NATIONAL TALENT SEARCH EXAMINATION, 2016-17

STATE LEVEL EXAMINATION – QUESTION BOOKLET

SCHOLASTIC APTITUDE TEST

CENTRE CODE						

SEAT. NO.											

CLASS X

MEDIUM : - ENGLISH

DATE : 6 NOVEMBER 2016, DAY : SUNDAY

[TIME : 14.15 P.M. TO 15.45 P.M.]

MAXIMUM MARKS : 100

Time : 90 Minutes **Total Pages : 40**

1. The work done in moving 10 lithium nuclei (Atomic number of Li = 3) through a potential difference of 10 V is : Charge on an electron is 1.6×10^{-19} C)

(1) 4.8×10^{-16} J (2) 4.8×10^{-19} J
(3) 4.8×10^{-18} J (4) 4.8×10^{-17} J

2. Choose the correct alternative which matches second and third column with first column :

Column I	Column II	Column III
(I) Magnetic field is produced near current carrying conductor	(A) Right hand thumb rule	(a) Michael Faraday
(II) Electric current is generated in a conductor moving in a magnetic field	(B) Fleming's right hand rule	(b) Hans Oersted

(1) (I) – (B) – (a), (II) – (B) – (b) (2) (I) – (A) – (b), (II) – (B) –(b)
(3) (I) – (B) –(b), (II) – (A) – (a) (4) (I) – (A) – (b), (II) – (B) – (a)

3. M.R.I. is based on …….

(1) Magnetic effect of electric current (2) Heating effect of electric current
(3) Chemical effect of electric current (4) Conduction of electric current

4. For refraction of light from air to rock salt, water and diamond if :
V – Velocity of light in air
V_1 – Velocity of light in rock salt
V_2–Velocity of light in water
V_3 – Velocity of light in diamond, then
Choose the correct alternative :

(1) $V_3 > V_1 > V_2 > V$ (2) $V > V_2 > V_1 > V_3$
(3) $V > V_1 > V_2 > V_3$ (4) $V_1 > V > V_3 > V_2$

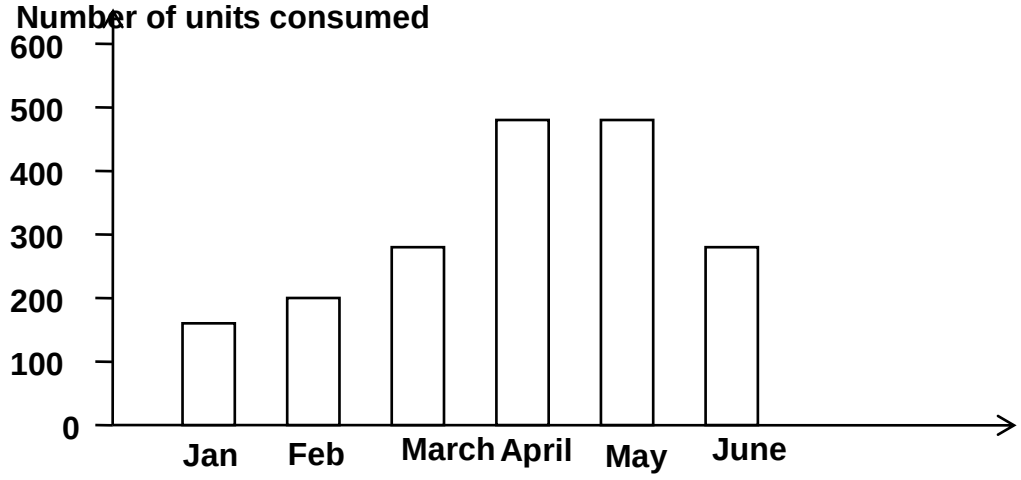
5. When white light is passed through an upside down (inverted) prism then ……

