

**NATIONAL TALENT SEARCH EXAMINATION  
STAGE 1, 2020 – 21**

CENTER CODE			
-------------	--	--	--

SEAT NO							
---------	--	--	--	--	--	--	--

**STATE LEVEL EXAMINATION – QUESTION BOOKLET  
SCHOLASTIC APTITUDE TEST  
CLASS X**

**MEDIUM: MARATHI WITH ENGLISH VERSION**

**[Date : 13<sup>th</sup> December, 2020]**

**[Time : 13:30 P.M. to 15:30 P.M.]**

**Time : 120 Minutes**

**Maximum Marks : 100**

**INSTRUCTION TO CANDIDATES**

**Read the following instructions carefully before you answer the questions.**

1. Answers are to be bubbled only on the separate carbonless answer – sheet provided to you. After examination detach the carbonless copy from original OMR & Keep carbonless copy with you till the declaration of result
2. Please write your centre code & Seat NO. very clearly (Only one digit in one block) on question paper. Before writing your seat, no. ascertained it with Hall Ticket. Please see that no block is left blank or unfilled

**Example**

CENTER CODE	2	1	0	2
-------------	---	---	---	---

SEAT NO	3	9	2	0	2	1	0	2	1	2	3
---------	---	---	---	---	---	---	---	---	---	---	---

3. Please ensure that you have received Scholastic Aptitude Test Answer Sheet
4. Total number of questions are 100 for this paper. All questions carry one mark each.
5. All questions are compulsory.
6. For each question there are four options given in question paper. Check for correct answer and bubble correct option from four circles given in answer sheet by Black/Blue pen. Please do not write any answers on questions papers.
7. Start answering from first question one after till last question.
8. If you do not know the answer to any question, do not spend much time on it and pass on to the next one. Time permitting you can come back to the questions which you have left in the first instance and try them again.
9. Utilize the allotted time for solving the questions in best possible way. The rough work is to be done in box given under each page.
10. Do not write anything except Center Code, Seat NO. and rough work anywhere in this booklet

# SAT

1. Observe the columns I and II, match them and select the correct alternative from the given options.

I	II
A. Motion of earth around sun	(i) Nuclear force
B. Motion of stone tied to a string and whirled in a circle	(ii) Electromagnetic force
C. Motion of electron around nucleus	(iii) Gravitational force
D. Motion of blades of fan	(iv) Tension

- (1) A-(i), B-(ii), C-(iv), D-(iii)      (2) A-(ii), B-(iii), C-(i), D-(iv)  
 (3) A-(iv), B-(i), C-(iii), D-(ii)      (4) A-(iii), B-(iv), C-(i), D-(ii)

2. Heat is a form of \_\_\_\_\_ energy.

- (1) Potential      (2) Kinetic  
 (3) Chemical      (4) Elastic

3. If mass of a planet is 25 times mass of earth and radius of the planet is 125 times radius of earth then escape velocity of an object from the planet ( $V_p$ ) is \_\_\_\_\_ times the escape velocity from earth ( $V_E$ ).

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

4. Equal masses of iron, water, aluminium and mercury at same initial temperatures is heated uniformly for 5 mins. If the temperatures obtained are

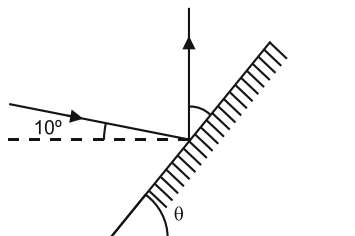
$T_1$  – mercury,  $T_2$  – aluminium,  $T_3$  – water,  $T_4$  – iron, then choose the correct alternative.

- (1)  $T_1 < T_4 < T_2 < T_3$       (2)  $T_1 > T_4 < T_2 > T_3$   
 (3)  $T_1 > T_4 > T_2 > T_3$       (4)  $T_1 < T_4 > T_2 < T_3$

5. If approximate refractive index of sapphire is 1.8, then approximate decrease in velocity of light, when light enters sapphire is \_\_\_\_\_.

