <math>y</math> by 2. Then the difference of <math>x</math> and <math>z</math> is:</p> <p>(1) 3                      (2) 5                      (3) 7                      (4) None of these</p>
95	<p>The <math>n^{\text{th}}</math> term of the sequence <math>\frac{1}{n}, \frac{n+1}{n}, \frac{2n+1}{n}, \dots</math> is</p> <p>(1) <math>\frac{n^2+1}{n}</math>                      (2) <math>\frac{n^2-n+1}{n}</math>                      (3) <math>n+1</math>                      (4) None of these</p>
96	<p>If <math>p</math> and <math>q</math> are two consecutive natural numbers, then HCF (<math>p</math>, <math>q</math>) is</p> <p>(1) <math>q</math>                      (2) <math>p</math>                      (3) 1                      (4) none of these</p>
97	<p>If zeros of the polynomial <math>x^3 - 3x^2 + x + 1 = 0</math> are <math>a-d</math>, <math>a</math>, <math>a+d</math> then <math>(a+d)</math> is</p> <p>(1) a natural no.                      (2) a non-integer no.                      (3) an integer                      (4) an irrational no.</p>
98	<p>Under which conditions the equation <math>2(a^2+b^2)x^2 + 2(a+b)x + 1 = 0</math> have non-real roots? (<math>a</math> and <math>b</math> are real numbers)</p> <p>(1) If <math>a = b</math>                      (2) If <math>a &gt; b</math>                      (3) if <math>a &lt; b</math>                      (4) If <math>a \neq b</math></p>
99	<p>The distance between the points <math>P(4, -5)</math> and <math>Q(12, k)</math> is 10 units. The sum of all the possible values of '<math>k</math>' is?</p> <p>(1) -10                      (2) -5                      (3) 12                      (4) 4</p>
100	<p>The ratio of milk and water in mixture of four containers are 5 : 3, 2 : 1, 3 : 2 and 7 : 4, respectively. In which container the quantity of milk, relative to water is minimum?</p> <p>(1) First                      (2) Second                      (3) Third                      (4) Fourth</p>