(1) White light is obtained
(2) Spectrum is obtained with violet colour undergoing maximum deviation and red colour undergoing minimum deviation
(3) Spectrum is obtained with red colour undergoing maximum deviation and violet colour undergoing minimum deviation
(4) light gets blocked

6. Select the correct sequence of light entering the different parts of human eye :

(1) cornea, lens, iris, pupil, retina (2) pupil, cornea, iris, lens, retina
(3) cornea, pupil, iris, lens, retina (4) cornea, iris, pupil, lens, retina

7. Graph shows the number of units consumed by a family for six months. Find the cost of energy for four months from March to June if M.S.E.B. increased its unit rate from ₹ 3.50 to ₹ 4.50 for April and May and again decreased by ₹ 2 for June :

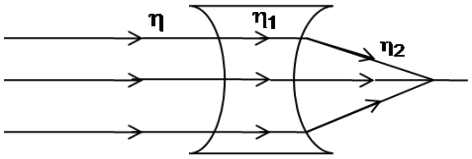


(1) ₹ 6,000 (2) ₹ 6,030
(3) ₹ 6,300 (4) ₹ 6, 200

8. Object placed _____ of lens or mirror give infinite magnification.
(1) at focus
(2) at infinite distance
(3) between F_1 and $2F_1$
(4) at $2F_1$

9. If a 3 cm tall object placed perpendicular to principal axis of a convex lens of focal length 156 cm produces a real inverted image of height 15 cm, then its object distance (u) is ……. and image distance (v) is …….
(1) u = - 18 m, v = + 90 m
(2) u = + 18 cm, v = - 90 cm
(3) u = - 18 cm, v = + 90 cm
(4) u = + 18 cm, v = + 90 cm

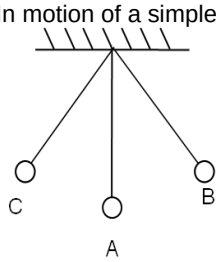
10. If the path of parallel light through a concave lens is as shown in the figure, whene η η_1 and η_2 are refractive indices, then ……



(1) $\eta > \eta_1 = \eta_2$
(2) $\eta = \eta_1 < \eta_2$
(3) $\eta = \eta_1 > \eta_2$
(4) $\eta < \eta_1 = \eta_2$

11. Distance covered by an object thrown upwards in the last second ……
(1) depends on initial velocity
(2) depends on mass
(3) depends on air velocity
(4) is always same

12. In motion of a simple pendulum acceleration and kinetic energy are maximum at …….



(1) C, B, A
(2) A, B, C
(3) A only
(4) B, C only

13. A washing machine rated 300 W is operated one and half an hour/day. If the cost of unit ₹ 3.50, find the cost of energy to cooperate a washing machine for the month of September :
(1) ₹ 27.90
(2) ₹ 35.25
(3) ₹ 47.25
(4) ₹ 55.90

14. Elements A, B, C, D have atomic numbers as 35, 19, 17, 9 respectively. Choose the odd element.
(1) A
(2) B
(3) C
(4) D

15. The elements P, Q, R, S belong to group number 14, 15, 16, 17 respectively. Select the elements in increasing order of their electronegativity :
(1) P < Q < R < S
(2) P > Q > R > S
(3) R < Q < P < S
(4) Q < P < S < R

16. For the following reaction which statement is true?
$2H_2S(g) + SO_2(g) \rightarrow 3S(s) + 2H_2O(l)$
(a) H_2S is reduced
(b) SO_2 is oxidised
(c) H_2S is reducing agent
(d) SO_2 is oxidizing agent
(1) (a) and (c)
(2) (b) and (c)
(3) (a) and (b)
(4) (c) and (d)

17. A science teacher wrote 3 statements about rancidity :
(i) When fats and oils are reduced, they become rancid
(ii) In chips packet, rancidity is prevented by oxygen

(iii) Rancidity is prevented by adding antioxidants

Select the correct option :

(1) (i) (2) (ii) and (iii)