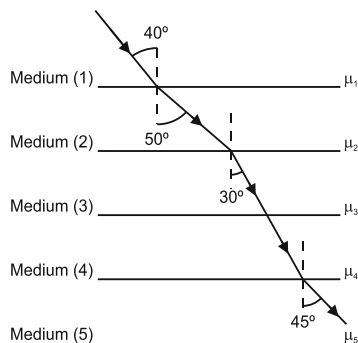
- (1) 40%      (2) 45%  
 (3) 50%      (4) 55%

6. If an incident ray making an angle of  $10^\circ$  with the horizontal is to be reflected perpendicular to the horizontal, by an inclined plane mirror, then inclination of the plane mirror ( $\theta$ ) should be \_\_\_\_\_.



- (1)  $\theta = 30^\circ$       (2)  $\theta = 40^\circ$   
 (3)  $\theta = 50^\circ$       (4)  $\theta = 60^\circ$

7. A ray of light follows the path as shown in figure as it travels through different media. Choose the correct relation regarding refractive indices from the given alternatives.



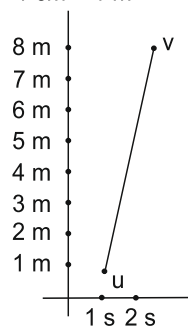
- (1)  $\mu_1 > \mu_2 < \mu_3 = \mu_4 > \mu_5$  (2)  $\mu_1 = \mu_2 < \mu_3 = \mu_4 > \mu_5$   
 (3)  $\mu_1 > \mu_2 < \mu_3 > \mu_4 < \mu_5$  (4)  $\mu_1 < \mu_2 < \mu_3 = \mu_4 > \mu_5$

8. The main objective of \_\_\_\_\_ satellite launched by COEP [College of Engineering, Pune] orbiting at a height of \_\_\_\_\_ is to provide point-to-point messaging services.

- (1) Samarpan, 550 km (2) Sampoonam, 540 km  
 (3) Swayam, 515 km (4) Sayam, 500 km

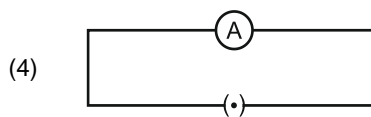
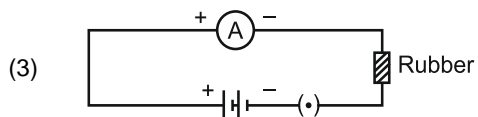
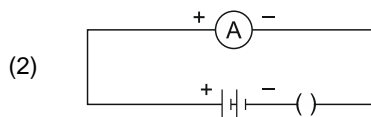
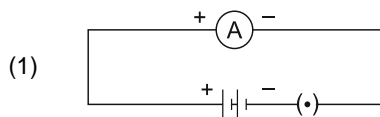
9. The position-time details travelled by a particle are as shown in figure. The initial velocity and acceleration of the particle is \_\_\_\_\_ respectively.

On x-axis time is  
 seconds 2 cm = 1 s  
 On y-axis displacement  
 1 cm = 1 m

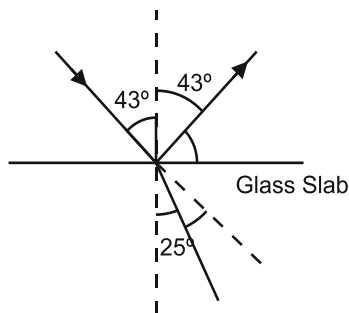


- (1)  $u = 2 \text{ cm/s}^2$ ,  $a = 2 \text{ ms}^{-1}$  (2)  $u = 2 \text{ cm/s}$ ,  $a = 2 \text{ ms}^{-2}$   
 (3)  $u = 0.2 \text{ ms}^{-1}$ ,  $a = 0.2 \text{ ms}^{-2}$  (4)  $u = 2 \text{ ms}^{-1}$ ,  $a = 2 \text{ ms}^{-2}$

10. In which of the following circuits ammeter shows deflection?



11. In partial reflection and refraction of light from surface of glass slab, if angle of incidence  $\angle i = 43^\circ$  and angle of refraction  $\angle r = 25^\circ$ , then the reflected ray and refracted ray are deviated from the incident ray by \_\_\_\_\_ and \_\_\_\_\_ respectively.

