Trinity Entrance Test 2015

+2 Science

Sample

Welcome to the Trinity Entrance Test 2015!

This Test assesses a student's competency to undertake a +2 Programme in **Science**. It contains 100 multiple choice questions – Science (50), English (20), Mathematics (20), and General Knowledge (10).

Please **FOLLOW** the **DIRECTIONS** below**:**

1. Write your **Name** and **Exam Entry Card number** clearly in the space given in the **Answer Sheet.**

2. During the Test, **do not leave your seat** unless it is necessary for which you would have to take the permission.

3. Please maintain **complete silence** in the examination hall.

4. Do **not** use **calculators**.

5. Questions are self-explanatory. Further **clarification** will **not** be entertained.

6. Do **not write** anything on the **Test Paper**. Use scrap paper provided for **rough work**.

7. **Read the questions carefully**. **Mark** your **choice** on the answer sheet as shown below in the example:-

   Example: A letter is chosen randomly from 'ENTRANCE'. What is the probability of not getting N?

   A. $\dfrac{3}{4}$ B. $\dfrac{1}{4}$ C. $\dfrac{1}{2}$ D. 1

   The answer is $\dfrac{3}{4}$; so, on your answer sheet use a cross mark for the correct answer as shown below:

A	B	C	D
⊠	☐	☐	☐

8. In multiple choice questions, choose the best option *marking it carefully*. More than one answer to a question or cancellation by over-writing or smudging of answer choices shall entail loss of marks for that question.

9. At the end of the Test, do not leave your seat or the hall until your **test papers** (Question Papers and Answer Sheet) are collected by the Invigilator.

1. At nine o'clock yesterday morning we were……………for the bus.
    A. wait
    B. waiting
    C. was waiting
    D. were waiting
2. The driver was arrested for failing………….an accident.
    A. of report
    B. report
    C. reporting
    D. to report
3. We can finish the rest of the bread for……….
    A. breakfast
    B. a breakfast
    C. breakfasts
    D. the breakfast
4. Is……………a post office near here, please?
    A. here
    B. it
    C. there
    D. this
5. I've lived here……………..last year.
    A. after
    B. by
    C. for
    D. since
6. I wonder………….the tickets are on sale yet.
    A. what
    B. when
    C. where
    D. whether
7. X: Haven't you got enough money for a holiday?
    Y: Oh yes. I have got some saved up………………….I suddenly need it.
    A. if
    B. unless
    C. in case
    D. that
8. Choose the correct sentence:
    A. It is I who am to be blamed.
    B. It is me who am to be blamed.
    C. It is I who is to be blamed.
    D. It is I who is to blame.
9. He ran as quickly as he …………..
    A. would
    B. can
    C. might
    D. could
10. Anything in the shop can be bought,……………?
    A. didn't it
    B. didn't we
    C. can't it
    D. can't we
11. On which syllable does the stress fall in the word 'education'?
    A. first
    B. second
    C. third
    D. fourth
12. The datum on the answer sheet………..to be revised.
    A. is needing
    B. need
    C. was needing
    D. needs
13. I've had more than a fair…………..of troubles in my life.
    A. sheer
    B. share
    C. shear
    D. rare
14. A hen-pecked husband *plays second fiddle* to his wife. The correct meaning of the italicized phrase is:
    A. fondles with
    B. humors
    C. plays a subordinate role
    D. pleases
15. Select the word which is nearly similar in meaning to DANK.
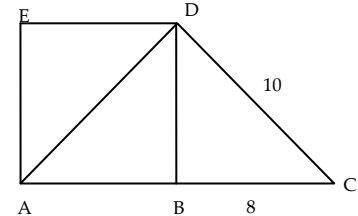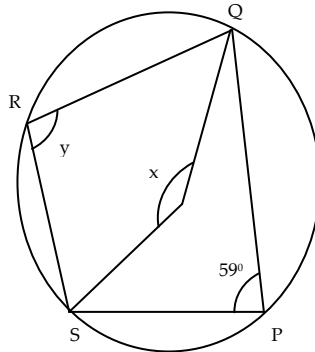   A. plunder
    B. cajole
    C. damp
    D. dangerous

In the following passage numbered blank spaces (16 to 20) are given. First read the passage and understand what it is about. Then fill in the blanks.