(3) (iii) (4) (i), (ii) and (iii)

18. The gas evolved during the reaction of $CuCl_2$ and conc. H_2SO_4 is …….

(1) Natural (2) Basic

(3) Highly basic (4) Acidic

19. Which of the following substances has the lowest pH-value?

(1) Tomato juice (2) Vinegar

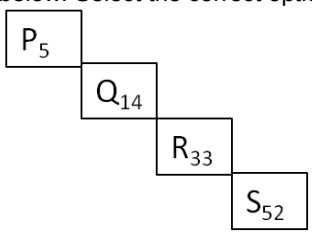
(3) Washing soda (4) Human blood

20. Which of the following is most reactive metal?

(1) Fe (2) Zn

(3) Ca (4) Al

21. In the given square P,Q, R, S with atomic number is written are metalloids. About this the 4 statements are given below. Select the correct option of the true statements :



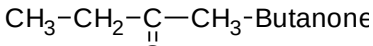
(a) Element after square P is a non-metal (b) Square R represents metalloid

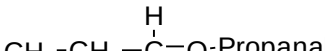
(c) Element just before square R is a metalloid (d) Element just before square S is a non-metal

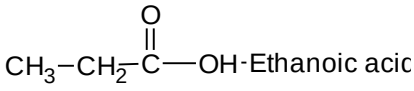
(1) (a), (b) and (c) (2) (a), (b) and (d)

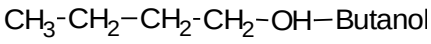
(3) (b) and (c) (4) (a), (b), (c) and (d)

22. In the following structural formulae one IUPAC name is incorrect. Identify it :

(1) 

(2) 

(3) 

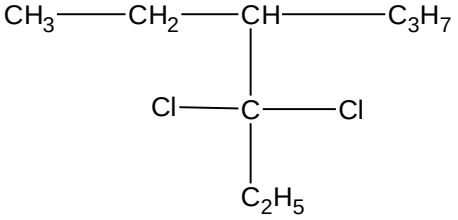
(4) 

23. Select a compound which gives effervescence with NaH.CO_3solution :

(1) C_2H_6O (2) $C_2H_4O_2$

(3) C_2H_4O (4) $C_3H_8O_2$

24. What is the IUPAC name of the following compounds?



(1) 4-Ethyl-3, 3-dichloro heptanes (2) 4-Ethyl-3, 3-dichloro hexane

(3) 4-Ethyl-3-chlorohexaneq (4) 3, 3-dichloro-4-butyl heptanes

25. X and Y are the two atomic species

	X	Y
Number of Proton	8	8
Number of Neutron	8	10

Select the correct statement about X and Y :

(1) X and Y are isobars (2) X and Y have different chemical properties

(3) X and Y have different physical properties (4) X and Y are the atoms of different elements

26. How many electrons are present in M-shell of an element with Atomic number 20?
(1) 8 (2) 6
(3) 18 (4) 2

27. Which of the following harmful products is not produced in the biochemical reactions of the cell of living organisms?
(1) Urea (2) Uric acid
(3) Ammonia (4) Lympth

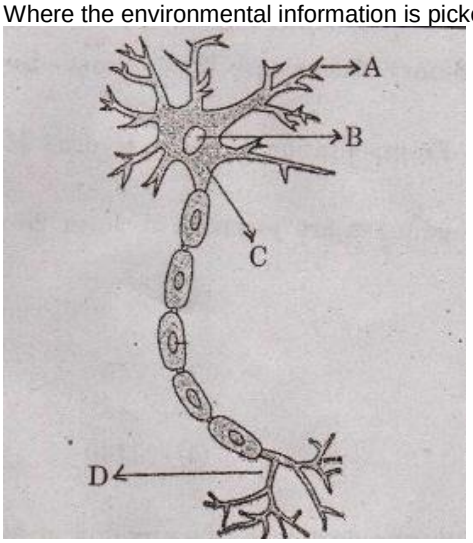
28. Match the following components of Column 'A' with the components of Column 'B' :