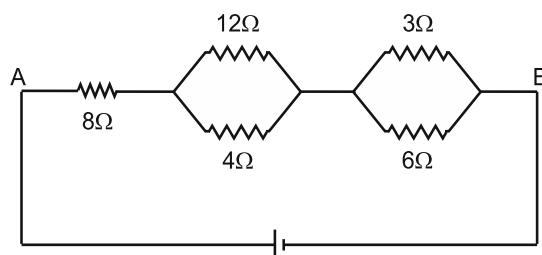


- (1)  $18^\circ$ ,  $94^\circ$  (2)  $94^\circ$ ,  $18^\circ$   
 (3)  $112^\circ$ ,  $15^\circ$  (4)  $15^\circ$ ,  $112^\circ$

12. Three bulbs of 100 W each, a fan of 1500 W and an electric iron of 1100 W are daily operated for 5 hours, 7 hours and 2 hours respectively. What will be the total electrical consumption expenses of these appliances for the month of April. The electrical company charges Rs. 5 unit.

- (1) Rs. 1500 (2) Rs. 1080  
 (3) Rs. 2130 (4) Rs. 2080

13. In the circuit diagram shown in figure potential difference across  $3\Omega$  resistance is 10V. Match the following two columns.



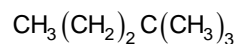
Potential difference across resistances	Resistances
(i) 65 V	(1) $6\Omega$
(ii) 40 V	(2) $4\Omega$
(iii) 15 V	(3) $8\Omega$
(iv) 10 V	(4) AB

- (1) (i) – 4, (ii) – 3, (iii) – 2, (iv) – 1 (2) (i) – 3, (ii) – 4, (iii) – 3, (iv) – 2  
 (3) (i) – 2, (ii) – 1, (iii) – 4, (iv) – 3 (4) (i) – 1, (ii) – 2, (iii) – 1, (iv) – 4

14. As per Dalton's sign, the symbol of hydrogen element is represented by

- (1)  $\odot$  (2)  $\ominus$   
 (3)  $\bullet$  (4)  $\oplus$

15. What is the IUPAC name of the following compound?



- (1) 2, 2-Dimethyl butane (2) 2-Methyl butane  
 (3) 2, 2-Dimethyl pentane (4) 2-Methyl pentane

16. Extraction of gold metal is done by \_\_\_\_\_ method.

- (1) Froth floatation method (2) Leaching method  
 (3) Magnetic separation method (4) Hydraulic separation method

17. Comparative atomic radius of beryllium is \_\_\_\_\_.

- (1)  $\text{Be} > \text{Li}$  (2)  $\text{B} > \text{Be}$   
 (3)  $\text{Li} > \text{Be}$  (4)  $\text{Be} < \text{N}$

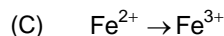
18. Identify the oxidation process from the following

- (A)  $\text{Zn} \rightarrow \text{Zn}^{++}$  (B)  $\text{Fe}^{3+} \rightarrow \text{Fe}^{2+}$



(1) 1 &amp; 3

(3) 2 &amp; 3



(2) 2 &amp; 4

(4) 1 &amp; 4

19. How many covalent bonds are present in propyne molecule?

(1) 8

(2) 7

(3) 6

(4) 5

20. The substance in molten state is diluted in water and cooled to  $50^\circ\text{C}$  results into precipitation of aluminium hydroxide. The substance is \_\_\_\_\_.(1)  $\text{Na}_2\text{O}$ (2)  $\text{Al}_2\text{O}_3$ (3)  $\text{NaAlO}_2$ (4)  $\text{SiO}_2$ 

21. Actual atomic mass of Sr is 87.6. What is the average atomic mass of Sr. according to Dobereiner's triad?

(1) 88.7

(2) 87.2

(3) 88.2

(4) 88.0

22. Oxidation product of methyl alcohol is \_\_\_\_\_.

(1) acetic acid

(2) methyl amine

(3) formic acid

(4) ethyl acetate

23. Which of the following is not an example of homologous series?

(1)  $\text{C}_2\text{H}_6\text{O}$ (2)  $\text{C}_4\text{H}_8\text{O}$ (3)  $\text{C}_4\text{H}_{10}\text{O}$ (4)  $\text{C}_3\text{H}_8\text{O}$ 

24. From the given diagram, identify the element 'X' and 'Y'?

Group $\rightarrow$	13	14	15	16	17	18
Period $\downarrow$						
II	B					
III		Si				
IV		'X'	As			
V			'Y'	Te		
VI					At	

