

NATIONAL TALENT SEARCH EXAMINATION, 2020-21

403482

CENTRE CODE

SEAT NO.

STATE LEVEL EXAMINATION - QUESTION BOOKLET

SCHOLASTIC APTITUDE TEST

CLASS X

MEDIUM: ENGLISH

[Date : 13th December, 2020]

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

Maximum Marks : 100

Time : 120 Minutes

Total Pages : 32

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you answer the questions.

1. Answers are to be bubbled only on the separate OMR 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 Center Code & Seat No. very clearly (only one digit in one block) on question paper. Before writing your seat no. ascertain it with Hall ticket. Please see that no block is left blank or unfilled.

Example :

CENTRE CODE	2	1	0	2							
SEATNO.	3	9	2	1	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 the correct answer and bubble correct option from four circles given in answer sheet by Black/Blue pen. Please do not write any answers on question paper.
7. Start answering from first question one after the other 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 the box given under each page.
10. Do not write anything except Center Code, Seat No. and rough work anywhere in this booklet.

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	Centripetal force	(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

Space for Rough work

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

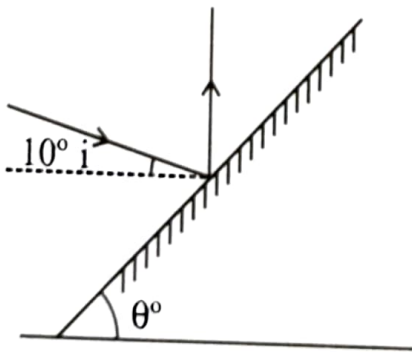
T_1 — mercury, T_2 — aluminium, T_3 — water, T_4 — iron, then choose the correct alternative.

- (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%

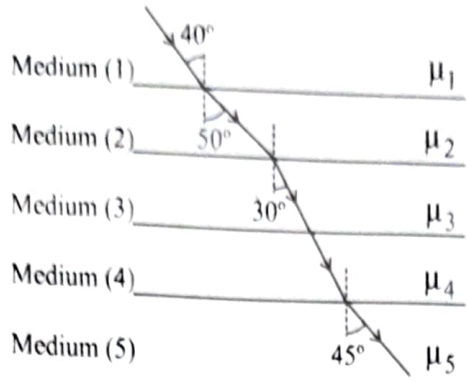
6. If an incident ray making an angle of 10° with the horizontal is to be reflected perpendicular to the horizontal, by an inclined plane mirror, then inclination of the plane mirror (θ) should be _____.



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

Space for Rough work

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.



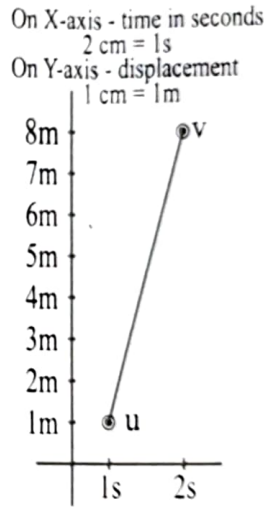
- (1) $\mu_1 > \mu_2 < \mu_3 = \mu_4 > \mu_5$
- (2) $\mu_1 = \mu_2 < \mu_3 = \mu_4 > \mu_5$
- (3) $\mu_1 > \mu_2 < \mu_3 > \mu_4 < \mu_5$
- (4) $\mu_1 < \mu_2 < \mu_3 = \mu_4 > \mu_5$

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

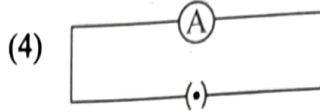
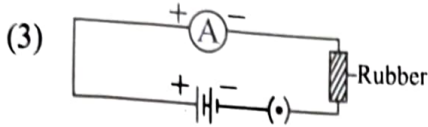
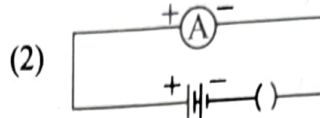
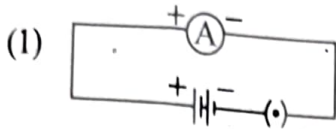
9. The position-time details travelled by a particle are as shown in figure. The initial velocity and acceleration of the particle is _____ respectively.