Column–I	**Column–II**
(1) Venus flytrap	(A) A trap which looks and smells like a flower to catch the insects
(2) Balsam	(B) Flower opens in the morning
(3) Drosera	(C) Fruit bursts open to scatter the seeds
(4) Lotus	(D) Tentacles on the leaves to trap the insects

(1) (1) – (A), (2) – (C), (3) – (D), (4) – (B) (2) (1) – (A), (2) – (C), (3) – (B), (4) – (D)
(3) (1) – (D), (2) – (C), (3) – (A), (4) – (B) (4) (1) – (D), (2) – (B), (3) – (A), (4) – (C)

29. Select the correct sequence of the steps of human nutrition :
(1) Ingestion $\rightarrow$ Digestion $\rightarrow$ Absorption $\rightarrow$ Assimilation $\rightarrow$ Egestion
(2) Ingestion $\rightarrow$ Digestion $\rightarrow$ Assimilation $\rightarrow$ Absorption $\rightarrow$ Egestion
(3) Ingestion $\rightarrow$ Assimilation $\rightarrow$ Digestion $\rightarrow$ Absorption $\rightarrow$ Egestion
(4) Ingestion $\rightarrow$ Absorption $\rightarrow$ Digestion $\rightarrow$ Assimilation $\rightarrow$ Egestion

30. Where the environmental information is picked in the neuron?



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

31. Which plant hormone is found in greater concentration in fruits and seeds?
(1) Auxins (2) Gibberellins
(3) Cytokinins (4) Abscisic acid

32. Identify the wrong pair from the following :
(1) Euglena – Binary fission (2) Yeast – Budding
(3) Spirogyra – Fragmentation (4) Hydra –Multiple fission

33. How many male gametes are essential to form 25 seeds in Angiospermi plants?"
(1) 25 (2) 50
(3) 75 (4) 100

34. A basic process in reproduction is the creation of a ……. Copy.

(1) RNA
(2) DNA
(3) Nucleus
(4) Mitochondria

35. Identify a fish who breathes air through its lungs :
(1) Lungfish
(2) Rohu
(3) Dogfish
(4) Sting Ray

36. A pea plant with yellow and round seeds (YYRR) is crossed with a pea plant having green and wrinkled (yyrr) seeds then in F_2 generation of this dihybrid cross 320 plants are produced. Out of which 180 plants have same phenotypic characters. Identify this phenotype.
(1) Yellow and wrinkled seeds
(2) Yellow and round seeds
(3) Green and round seeds
(4) Green and wrinkled seeds

37. Which gas emits on burning of rice straw?
(1) SO_2
(2) NH_3
(3) O_3
(4) H_2S

38. If biomedical waste not handled properly, then which disease is a potent source in human being?
(1) Cancer
(2) Heart diseases
(3) AIDS
(4) Leprosy

39. Which category lies in between the genus and order in the classification of plants?
(1) Species
(2) Class
(3) Family
(4) Kingdom

40. 'Earthworm, a friend of farmer belongs to …….. phylum.
(1) Arthropoda
(2) Echinodermata
(3) Mollusca
(4) Annelida

41. Identify incorrect sentence related to Asian continent :
(1) This continent is the biggest of all from the perspectives of area and population
(2) The continent got the name from the word 'Aasu'
(3) The renaissance era was started from this continent
(4) The emergence of old religion and culture from this continent

42. Which one of the following atomic reactors is not present in 'Atomic Reserch City' at Mumbai?
(1) Apsara
(2) Narora
(3) Zarlina
(4) Purnima

43. Who was the painter of this famous immortal picture?

(1) Michelangelo
(2) Leonardo-da-Vinci
(3) Raphael
(4) Donato

44. Who one of the following was not navigator?
(1) John Cabot (2) John Key
(3) Amerigo Vespucci (4) Christopher Columbus