(1) Ga and Sn

(2) Ge &amp; Po

(3) Ge &amp; Sb

(4) Sb &amp; Po

25. Reddish coloured poisonous gas is produced when copper reacts with nitric acid, the gas is \_\_\_\_\_.

(1)  $\text{NO}_2$ 

(2) NO

(3)  $\text{N}_2\text{O}$ (4)  $\text{N}_2\text{O}_2$ 26. How many atoms are present in a mole of  $\text{Ca}(\text{HCO}_3)_2$ ?(1)  $5 \times 6.02 \times 10^{23}$ (2)  $7 \times 6.02 \times 10^{23}$ (3)  $9 \times 6.02 \times 10^{23}$ (4)  $11 \times 6.02 \times 10^{23}$ 

27. Carbon dating method developed by Willard Libby is based upon the radioactive decay of naturally occurring carbon \_\_\_\_\_.

(1)  $\text{C}^{14}$ (2)  $\text{C}^{11}$ (3)  $\text{C}^6$ (4)  $\text{C}^{22}$ 

28. In which of the following cells a cell plate is formed exactly along midline of the cell and thus completing cytokinesis?

(1) blood cells

(2) muscle cells

(3) nerve cells

(4) cells in the root of onion

29. Identify the members in embryo-sac of flowers before fertilization occurs.

(1) one haploid egg cell and one haploid male gamete

- (2) two haploid male gametes and two haploid polar nuclei
- (3) one haploid egg cell and two haploid polar nuclei
- (4) one haploid male gamete and two haploid polar nuclei

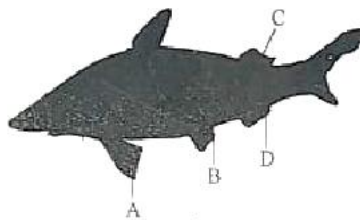
30. What is indicated in clause 49A of Wildlife Protection Act, 1972?

- (1) Ban on use of articles prepared from skin or organs of wild animals
- (2) Compulsion for disclosure of stock of artifacts made from rare wild animals
- (3) Ban on trading of rare wild animals.
- (4) Completely ban on migration of rare animals

31. 'Molai Jungle' is in which state?

- (1) Meghalaya
- (2) Assam
- (3) Arunachal Pradesh
- (4) Nagaland

32. Identify pelvic fin in the given figure.



- (1) A
- (2) B
- (3) C
- (4) D

33. \_\_\_\_\_ is most clever animal among all non-chordates and which can change its colour.

- (1) Octopus
- (2) Lizard (Chameleon)
- (3) Snail
- (4) Balanoglossus

34. Which is effective antibiotics against tuberculosis?

- (1) Cephalosporins
- (2) neomycin
- (3) streptomycin
- (4) rifamycin

35. Glucose and fructose syrup can be obtained from cornflour by action of enzymes obtained from \_\_\_\_\_ and \_\_\_\_\_.

- (1) Brevibacterium and Corynebacterium
- (2) Hansenula and lacto-bacillus brevis
- (3) Saccharomyces cerevisiae and Candida
- (4) bacillus and Streptomyces

36. From the following pairs of living organisms which pair is used for freshwater fishery?

- (1) Rohu, Catla
- (2) Shrimp, Lobsters
- (3) Rohu, lobsters
- (4) Catla, lobsters

37. Consumption of tobacco products lead to which disease in human beings?

- (1) tuberculosis
- (2) AIDS
- (3) cancer of the lungs
- (4) leprosy

38. Identify action plan from the following pre-disaster management.

- (1) Participation of preferably local people saved from the disaster in arranging help of victims.
- (2) Quick establishments of help centre.
- (3) Categorization of the help material received from control centre, delivering the material to victims.
- (4) Increasing awareness about disaster management among the general public.

39. Amongst the following which disease spread through bacteria?

- (1) Hepatitis
- (2) Pneumonia
- (3) Influenza
- (4) Chicken pox

40. Identify the odd pair of hormone and its function from the following

- (1) Gibberellins-helps in elongation in stem
- (2) Cytokinins-help in cell division
- (3) Absciscic acid-production of flowers
- (4) Auxin-help in enlargement of cells