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

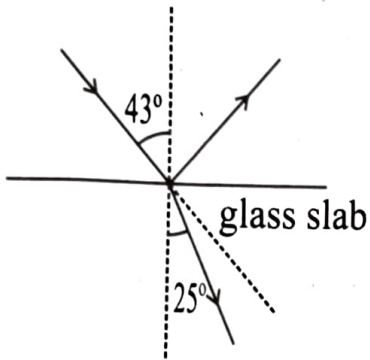


Space for Rough work

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) $112^\circ, 15^\circ$

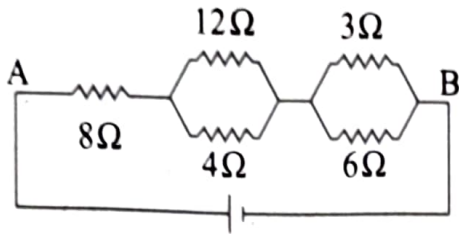
(4) $15^\circ, 112^\circ$

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 5 ₹ / unit]

- (1) ₹ 1500 (2) ₹ 1080 (3) ₹ 2130 (4) ₹ 2080

Space for Rough work

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



Potential difference across resistances	Resistances
(i) 65 V	(A) 6Ω
(ii) 40 V	(B) 4Ω
(iii) 15 V	(C) 8Ω
(iv) 10 V	(D) AB

- (1) (i) – D, (ii) – C, (iii) – B, (iv) – A
 (2) (i) – C, (ii) – D, (iii) – C, (iv) – B
 (3) (i) – B, (ii) – A, (iii) – D, (iv) – C
 (4) (i) – A, (ii) – B, (iii) – A, (iv) – D
14. As per Dalton's sign, the symbol of hydrogen element is represented by –
- (1) \odot (2) \ominus (3) \bullet (4) \oplus

Space for Rough work

15. What is the IUPAC name of the following compound?
 $\text{CH}_3 \cdot (\text{CH}_2)_2 \cdot (\text{CH}_3)_3\text{C}$
- (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) $\text{Fe}^{3+} \rightarrow \text{Fe}^{2+}$ (C) $\text{Zn}^{++} \rightarrow \text{Zn}$ (D) $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+}$
- (1) A & C (2) B & D (3) B & C (4) A & D
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°C results into precipitation of aluminium hydroxide. The substance is _____.
- (1) Na_2O (2) Al_2O_3
(3) NaAlO_2 (4) SiO_2

Space for Rough work

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) C_2H_6O (2) C_4H_8O (3) $C_4H_{10}O$ (4) C_3H_8O

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

Group →	13	14	15	16	17	18
Period ↓						
II	B					
III		Si				
IV		'X'	As			
V			'Y'	Te		
VI					At	

- (1) Ga & Sn (2) Ge & Po (3) Ge & Sb (4) Sb & Po

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

- (1) NO_2 (2) NO (3) N_2O (4) N_2O_2

Space for Rough work

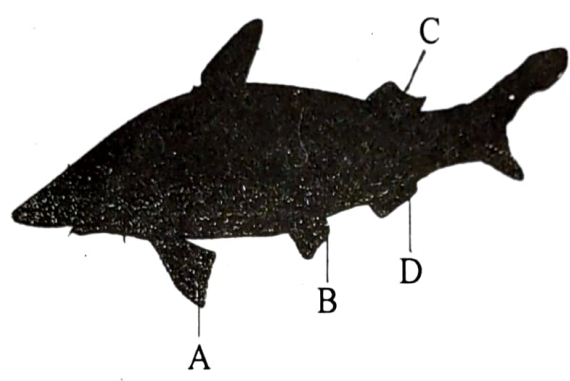
26. How many atoms are present in a mole of $\text{Ca}(\text{HCO}_3)_2$?
- (1) $5 \times 6.02 \times 10^{23}$ (2) $7 \times 6.02 \times 10^{23}$
(3) $9 \times 6.02 \times 10^{23}$ (4) $11 \times 6.02 \times 10^{23}$
27. Carbon dating method developed by Willard Libby is based upon the radioactive decay of naturally occurring carbon _____.
- (1) C^{14} (2) C^{11} (3) C^6 (4) 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

Space for Rough work

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

Space for Rough work

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

Space for Rough work

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 establishment 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) Abscisic acid - production of flowers
- (4) Auxin - help in enlargement of cells

Space for Rough work

41. Annales School gave a new direction to history writing. Identify the newly recognized 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 practice 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 historians 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

Space for Rough work

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 named 'Pragati' (1929)?

