|  |
| --- |
| **AITSE 1012** |

**NATIONAL TEACHERS COUNCIL**

**ALL INDIA TALENT SEARCH EXAMINATION: 2012**

**CLASS X**

**Duration: 90 Minutes Maximum Marks: 100**

***General Instructions to Candidates***

1. *This question paper contains 100 multiple choice questions each of one mark.*

*2 The question paper is divided into two sections,* ***A*** *and* ***B***

*3. Section* ***A*** *is* ***S****cholastic* ***A****ptitude Test**(****SAT)****, contains 60 questions. This section covers Physics, Chemistry, Biology and Mathematics.*

*4. Section* ***B*** *is* ***M****ental* ***A****bility* ***T****est* ***(MAT),******C****omputer* ***A****wareness**and* ***G****eneral* ***K****nowledge****,*** *contains 40 questions.*

*5. There will be no negative marks for wrong answer.*

*6. A separate answer sheet is provided for answering the questions. Each question should be answered by* ***darkening*** *the appropriate circle (A, B, C, or D) with a* ***blue or black ball pen****.*

*7. Answer recorded once in the answer sheet cannot be altered.*

*8. All rough works should be done only in the space provided for* ***rough work*** *in this question paper.*

*9. Calculator is not permitted in the examination hall.*

*10. Candidate should write his / her name in the space provided for the purpose.*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**SECTION A**

1. The powers of two lenses are 3.25D and -0.75D. What is the focal length of the combination of these two lenses?

 A) 0.4m B) 0.25cm

 C) 0.25m D) 2.5m

2. Two light rays P and Q fall on an optical component **M** and come out as R and S.

 P R

 Q S

 Identify **M.**

 A) Prism B) Convex mirror

 C) Concave lens D) Convex lens

3. A monochromatic light of wave length 589 nm is incident from air into water of refractive index 1.33. Then the speed of refracted light is

 A) 9.23 X 108ms-1 B) 8.356 X 108ms-1

C) 3 X 108ms-1 D) 2.256X 108ms-1

4. The lens in the eye and corrective lenses all serve the same general purpose. What is that purpose?

 A) To reflect light B) To Refract light

 C) To open up eye to light D) To control the light entering the eye

5. A Current of **I** flows through a conductor connected to a voltage source. How does the heating effect in the conductor change if the resistance of the conductor becomes half the initial value and connected to the same voltage source?

 A) Double B) Four times

 C) Half D) One-fourth

6. Three equal resistors connected in series across a voltage source together dissipate 10Watt. If the resistors are connected in parallel across the same voltage source, then the power dissipated will be

 A) 10watt B) 30watt

 C) 90watt D) 10/3 watt

7. The essential difference between an AC generator and a DC generator is that

 A) AC generator has an electromagnet but DC generator does not have

 B) Ac generator has slip rings while DC generator has a split ring

 C) AC generator produces a high voltage

 D) DC generator produces a low voltage

8. To produce bio-gas in biogas plant we need

 A) Air and Water B) Neither air nor Water

 C) Air but not Water D) Water but not Air

9. A dynamo works on the principle of

 A) Electromagnetic induction B) Chemical effect of electric current

 C) Magnetic effect of electric current D) Heating effect of electric Current

10. Three resistors of resistance 1ohm each are connected in parallel. The resultant resistance is

 A) 3 ohm B) 1ohm C) $ \frac{1}{3}$ ohm D) 1.5 ohm

11. A student brought a mirror to class room to obtain enlarged virtual image. Identify the type of mirror.

 A) Convex mirror B) Concave mirror

 C) Plane mirror D) Both (A) & (B)

12. In Fleming’s right hand rule, the forefinger points in the direction of

 A) The force B) The motion

 C) The current D) The magnetic field

13. Read the following statements and mark the correct option.

 Statement P An ammeter is always connected in series with a circuit.

 Statement Q A voltmeter can be connected in series or parallel with a circuit.

 A) Both P and Q are correct B) Both P and Q are false

 C) P is true and Q is false D) P is false and Q is true.

14. Which one of the following is a renewable source of energy?

 A) Wood B) Coal C) CNG D) Petroleum.

15. In a nuclear fission reaction most of the energy is released in the form of

 A) Radiation energy B) Heat energy

 C) Electrical energy D) Chemical energy

16. The molecular formula of an organic compound is **C2H4O2** and it turns blue litmus red. The compound is

 A) Ethanoic acid B) Ethanol

 C) Ethanal D) None of these

17. The elements of a certain period have

 A) The same number of valence electron B) The same number of shells

 C) Identical outer electronic configuration D) All of these.

18. Rancidity can be prevented by

 A) Adding anti-oxidant to oily food stuff B) Flushing nitrogen gas into packets of oily food

 C) Both (A) and (B) D) None of these

19. Dilute hydrochloric acid is added to solid sodium carbonate. It is observed that

 A) Brisk effervescence occur B) A loud sound is produced

 C) The solution turns blue D) No change take place.

20 10ml of freshly prepared Iron sulphate is taken in four test-tubes each. Strips of copper. Iron, Zinc and aluminium are introduced in these test-tubes. A black residue was obtained in two of them. The correct pair of metals forming black residue are

 A) Copper and Zinc B) Aluminium and Zinc

 C) Iron and Aluminium D) Zinc and Aluminium

21. The process of conversion of wood into coal by biochemical process taking over millions of years is called

 A) Destructive distillation B) Carbonation

 C) Fractional distillation D) Catenation

22. P, Q and R are three elements with atomic numbers Z-1, Z and Z+1 respectively. Q is an inert gas. Identify the group to which elements P and R belong.