41. Annales School gave a new direction to history writing. Identify the newly recognised aspect which was stated by Annales School.
- (1) History is only about political events
  - (2) Great leaders and their accordingly politics
  - (3) Study of trade technology means of communication
  - (4) Study of kings and wars
42. Who argued that the prevailing practices of arranging historical events in a chronological order is not right?
- (1) Michel Foucault
  - (2) Karl Marx
  - (3) Leopold Von Ranke
  - (4) Friedrich Hegel
43. Ishwardas Nagar, Bhimsen Saxena were the histories of \_\_\_\_\_ 's times.
- (1) Jahangir
  - (2) Aurangzeb
  - (3) Shahjahan
  - (4) Akbar
44. Identify the style of painting which influenced Maratha style of painting.
- (1) Art style
  - (2) Varli Kala
  - (3) Rajput Kala
  - (4) Classical Art
45. The temples built in the Hemadpanti style and places of it are given below. Identify the wrong pair.
- (1) Verul – Kailash
  - (2) Mumbai – Ambreshwar
  - (3) Nashik – Gondeshwar
  - (4) Hingoli – Aundha Nagnath
46. Newspaper \_\_\_\_\_ began to publish articles about the nationwide situations, books in the native languages and the politics in other countries.
- (1) Maratha
  - (2) Kesari
  - (3) Deenbandhu
  - (4) Indu Prakash
47. Who was the editor of the periodical name 'Pragati' (1929)?
- (1) Pandit Narendra Sharma
  - (2) Balshastrri Jambhekar
  - (3) Traymbak Shankar Shejwalkar
  - (4) Gopal Hari Deshmukh
48. Identify the correct option from the alternatives given below
- |  |  |
|--|--|
| (i) Patan at Gujrat                        | (d) The Capital Complex                    |
| (ii) Hampi                                 | (b) Chhau Dance                            |
| (iii) Chandigarh                           | (c) Rani-ki-Vav                            |
| (iv) West Bengal                           | (d) Group of Monuments                     |
| (1) (i) – d, (ii) – a, (iii) – b, (iv) – c | (2) (i) – c, (ii) – d, (iii) – a, (iv) – b |
| (3) (i) – b, (ii) – c, (iii) – d, (iv) – a | (4) (i) – a, (ii) – b, (iii) – c, (iv) – d |
49. Identify the wrong pair related to the movie and its directions.
- |                              |   |                      |
|------------------------------|---|----------------------|
| (1) Bal Shivaji              | – | Prabhakar Pendharkar |
| (2) Dhanyate Santaji Dhanaji | – | Diankar D. Patil     |
| (3) Bajirao Mastani          | – | Bhalji Pendharkar    |
| (4) Baji Prabhu Deshpande    | – | Dadasaheb Torane     |
50. \_\_\_\_\_ scheme was launched in 1970-1971 in Maharashtra.
- (1) Rural Water Supply
  - (2) Nutritious diet
  - (3) To supply more electricity for pumps
  - (4) Pulse Polio Vaccination
51. Which game was not mentioned in the ancient Indian literature and in the EPICS?
- (1) dice (dyut)
  - (2) horse and the chariot races
  - (3) boxing
  - (4) Chess
52. Identify the name of the book which has description of flying dolls?
- (1) Kathasaritsagar
  - (2) Kitchak Vadh
  - (3) Harshacharit
  - (4) Manasollas
53. Observe the picture and identify the name of the cave, where this sculpture is carved.