- (1) Pandit Narendra Sharma
- (2) Balshastri Jambhekar
- (3) Traymbak Shankar Shejwalkar
- (4) Gopal Hari Deshmukh

Space for Rough work

48. Identify the correct option from the alternatives given below.

(I) Patan at Gujrat

(a) 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 directors.

(1) Bal Shivaji

— Prabhakar Pendharkar

(2) Dhanya te Santaji Dhanaji

— Dinakar D. Patil

(3) Bajirao Mastani

— Bhalji Pendharkar

(4) Baji Prabhu Deshpande

— Dadasaheb Torane

Space for Rough work

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



Space for Rough work

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

Space for Rough work

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 relations between nations

60. According to you, which two conditions among the options are violating code of conduct?

- (A) The candidate distributes items of household use
- (B) Promise made to resolve the water problem if elected
- (C) To go from door-to-door to meet voters and request them to vote
- (D) To appeal on the basis of caste and religion to get support

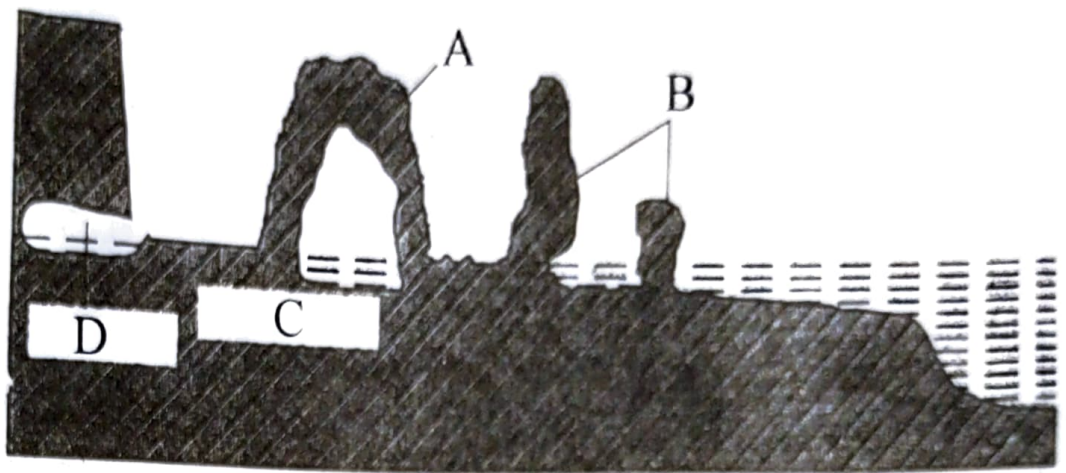
- (1) A and B
- (2) A and D
- (3) B and C
- (4) C and D

Space for Rough work

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 its 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 Bhave
 - (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%

Space for Rough work

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



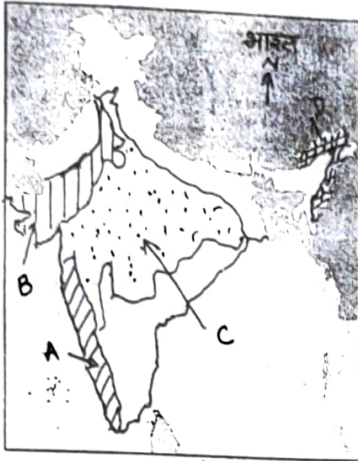
- (1) A (2) B (3) C (4) D

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

Space for Rough work

67. Match the appropriate pair of a region and its major forest type shown with the 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.

Space for Rough work

70. In India about _____ percent 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'

A. Pantanal

I. Pink dolphins

B. Looks like a lion

II. Condors

C. Fish variety

III. Anacondas

D. 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

Space for Rough work

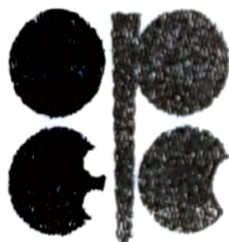
75. Choose the correct order of mountain ranges from Southern Himalayan ranges to Northern Himalayan ranges.