But if travel brings a conviction of human (16)…….., it brings an equally strong conviction of human unity. It (17)………..tolerance, but it also shows what are the (18)…….. of possible tolerance. Religion and moral codes, forms of government and of society are almost endlessly (19)…………, and each has a right to its separate existence. But a oneness (20)………..this diversity.

16. A. varied
    B. diversity
    C. eccentricity
    D. unity

17. A. inculcates
    C. engenders
    B. imbibes
    D. infuses
18. A. areas
    C. scope
    B. regions
    D. limits
19. A. varied
    C. various
    B. different
    D. new
20. A. undermines
    C. percolates
    B. underlies
    D. aims

21. If $f(x) = \dfrac{x}{x-1} = \dfrac{1}{y}$, then $f(y) = \ldots$

    A. x
    C. $-(x + 1)$
    B. $x + 1$
    D. $1 - x$

22. If $A \cap B = \phi$, then A-B is ____
    A. A
    C. B-A
    B. B
    D. $\overline{A}$

23. The fourth term of G.P. is 2 then the product of 1st eleventh term will be
    A. 2^5
    C. 2^7
    B. 2^6
    D. 2^4

24. If $A = \begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix}$ then $A^n =$

    A. $\begin{pmatrix} 1 & 2n \\ 0 & 1 \end{pmatrix}$

    B. $\begin{pmatrix} n & 1 \\ 0 & 2 \end{pmatrix}$

    C. $\begin{pmatrix} 1 & 2 \\ 1 & 0 \end{pmatrix}$

    D. $\begin{pmatrix} n & 2 \\ 0 & 1 \end{pmatrix}$

25. The angle between the two straight lines $x\cos\alpha + y\sin\alpha = p$ and $x\cos\beta + y\sin\beta = q$ is
    A. $|\alpha + \beta|$
    C. $2|\alpha + \beta|$
    B. $|\alpha - \beta|$
    D. $2|\alpha - \beta|$

26. For what value of k will the equation $x^2 + y^2 + kx + 6y + 13 = 0$ represents a point circle?
    A. 2
    C. -2
    B. 4
    D. -3

27. If $\cot\alpha = \sqrt{3}$ and $\csc\alpha = -2$ then the value of $\alpha = \ldots$

    A. $\dfrac{\pi}{6}$

    B. $\dfrac{3\pi}{6}$

    C. $\dfrac{5\pi}{6}$

    D. $\dfrac{7\pi}{6}$

28. If $A = \text{Tan}^{-1}x$, then $\sin 2A$ is

    A. $\dfrac{2x}{1+x^2}$

    B. $\dfrac{2x}{\sqrt{1-x^2}}$

    C. $\dfrac{2x}{1-x^2}$

    D. $\dfrac{\sqrt{1-x^2}}{x}$

29. Which one of the following is the unit vector perpendicular to $\vec{u} = (3,-4)$?
    A. (-4/5, -3/5)
    C. (3/5, 4/5)
    B. (4, 3)
    D. (-3/5, -4/5)

30. If $x + \dfrac{1}{x} = 2$ then the value of $x^{102} + \dfrac{1}{x^{102}}$ is

    A. 102
    C. 2
    B. 204
    D. 4

31. If $y^2 - 3y + 1 = 0$ then $\left(y - \dfrac{1}{y} \right)^2 =$

    A. 10
    C. 5
    B. 7
    D. 2
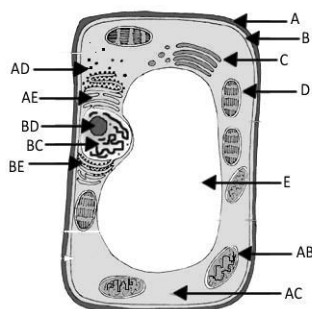
32. If a, b, c are in G.P and $a^x = b^y = c^z$ then $\dfrac{1}{x} + \dfrac{1}{z} = \ldots$

    A. $\dfrac{2}{y}$ B. $\dfrac{1}{y}$

    C. y^2 D. 1

33. The average of 11 observations is 50. If the average of the first six observations is 49 and that of last six is 52 then the sixth observation is

    A. 56   B. 55
    C. 54   D. 53

34. Tickets are numbered from 1 to 10. A ticket is taken at random. The probability that the selected ticket has a prime number or an even number is