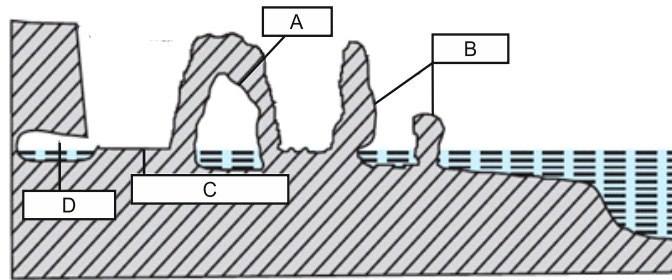


- (1) Ajanta (2) Gharapuri  
(3) Panhalaje (4) Verul
54. Identify first nuclear reactor of India functioning on atomic energy.  
(1) Dhruv (2) Apsara  
(3) Tarapur (4) Zarrina
55. Which five year plan consisted of measures to lay the foundation of planned economic development?  
(1) second (2) third  
(3) fourth (4) first
56. Identify the well known play of Shakespeare on which Marathi play 'Natsamrat' was styled?  
(1) Hamlet (2) King Lear  
(3) Julius Ceaser (4) Romeo-Juliet
57. Which provision is not included in the basic structure of the constitution?  
(1) Federal structure of constitution (2) Promotion of unity and integrity of the nation  
(3) Sovereignty of the nation (4) Supremacy of parliament
58. After which reform the farmers' movement became more active and effective?  
(1) tenancy laws (2) laws related to titling of the lands  
(3) debt relief (4) green revolution
59. Choose the wrong option which is not mentioned in Article 51 of the Indian constitution.  
(1) Establish international peace and security  
(2) Foster respect for international law  
(3) Discourage settlement of international disputes by arbitration  
(4) Maintain justice and honourable relation between nations
60. According to you, which two conditions among the options are violating code of conduct?  
(1) The candidate distributes items of household use  
(2) Promise made to resolve the water problem if elected  
(3) To go from door-to-door to meet voters and request them to vote  
(4) To appeal on the basis of caste and religion to get support  
(1) 1 and 2 (2) 1 and 4  
(3) 2 and 3 (4) 3 and 4
61. Who is known as 'Waterman of India'?  
(1) Shree Anna Hajare (2) Sardar Vallabhbhai Patel  
(3) Dr. Rajendra Sinh Rana (4) Shree Sundarlal Bahuguna
62. Which organ of the United Nation passes the annual budget of United Nation as in function?  
(1) General Assembly (2) Security Council  
(3) Economic and Social Council (4) Trustship Council
63. The idea of party less democracy is put forth by the following leaders. Choose the wrong option. Name of the leader who does not support the concept of party less democracy.  
(1) Mahatma Gandhi (2) Lokmanya Tilak  
(3) Vinoba Bhawe (4) Jaiprakash Narayan
64. Choose the number of percentage which has been raised to increase representation of women in politics.  
(1) 33% (2) 50%

(3) 60%

(4) 58%

65. In the above diagram wave cut platform has been shown with letter \_\_\_\_\_ .



(1) A

(2) B

(3) C

(4) D

66. Increase in the \_\_\_\_\_ is an indicator of development of that society of a country.

(1) Life expectancy

(2) Sex ratio

(3) Density

(4) Population

67. Match the appropriate pair of a region and its major forest type shown with his code letters in the outline map of India.



I. Himalayan Forest

II. Deciduous forest

III. Thorny shrubs forest

IV. Evergreen forest

(1) A – II, B – IV, C – I, D – III

(2) A – IV, B – III, C – II, D – I

(3) A – I, B – II, C – III, D – IV

(4) A – III, B – I, C – IV, D – II

68. \_\_\_\_\_ from the Western Rajasthan is considered as the most dry part in India.

(1) Jaisalmer

(2) Ajmer

(3) Jodhpur

(4) Jaipur

69. Identify the wrong statement from the statements given below;

(1) Brazil is fifth in the world with respect to area.

(2) The density of population in Brazil is around 230 persons per sq. km.

(3) According to census 2011 population of India was 121 crores.

(4) According to census 2011 India's density of population is 382 persons per sq. km

70. In India about \_\_\_\_\_ present of passengers are carried by road.

(1) 75%

(2) 65%

(3) 85%

(4) 80%

71. In which direction of Brazil, there is no sea coast?

(1) East

(2) West

(3) South

(4) North

72. Identify the correct option for correct pairs:

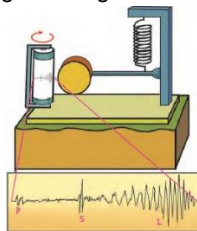
Column A	Column B
(1) Pantanal	(i) Pink dolphins
(2) Looks like a lion	(ii) Condors
(3) Fish variety	(iii) Anacondas

(4) Huge sized bird	(iv) Golden tamrin
(1) A – iii, B – iv, C – i, D – ii	(2) A – iv, B – iii, C – ii, D – i
(3) A – ii, B – i, C – iii, D – iv	(4) A – i, B – ii, C – iv, D – iii

73. Which one of the following is not a major trading partner of Brazil?
- (1) Pakistan (2) Germany  
(3) India (4) Canada
74. What type of tourism is developing in Brazil?
- (1) Historical (2) Cultural  
(3) Eco-tourism (4) Professional
75. Choose the correct order of mountain ranges from Southern Himalayan ranges to Northern Himalayan ranges.
- (1) Lesser Himalayas – Sivaliks – Himadri (2) Sivaliks – Himadri – Lesser Himalayas  
(3) Himadri – Lesser Himalayas – Sivaliks (4) Sivaliks – Lesser Himalayas – Himadri
76. India is located in the \_\_\_\_\_ hemispheres of the earth.
- (1) Southern and Eastern (2) Northern and Eastern  
(3) Northern and Western (4) Southern and Western
77. Which international organization is using the logo printed below?