- (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

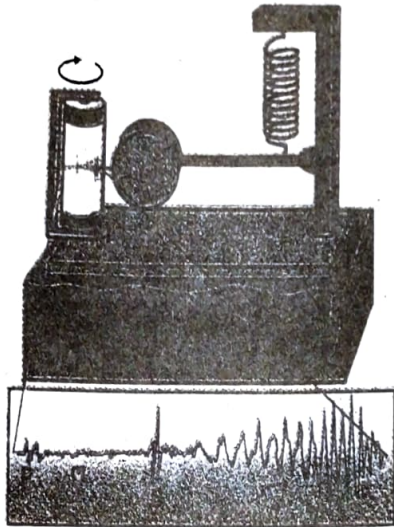
Space for Rough work

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 ₹ 1 and ₹ 2. The total number of coins that she has is 50. The total amount that she has is ₹75. Find the number of coins that she has of ₹ 1 and ₹ 2 respectively.

- (1) 35 and 15 (2) 35 and 20 (3) 15 and 35 (4) 25 and 25

Space for Rough work

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 is 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 3rd and 8th term of an A.P. is 7 and the sum of the 7th term and 14th term is -3. Find the 10th 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 at random. The probability that the ball 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

Space for Rough work

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 n^{th} 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 $a^4 + b^4 = ?$

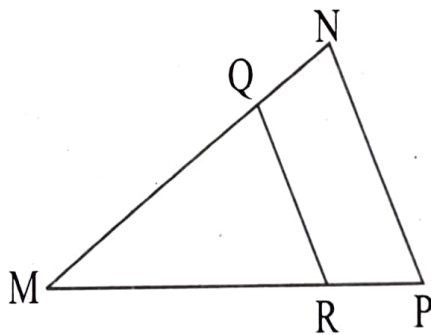
- (1) 14 (2) 16 (3) 18 (4) 20

91. In ΔMNP Seg. $QR \parallel$ 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



Space for Rough work

92. If point $P(x, y)$ is equidistant from points $Q(-2, 5)$ and $R(6, -1)$ then find the 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 constructed. 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

(D) $MN + NP = 4$; $NP + PM = 8$; $MN + PM = 6$

(1) Only B and C

(2) Only A and C

(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 tree, making an angle 45° 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

Space for Rough work

95. In ΔPQR , Seg. QS is the bisector of $\angle PQR$. If $PQ = x$; $QR = \left(2x + \frac{5}{3}\right)$;

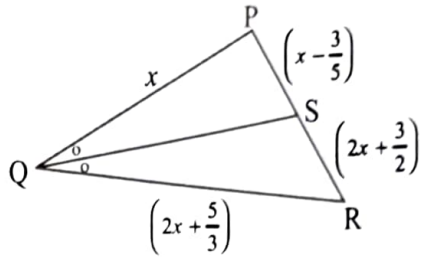
$PS = \left(x - \frac{3}{5}\right)$; $RS = \left(2x + \frac{3}{2}\right)$. Find the value of x . Choose the correct alternative.

(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 the 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) $\frac{2}{3}$

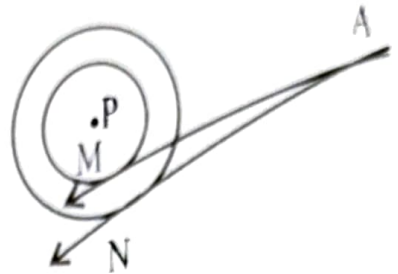
(3) $\frac{5}{8}$

(4) 0

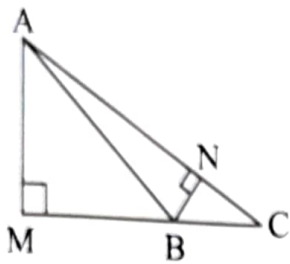
Space for Rough work

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

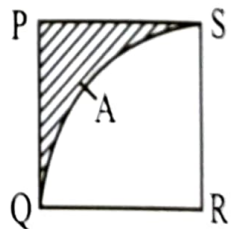
Seg. BN \perp Seg. AC. If BC = 7 cm;

AM = $8\sqrt{3}$ cm.; AC = $14\sqrt{3}$ cm then BN = ?

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

100. \square PQRS 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 cm^2 (2) 17.5 cm^2
 (3) 23.7 cm^2 (4) 31.5 cm^2



Space for Rough work