    A. $\dfrac{9}{10}$ B. $\dfrac{4}{5}$

    C. $\dfrac{1}{2}$ D. $\dfrac{3}{5}$

35. What is the angle of elevation of the sun when the length of the shadows is $\sqrt{3}$ times length of the pole?

    A. 60^0 B. 30^0
    C. 45^0 D. 15^0

36. A dealer gains a selling price of 4 watches by selling 20 watches. What is his profit percentage?

    A. 15%   B. 30%
    C. 20%   D. 25%

37. A man completes a job in 5 days working 8 hours a day. How many days he will take complete the same job working 2 hours overtime per day in addition?

    A. 4 days   B. 5 days
    C. 6 days   D. 7 days

38. In the figure alongside, side AB of a square ABDE is extended to C. If BC = 8 and CD = 10, what is perimeter of ΔACD?

    A. $18 + 6\sqrt{2}$ B. $24 + 6\sqrt{2}$
    C. $26 + 6\sqrt{2}$ D. 30

39. In the figure, the sum of x and y is:
    A. 90^0
    B. 180^0
    C. 245^0
    D. 115^0

40. A bus travels at an average speed of 50 miles per hour for 2.5 hours and then travels at a speed of 70 miles per hour for 1.5 hours. What is the average speed of the train in the entire 4 hours?

    A. 60 miles/hr   B. 55 miles/hr
    C. 57.5 miles/hr   D. 58 miles/hr

41. Which of the following is a vector quantity?

    A. Speed   B. Temperature
    C. Plane area   D. Distance

42. The change in acceleration depends on

    A. Mass   B. Velocity
    C. Force   D. Both a and c

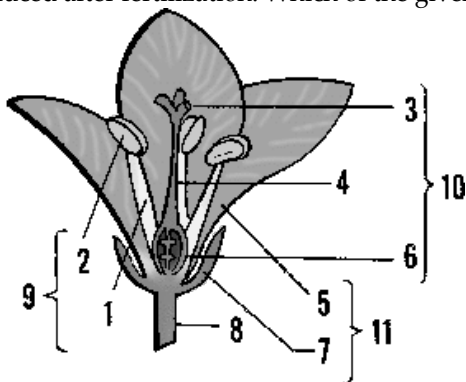43. Which of the following statement is false?
    A. Work done by gravity on walking on a level road is zero.
    B. Work done by gravity on lifting a mass to a height is positive.
    C. Work done by electrostatic force between two positive charges to bring them close is positive.
    D. Work done by electrostatic force between two opposite charges to bring them close is positive.
44. The linear momentum is the
    A. Vector product of mass and velocity
    B. Scalar product of mass and speed
    C. Vector product of force and its perpendicular distance from the axis of rotation
    D. Scalar product of mass and velocity
45. Temperature measures -------
    A. Chemical energy   B. Heat energy
    C. Potential energy   D. Nuclear energy
46. When we supply equal amount of heat to equal masses of water and kerosene , the rise in temperature will be
    A. Equal in both   B. More in water
    C. More in kerosene   D. None of above
47. When we have normal incidence and enters in second denser medium,
    A. Its speed remains constant   B. Its speed decreases
    C. Its speed increases   D. None of the above
48. If a lens always forms an inverted image, it should be
    A. Plano-convex lens   B. Biconvex lens
    C. Concavo-convex lens   D. Biconcave lens
49. By increasing the intensity of sound, we can increase the --------- of the sound.
    A. Frequency   B. Wavelength
    C. Loudness   D. Velocity
50. The speed of sound wave does not depend on
    A. Density of the medium   B. Amplitude of wave
    C. Humidity present in the medium   D. Temperature
51. If a magnet repels a substance A, then
    A. A must be a magnet.
    B. A must be a good magnetic substance.
    C. A may either be a magnet or magnetic substance.
    D. A may neither be a magnet nor magnetic substance.
52. If the efficiency of a machine is 30% and the input energy of 10J is required in every 1 second, the output work we can obtain in every second from it is
    A. 30J   B. 300J
    C. 3J   D. 0.3J
53. If the ratio of primary voltage to the secondary voltage in a transformer is 2, then the ratio of its secondary turn to the primary turn is
    A. 2   B. 1/2
    C. 4   D. 1/4
54. The circular depression at the center of volcano is called
    A. Crater   B. Magma chamber
    C. Caldera   D. Crater lake
55. Which one of the following is the source of renewable energy?
    A. Coal   B. Kerosene
    C. Tidal   D. Petrol
56. The solubility of a salt is 50 at 25^{0}C. What amount of salt will be present in 50 gm of its saturated solution at that temperature?
    A. 16.66   B. 166.6
    C. 15.55   D. 1.66
57. Which of the following is not true for Mendeleev's periodic table?
    A. It is constructed on the basis of atomic weight of the elements.
    B. Positions of the isotopes are not mentioned on the table.
    C. The position of hydrogen is not properly defined.
    D. Chemically dissimilar elements are placed separately.