- (1) World Trade Organization (W.T.O) (2) ASEAN  
(3) APEC (4) OPEC
78. \_\_\_\_\_ is the most urbanized state in India.
- (1) Maharashtra (2) Gujarat  
(3) Goa (4) Kerala
79. Identify the wrong pair:
- River Tributary
- (1) Ganga – Yamuna (2) Sindhu – Satluj  
(3) Krishna – Tungabhadra (4) Tapi – Bhima
80. Which letter indicates the surface waves in the given diagram?



- (1) P (2) S  
(3) M (4) L
81. Arpita has some coins of Rs. 1 and Rs. 2. The total number of coins that she has is 50. The total amount that she has is Rs. 75. Find the number of coins that she has of Rs. 1 and Rs. 2 respectively.
- (1) 35 and 15 (2) 35 and 20  
(3) 15 and 35 (4) 25 and 25
82. One root of the quadratic equations  $x^2 - bx + 6 = 0$  and  $x^2 - 6x + c = 0$  is equal. The ratio of the remaining roots is 3 : 4. If all the roots are positive integers find the values of b and c respectively.
- (1) 3, 4 (2) 5, 8

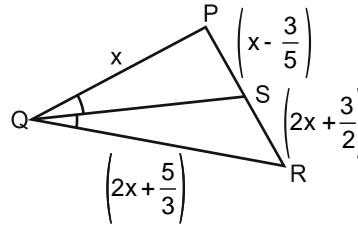
- (3) 1, 6 (4) 8, 5
83. Speed of the boat in still water is 6 km/hr. The time required to go downstream in half of the time required to go upstream. Find the speed of the water current.  
 (1) 5 km/hr (2) 4 km/hr  
 (3) 3 km/hr (4) 2 km/hr
84. The sum of the 3<sup>rd</sup> and 8<sup>th</sup> term of an A.P. is 7 and the sum of the 7<sup>th</sup> term and 14<sup>th</sup> term is -3. Find the 10<sup>th</sup> term of the A.P.  
 (1) -1 (2) +1  
 (3) 0 (4) 2
85. A bag contains 5 red and some blue balls. One ball is taken out of the bag a random. The probability that the balls taken out is blue is double of the probability that the ball drawn is red. Find the total number of balls in the bag.  
 (1) 15 (2) 10  
 (3) 5 (4) 20
86.  $n$  is an odd number. Which of the following statement is true?  
 (1)  $(2^n + 1)$  is divisible by 5 (2)  $(2^n + 1)$  is divisible by 3  
 (3)  $(2^n - 1)$  is divisible by 5 (4)  $(2^n - 1)$  is divisible by 3
87. The first term in an A.P. is 1. Common difference is 3. If the sum of the  $n$  terms in the A.P. is 2380, find the 40<sup>th</sup> term.  
 (1) 117 (2) 118  
 (3) 119 (4) 120
88. Find the probability that a leap year has 53 Sundays.  
 (1)  $\frac{4}{7}$  (2)  $\frac{3}{7}$   
 (3)  $\frac{2}{7}$  (4)  $\frac{1}{7}$
89. Observe the following frequency distribution table. It shows the distances travelled by 250 public transport buses in a day. Find the median of the distance travelled.
- | Distance in (km) | 200-210 | 210-220 | 220-230 | 230-240 | 240-250 |
|------------------|---------|---------|---------|---------|---------|
| No. of buses     | 40      | 60      | 80      | 50      | 20      |
- (1) 225 (2) 217.80  
 (3) 223.125 (4) 230
90. If  $a + b = 2\sqrt{3}$ , and  $ab = 3$ , then  $a^4 + b^4 = 7$ .  
 (1) 14 (2) 16  
 (3) 18 (4) 20
91. In  $\Delta MNP$  seg.QR || Seg. NP.  
 If 3.2 QN = 5.3 QM and QR = 6.4, then NP = ?  
 (1) 11.7 (2) 17  
 (3) 10.4 (4) 15.9
92. If point P(x, y) is equidistant from points Q(-2, 5) and R(6, -1) then find b relation between x and y.  
 (1)  $4x - 3y = 2$  (2)  $x - 3y = 2$   
 (3)  $4x + 3y = -2$  (4)  $2x - 3y = 2$
93. From the information given below find out which triangles can not be continue. Choose the correct alternative.  
 (A) PQ = 6.2 cm ;  $(PR + QR)^2 = 81$  cm  
 (B)  $AB = 13\sqrt{3}$ cm ;  $BC = 11\sqrt{2}$ cm ;  $AC = 5\sqrt{7}$ cm  
 (C) XY = 0.2 m ; YZ = 0.21 m ; XZ = 0.29 m  
 (C) MN + NP = 4 ; NP + PM = 8 ; MN + PM = 6