45. Arrange the following events in chronological sequence :
(I) Hitler adopted 4th year plan (II) Hitler adopted 4th year plan
(III) Hitler brought out an agreement with Italy and Japan
(IV) Hitler captured the Rhineland
(1) (II), (I), (IV), (III) (2) (III), (IV), (II), (I)
(3) (I), (III), (II), (IV) (4) (IV), (II), (I), (III)

46. Choose the inappropriate pair :
(1) Business concessions took from king - Vasco-da-Gama
(2) Request to the Japanese Government - Commodore Perry for business concession
(3) The book written by him which was created among the European people a kind of attraction towards Africa – Bartholomew Dias
(4) Motivated the navigators – King Henry

47. Which one of the following is not computer's input device?
(1) Keyboard (2) Scanner
(3) Mouse (4) Printer

48. …….. is the first archaic scripture of the Aryans.
(1) Yajurveda (2) Samveda
(3) Atharvaveda (4) Rigveda

49. The communist thinker Karl Marx belong to _____ country.
(A) Russia (B) France
(C) Germany (D) Turkistan

50. 'UNO' was found in _____
(A) New York (B) Washington
(C) San Francisco (D) The Hague

51. Due to which action of Japan, the Asian Contient was engulfed into the international conflict?
(1) The battle between China and Japan (2) Japan forced its army into the Indo- China Region
(3) Japan attacked on Pearl Harbour (4) The rise of Militarism in Japan

52. Tipu Sultan was defeated due to collaboration with which rulers?
(1) British – Maratha - Nizam (2) Nizam – Nawab of Karnataka - British
(3) Maratha – British – Karnataka Nawab (4) King of Travancore – Maratha - British

53. Who has written the book 'Rights of Man'?
(1) Thomas Jefferson (2) Thomas Penn
(3) George Washington (4) Rousseau

54. Atomic energy plant has not been erected at ____
(1) Talcher (2) Jadugad
(3) Tuticorin (4) Nangal

55. Which nation is not included in the Committee an executive body of the League of Nations?
(1) France (2) Italy
(3) Soviet Russia (4) Germany

56. Hari –ke – Pattan National Wetland is situated in ____ state.
(1) West Bengal (2) Assam
(3) Punjab (4) Haryana

57. The correct order of Central Highlands of the peninsular Plateau Region from East to West is :
(1) Chota Nagpur → Baghelkhand → Bundelkhand → Malwa Plateau
(2) Baghelkhand → Bundelkhand → Malwa Plateau → Chota Nagpur
(3) Bundelkhand → Malwa Plateau → Chota Nagpur → Baghelkhand
(4) Malwa Plateau → Chota Nagpur → Baghelkhand → Bundelkhand

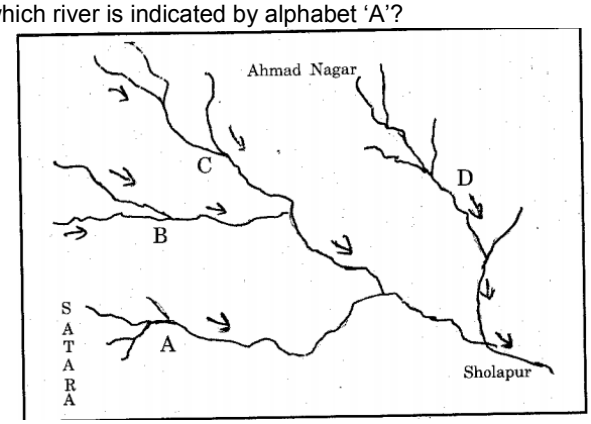
58. From the Physiography point of view which of the following region is situated to the east to Western Ghats known as "MuktaMaidan'?
(1) Palkonda Hills (2) Biligiri Hills
(3) Nallamalla Hills (4) Velikonda Hills