58. The outermost valence electronic configuration of an atom is $3s^1$ which represents,
    A. Argon
    B. Magnesium
    C. Sodium
    D. Potassium
59. Which of the following statement is false in case of a chemical equation?
    A. It provides chemical formula of both reactant and product.
    B. It provides condition of the reaction.
    C. It also indicates nature of the reactant and product.
    D. It provides all characters of both reactant and product.
60. A substance that can be further simplified by ordinary chemical means may be which of the following?
    I. An element or a compound
    II. A mixture or a compound
    III. An element of a mixture
    A. I only
    B. II only
    C. III only
    D. I,II and III
61. Suppose, you are a scientist and interested to extract a metal by using an ore Limonite. Which one of the following metal is extracted by you from this ore?
    A. Copper
    B. Aluminum
    C. Gold
    D. Iron
62. Which of the following is organic acid?
    A. H_2SO_4
    B. CH_3COOH
    C. H_2CO_3
    D. HNO_3
63. The formation of carbon dioxide can be detected by,
    A. Inserting a burning candle into the jar.
    B. Passing a gas in a test tube containing lime water.
    C. Introducing burning magnesium into the jar.
    D. All processes mentioned above.
64. Identify the missing in a given chemical process ,
    $2NH_4Cl + Ca(OH)_2 \longrightarrow CaCl_2 + \ldots\ldots\ldots + 2H_2O$
    A. $2NH_3 \downarrow$
    B. $2NH_3 \uparrow$
    C. $NH_3 \uparrow$
    D. $H_3N \downarrow$
65. Which of the following statement is not correct?
    A. Higher is the concentration of reactant higher is the rate of reaction.
    B. Catalyst does not affect the equilibrium position of reaction.
    C. Rate of reaction increases by 2/3 times for every 10^0C rise in temperature.
    D. Higher is the surface area of reactant slower would be the reaction rate.
66. Which of the following pair represents general formula of alkyne and alkene respectively?
    A. C_nH_{2n+2} and C_nH_{2n}
    B. C_nH_{2n-2} and C_nH_{2n+2}
    C. C_nH_{2n} and C_nH_{2n-2}
    D. C_nH_{2n-2} and C_nH_{2n}
67. A glass company prepares a green colored glass. Which of the following oxide is used to prepare such a glass by the company?
    A. Cobalt oxide
    B. Nickel oxide
    C. Chromium oxide
    D. Cuprous oxide
68. Which of the following is an example of thermosetting plastics?
    A. Bakelite
    B. Polyethene
    C. Polystyrene
    D. Synthetic fibres
69. Atomic weight 27 amu resembles,
    A. Fe
    B. Al
    C. Cu
    D. Ag
70. Which of the following chemical is used as an anesthetic agent?
    A. Ethane
    B. Ethanol
    C. Ether
    D. Glycerine
71. One of the early botanists popularly called 'the father of botany' is
    A. Mendel
    B. Aristotle
    C. Linnaeus
    D. Theophrastus
72. Transportation of proteins and synthesis of lipids & steroids are the common functions of
    A. Nucleus
    B. Lysosome
    C. Ribosome
    D. Endoplasmic Reticulum

73. The process of movement of chaismata from centromeres towards the ends of chromosomes is called terminalization. Terminalization starts during
    A. Leptotene
    B. Zygotene
    C. Diplotene
    D. Diakinesis