- (1) Only B and C  
(2) Only A and D  
(3) Only A and D  
(4) Only B and D

94. A storm broke a tree and the treetop rested  $13\sqrt{6}$  m from the base of the making an angle  $45^\circ$  with the horizontal. Find the height of the tree.

- (1)  $26\sqrt{6}$  m  
(2)  $13\sqrt{3}(2+\sqrt{2})$  m  
(3)  $26\sqrt{3}$  m  
(4)  $26\sqrt{2}+13\sqrt{3}$  m

\*95. In  $\triangle PQR$ , Seg. QS is the bisector of  $\angle PQR$ . If  $PQ = x$ ;  $QR = \left(2x + \frac{5}{3}\right)$ ;  $PS = \left(x - \frac{3}{5}\right)$ ;  $RS = \left(2x + \frac{3}{2}\right)$ . Find the value of  $x$ . Choose the correct alternative.



- (1) -1  
(2)  $\frac{31}{30}$   
(3)  $-\frac{31}{30}$   
(4)  $-\frac{30}{31}$

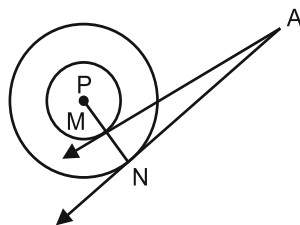
96. In an isosceles triangle length of one of the side of the congruent sides is 17 cm and the length of non-congruent side is 16 cm. Find distance between the vertex opposite to non-congruent side and the centroid.

- (1) 10 cm  
(2) 8 cm  
(3) 9 cm  
(4) 6 cm

97. If  $\sin\theta + \cos\theta = \frac{3}{2}$  then  $\sin\theta \cdot \cos\theta = ?$

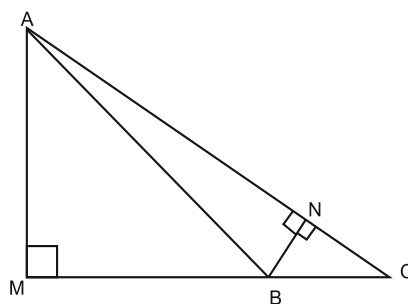
- (1) 1  
(2)  $\frac{2}{3}$   
(3)  $\frac{5}{8}$   
(4) 0

98. P is the centre of two concentric circles having radius 3 cm and 5 cm. Two tangents are drawn from point A which is outside the circle. Tangent AM touches the smaller circle at point M and tangent AN touches the bigger circle at point N. If  $AM = 13$  cm then  $AN = ?$



- (1)  $\sqrt{153}$  cm  
(2)  $\sqrt{178}$  cm  
(3)  $\sqrt{191}$  cm  
(4)  $\sqrt{161}$  cm

99. In the adjacent figure Seg.  $AM \perp$  Seg. BC Seg.  $BN \perp$  Seg. AC. If  $BC = 7$  cm;  $AM = 14\sqrt{3}$  cm, then  $BN = ?$

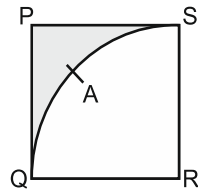


- (1)  $4\sqrt{3}$  cm  
(2)  $5\sqrt{3}$  cm

(3)  $2\sqrt{3}\text{cm}$

(4) 4 cm

100. WPQRS is a square,  $PQ = 7\sqrt{3}$  cm with centre R and radius RS, Sector R – QAS is drawn. Find the area of the shaded portion.



(1)  $29.5 \text{ cm}^2$

(2)  $17.5 \text{ cm}^2$

(3)  $23.7 \text{ cm}^2$

(4)  $31.5 \text{ cm}^2$