59. Which of the following is not included in the Deccan Plateau?
(1) Satpuda – MahadeoMaikal Range (2) Karnataka – Telangana Plateau
(3) Malwa Plateau (4) Maharashtra Plateau

60. Vegetal cover is thin in Rajasthan Plain region due to :
(1) Winds blow with high velocity (2) Very high temperatures
(3) Dry Climate (4) Scanty rainfall

61. Along the shore of the Dal lake in Kashmir ____ is cultivated
(1) Apple (2) Cherry
(3) Pears (4) Grapes

62. In the figure given below, which river is indicated by alphabet 'A'?



(1) Man river (2) Bhima River
(3) Sina River (4) Nira River

63. Find the wrong pair having place and industry.
(1) Durgapur – Iron and steel industry (2) Kanpur – Ship building industry
(3) Varanasi – Silk Sari (4) Barauni – Oil Refinery

64. If the countries sharing land border with India are arranged in ascending order of percentage, which country will be in the middle?
Pakistan, China, Bhutan, Afghanistan, Nepal
(1) Bhutan (2) Nepal
(3) Pakistan (4) Afghanistan

65. The eastern districts of Maharashtra _____ districts have more number of tanks and lakes.
(1) Bhandara and Gondia (2) Wardha and Nagpur
(3) Chadrapur and Gadchiroli (4) Bhandara and Chandrapur

66. Which of the following regions is described as "Cold Desert'?
(1) Sikkim Himalaya (2) Karakoram Ranges
(3) Ladakh Range (4) Kailas Range

67. Which of the following is known as "Canebrakes'?
(1) Thick stands of tall grass (2) Forests with thick and tall trees
(3) Region affected by tropical cyclones (4) Region affected by floods

68. **'**Shilong' belongs to which subdivision of the Himalaya?
(1) The central Himalaya (2) The Kailas Range
(3) The Ladakh Range (4) The Eastern Himalaya

69. The region of older alluvium of the Ganga plain in known as _____
(1) Khadar (2) Bhabar
(3) Bangar (4) Tarai

70. 'Bundelkhand' is situated in which direction in relation to Malwa Plateau?
(1) South - East (2) South
(3) West (4) North - East

71. Identify the correct pair of the following

(i)	Indian National Congress	(A)	Established in 1980
(ii)	Bharatiya Janata Party	(B)	Established in 1885
(iii)	Communist Party of India	(C)	Established in 1999
(iv)	Nationalist Congress party	(D)	Established in 1964

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

72. Which one of the following is not applicable for the parliamentary Democracy?
(1) Two chief executives
(2) Power vested in the parliament
(3) Executive chiefs cannot be removed before the end of his tenure
(4) In England and India, Parliamentary democracy is in existence

73. Who worked as the Chairperson of the Advisory Committee on fundamental rights of the Constituent Assembly?
(1) Vallabhbhaipatel (2) Pandit Jawaharlal Nehru
(3) Dr.Rajendra Prasad (4) Dr.BabasahebAmbedkar

74. Who has written book called 'Stree – PurushTulana' Published in 1882?
(1) Mahatma Phule (2) ShahuMaharaj
(3) TarabaiShinde (4) SavitribaiPhule

75. People tend to migrate to more developed regions is an example of which inequality?
(1) Political (2) Regional
(3) Social (4) Linguistic

76. _____ refers to various activities related to the production, distribution and consumption of goods and services in a certain Geographical region.
(1) Political Sovereignty (2) Sectoral distribution
(3) An Economy (4) Natural Resources

77. Which day of the following is celebrated as World Consumer Day?
(1) 15^{th} March (2) 24^{th} December
(3) 10^{th} December (4) 8^{th} April

78. 'Economics is a science to study human well – being/welfare." Who has defined it?
(1) Prof. Adam Smith (2) Leonnel Robins
(3) Prof. Kemmerer (4) Prof. Alfred Marshall