74. Non-embryonic chlorophyllous autotrophs belong to
    A. Algae
    B. Fungi
    C. Bryophyta
    D. Pteridophyta

75. The image shows a typical plant cell. Which cell structures are represented by A, B, C, & E?

    A. Cell membrane, Cell wall, Golgi bodies, & Vacuole
    B. Vacuole, Cell wall, Golgi bodies, & Cell membrane
    C. Cell wall, Cell membrane, Golgi bodies, & Vacuole
    D. Golgi bodies, Cell wall, Cell membrane, & Vacuole

76. Fruit in flowering plants is produced after fertilization. Which of the given part of flower changes into a fruit?

    A. 1
    B. 4
    C. 6
    D. 10

77. Sori, rhizome, and zygote in the life cycle of fern belong to
    A. Sporophytic generation
    B. Gametophytic generation
    C. Both
    D. None

78. The meristem found at the tip of root and shoot is called
    A. Apical
    B. Lateral
    C. Intercalary
    D. Secondary

79. The growth of plant parts in response to gravity is called
    A. Phototropism
    B. Geotropism
    C. Thigmotropism
    D. Chemotropism

80. Which of the following plants is the richest source of vegetarian protein?
    A. Rice
    B. Barley
    C. Soybean
    D. Gram

81. Asexual reproduction in *Planaria* occurs by which among the following processes.
    A. Sporulation
    B. Fragmentation and Regeneration
    C. Fusion of gametes
    D. Vegetative propagation

82. Appendicular skeleton includes all EXCEPT:
    A. Hind limbs
    B. Fore limbs
    C. Pectoral- and Pelvic- girdles
    D. Vertebrae

83. Presence of pneumatic bones is the character of which group of animals?
    A. Pisces
    B. Amphibian
    C. Reptilian
    D. Aves

84. Select a hormone that controls an exchange of calcium between blood and bones and increase calcium content in blood.
    A. Adrenaline
    B. Growth Hormone
    C. Parathyroid Hormone
    D. Progesterone

85. Ventricle is thick walled as compared to auricle because:
    A. It is present on the posterior side
    B. It is to pump blood
    C. It is to receive blood from auricle
    D. It lies above the auricle

86. Which of the following are homologous structures?
    A. Ginger and sweet potato
    B. Trunk of elephant and hand of chimpanzee
    C. Nail of man and claw of cat
    D. Wing of bird and butterfly

87. A scientist cut the tail of mice but young ones produced by them had tails. He disproved the theory of
    A. Darwin
    B. Lamarck
    C. Wallace
    D. Haeckel

88. Balance and muscular coordination is the function of
    A. Spinal cord
    B. Cerebellum
    C. Pons Varolii
    D. Medulla

89. All of the following are the examples of reflex action EXCEPT
    A. Sneezing
    B. Blinking
    C. Thinking
    D. Knee jerking

90. Night blindness is caused by the functional weakness of
    A. Rod cells
    B. Cone cells
    C. Nerve cells
    D. Mast cells

91. Which is the Capital Saudi Arabia?
    A. Yamen
    B. Dubai
    C. Riyadh
    D. Dakar

92. What land area of Nepal is occupied by the Terai region?
    A. 27%
    B. 28%
    C. 42%
    D. 17%

93. Which insects is known as social insects?
    A. Ants
    B. Grasshopper
    C. Bees
    D. Spider

94. Which planet is known as green planet?
    A. Saturn
    B. Pluto
    C. Mars
    D. Uranus

95. Which is the oldest industry of Nepal?
    A. Biratnagar Rice Mill
    B. Biratnagar Sugar Mill
    C. Hetauda Jute Mill
    D. Biratnagar Jute Mill

96. Which is the shortest day of the year?
    A. 23rd July
    B . 1st April
    C. 22nd December
    D. 29th December

97. Which country produces largest quantity of wool in the world?
    A. India
    B. Australia
    C. China
    D. Nepal

98. What are the water soluble Vitamins?
    A. Vitamins A & B
    B. Vitamins B & C
    C. Vitamins C & D
    D. Vitamins B & D

99. The World Environment Day is celebrated on?
    A. March 6th
    B. April 5th
    C. June 5th
    D. March 5th

100. What is the Full Form of ATM?
    A. Any Time Money
    B. Automated Teller Machine
    C. Automatic Teller Machine
    D. Amounted Teller Machine