79. On Which factor of the following the decision regarding "How much to produce" does not depend upon?
(1) Population growth (2) Level of Production
(3) Size of Market (4) Availability of resources

80. Which is not a fiscal measure of the following to control inflation?
(1) Increase in Taxation (2) Public Borrowings
(3) Overvaluation (4) Increase in Bank Rate

81. In an A.P the sum of 'n' terms is $5n^2 - 5n$. Find the 10^{th} term of the A.P
(1) 80 (2) 90
(3) 100 (4) 110

82. If $\frac{a}{x+y} = \frac{b}{y+z} = \frac{c}{z-x}$, then which of the following equations is true?
(1) $a = b + c$ (2) $c = a + b$
(3) $b = a \times c$ (4) $b = a + c$

83. The difference between the two roots of a quadratic equation is 2 and the difference between the cubes of the roots is 98, then which of the following is that quadratic equation?
(1) $x^2 - 8x + 15 = 0$ (2) $x^2 + 8x - 15 = 0$

(3) $x^2+5x+15=0$ (4) $x^2-5x-15=0$

84. From a pack of 52 playing cards, face club cards are removed. The remaining cards are well shuffled and a card is drawn at random. Find the probability that the card drawn is a heart card.

(1) $\frac{1}{4}$ (2) $\frac{13}{49}$

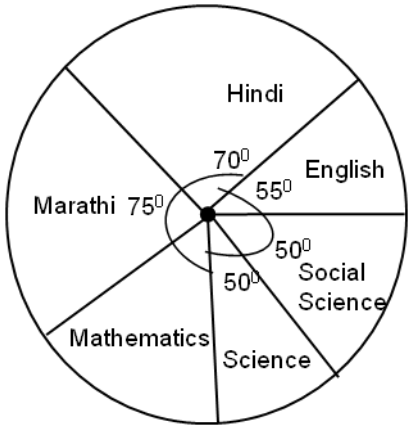
(3) $\frac{3}{52}$ (4) $\frac{49}{52}$

85. A boat takes 7 hours to travel 30 km upstream and 28 km downstream. It takes 5 hours to travel 21 km upstream and to return back. Find the speed of the boat in still water

(1) 10 km/hr (2) 20 km/hr

(3) 14 km/hr (4) 6 km/hr

86. The marks scored by a student in an examination of 600 marks is shown in the following pie diagram. If he scored 60 marks in Mathematics, then find the percentage of marks that he secured in the examination.



(1) 60% (2) 50%

(3) 75% (4) 5%

87. $\sqrt{m^4n^4}\ \text{x}\ \sqrt[6]{m^2n^2}\ \text{x}\ \sqrt[3]{m^2n^2}=(m,n)^k$, then find the value of k.

(1) 6 (2) 3

(3) 2 (4) 1

88. The cost of 20 guavas and 5 apples is same as that of 12 guavas and 7 apples then how many times the cost of an apple is to that of a guava?

(1) Two times (2) half times

(3) four times (4) five times

89. In a group of students, 10% students scored marks less than 20, 20% students scored marks between 20 to 40, 35% students scored marks between 40 to 60 and 20% students scored marks between 60 to 80. Remaining 30 students scored marks between 80 to 100. Find the mode of marks.

(1) 30 (2) 50

(3) 60 (4) 70

90. One of the root of a quadratic equation is $(3-\sqrt{2})$, then which of the following is that equation

(1) $(x^2-6x-7)=0$ (2) $(x^2+6x-7)=0$

(3) $(x^2+6x+7)=0.$ (4) $(x^2-6x+7)=0$

91. In ΔABC, m $\angle B=90^0$, $AB=4\sqrt{5}$. $BD\perp AC$, $AD=4$, then $A(\Delta ABC)=?$

(1) 96 sq. units (2) 80 sq.units

(3) 120 sq.units (4) 160 sq.units

92. Side of a cube is increased by 50%, then what percent increase will be in the area of the vertical faces of the cube?

(1) 125% (2) 150%

(3) 100% (4) 50%

93. $\sin x=\frac{6\sin 30^0-8\cos 60^0+2\tan 45^0}{2\left(\sin^2 30^0+\cos^2 60^0\right)}$, then x = how much?

(1) 30^0 (2) 45^0

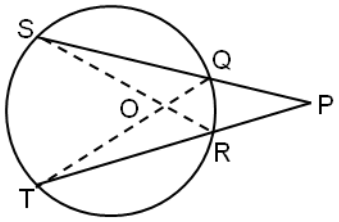
(3) 60^0 (4) 90^0

94. $P\equiv(1,-9), Q\equiv(2,5)$ and $R\equiv(6,7)$ are the co-ordinates of the vertices of ΔPQR, then find the co-ordinates of the centroid from the following alternative given:

(1) $\left(\frac{10}{3},\frac{-17}{3}\right)$ (2) $(1,3)$

(3) $(3,1)$ (4) $(-3,1)$

95. In the following figure secants QS and TR intersect each other at point P, which is outside the circle. O is the point of intersection of Chords SR and TQ. If OS = 5 cm, OT = 10 cm, TR = 12 cm, PR = 8 cm, then find $l(PQ)$.

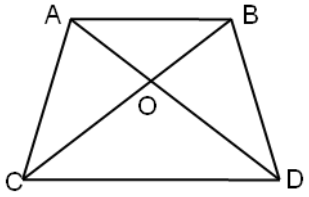


(1) 6 cm (2) 10 cm

(3) 12 cm (4) 16 cm

96. In the following figure, $\text{seg AB} \parallel \text{seg CD}$. Diagonals AC and BD intersect at point O.

If AO : OC = 1 : 3, then $\frac{A(\Delta AOB)}{A(\Delta ABD)} = ?$



(1) $\frac{1}{4}$ (2) $\frac{1}{9}$

(3) 16 (4) 116

97. In ΔABC points P and Q trisect side AB. Points T and U trisect side AC and points R and S trisect side BC. Then perimeter of hexagon PQRSTU is how many times of the perimeter of ΔABC?

(1) $\frac{1}{3}$ times (2) $\frac{2}{3}$ times

(3) $\frac{1}{6}$ times (4) $\frac{1}{2}$ times

98. $\frac{\sin^4\theta - \cos^4\theta}{1-\sin^2\theta} =$ how much

(1) $1-\cot^2\theta$ (2) $1-\tan^2\theta$

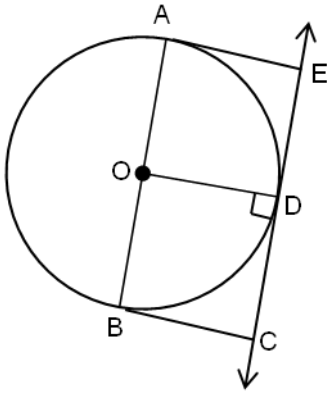
(3) $\tan^2\theta - 1$ (4) $\cot^2\theta - 1$

99. The radius of a cylindrical vessel is 7 cm and its height is 12 cm. $\frac{2}{3}$ of the vessel is filled with water. A sphere having radius 6cm is dropped into the water. Find the volume of the water that will come out of the vessel.

(1) $196\ \pi\ cm^3$ (2) $92\ \pi\ cm^3$

(3) $288\ \pi\ cm^3$ (4) $588\ \pi\ cm^3$

100. Radius of circle with centre 'O' is $4\sqrt{5}$ cm 'AB' is the diameter of the circle. $AE \parallel BC$, BC = 8 cm. Line EC is tangent at point D. Find the length of DE.



(1) $4\sqrt{5}$ cm (2) $6\sqrt{5}$ cm

(3) 8 cm (4) 10 cm