 A) Halogen and Alkali metal B) Halogen and inert gas

 C) Inert gas and alkali metal D) Alkali metal and Alkaline earth metals

23. Which of the following remains unchanged on descending a in group in the periodic table?

 A) Density B) Atomic size

 C) Metallic character D) Valence electron

24. Alkaline hydrolysis of an ester is known as

 A) Esterification B) Hardening

 C) Saponification D) Hydration

25. The below given chemical equation represents the manufacture of

 **Ca(OH)2 + Cl2 CaOCl2 + H2O**

 A) Bleaching powder B) Baking Powder

 C) Washing powder D) Slaked lime

26. Active absorption of water from the soil by the roots is mainly affected by

 A) Respiratory activity of roots B) Tension on cell sap due to transpiration

 C) Tissue organization D) Chemical potential gradient.

27. Photosynthesis is a process of

 A) Reductive and Exergonic B) Reductive and Catabolic

 C) Reductive, Endergonic & Catabolic D) Reductive, Endergonic & Anabolic

28 What happens when the left ventricle of human heart contract?

 A) The oxygenated blood is forced into the main artery

 B) The deoxygenated blood is forced into the pulmonary artery

 C) The deoxygenated blood is pumped into the lungs through pulmonary artery

 D) The oxygenated blood goes into different body organ through pulmonary vein.

29. Tropism is the movement of a part of plant in response to an external stimulus. The growth of pollen tube towards the ovule during the process of fertilization in flower is an example of

 A) Geotropism B) Hydrotropism

 C) Chemotropism D) Phototropism

30. Which of the following methods of preventing pregnancy act by changing hormonal balance of the body so that eggs are not released and fertilization cannot occur?

 A) Creating a mechanical barrier B) Using IUCDs

 C) Using copper. T. D) Taking oral pills

31. Genetic drift is defined as

 A) A change in an ALLETE due to alteration in the DNA molecules.

 B) A random change in gene frequency from one generation to the next

 C) A change in gene frequencies due to exchange of genes between different populations

 D) A product of natural selection.

32. Which of the following is the method for determining the age of fossils?

 A) Carbon dating B) Radioactive clock

 C) Potassium – argon dating D) All of these.

33. Below given informations is about an endocrine gland. From the information identify the hormone secreted by the gland.

* The gland is located on the top of kidney.
* The hormone converts glycogen into glucose.
* Deficiency of the hormone causes **Addison’s** disease

 A) Adrenal B) Pancreas

 C) Progesterone D) Thyroid

34. The part of the brain which is concerned with balance is

 A) Cerebrum B) Cerebellum

 C) Medulla oblongata D) Pons

35. Homologous organs have

 A) No common ancestral origin B) Same morphology & functions

 C) Same morphology & different functions D) Different morphology & functions, but same

 Origin

36. A tree of 6cm high casts a shadow of 6$√3$ m. The angle of depression made by the sun is

 A) 30$° $ B) 60$°$ C) 45$°$ D) 90$°$

37. How many numbers between 1 and 1000 are divisible by 9?

 A) 90 B) 100 C) 110 D) 111

38. A girl calculates that the probability of her winning the first prize in a lottery is 0.08. If 6000 tickets are sold, how many tickets has she brought?

 A) 40 B) 240 C) 480 D) 750

39. The product of two consecutive natural numbers is always

 A) An odd number B) An even number

 C) A prime number D) Divisible by 3

40. The rational number between $\frac{1}{3}$ and $\frac{1}{2}$is

 A) $\frac{2}{5}$B)$ \frac{1}{5} $C) $\frac{3}{5}$D) $\frac{4}{5}$

41. The LCM of two numbers is 567 and their HCF is 9. If the difference between the two numbers is 18, the two numbers are

 A) 36 & 18 B) 78 & 60 C) 52 & 34 D) 63 & 81

42. If α, β be the zeroes of the quadratic polynomial $2x^{2 }$+ 5x + 1, then the value of **α + β+ αβ** is

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

43. The value of **k** for which the equations **x + 2y – 3 =0** and **5x + ky + 7 = 0** has no solution is

 A) 1 B) 3 C) 6 D) 10

44. A man walks a distance of 48 km in a given time. If he walks 2km/hr faster, he will perform the journey 4 hrs before. His normal rate of walking is

 A) 3 Km/hr B) 4 Km/hr C) 6 Km/hr D) 5 Km/hr

45. The solution of $\sqrt{5x-1}$ + $\sqrt{x-1}$ = 2 is

 A) x = 2, x = 1 B) x = 2 C) x = 1 D) x = 3

46. If the first, second and last term of an **AP**  are **a, b and 2a** respectively, its sum is

 A) $\frac{ab}{2(b-a)}$B)$\frac{3ab}{2(b-a)}$C)$\frac{ab}{b-a}$D)$ \frac{2ab}{b-a}$

47. If four numbers are in **AP** such that their sum is 50 and the greatest number is 4 times the least, then the numbers are

 A) 3, 7, 11, 15 B) 4, 10, 16, 22 C) 5, 10, 15, 20 D) None of these

48. If A(2, 2), B(-4, -4) and C(5, -8) are the vertices of a triangle, then the length of the median through vertex C is

 A) $\sqrt{113}$ B) $\sqrt{117}$

 C) $\sqrt{65}$ D) $\sqrt{85}$

49. In the given triangle ABC, AD perpendicular to BC and <A is a right angled. Then $AD^{2}$ =

 A) BD X CD

 B) AB X AC

 C) BC X AC

 D) AB X BC

50. The areas of two concentric circles are 962.5 $cm ^{2}$ and 1386 $cm ^{2}$ respectively. The width of the ring is

 A) 3.4cm B) 3.5cm C) 3.2cm D) 3.1cm

51. The mean of 20 observations is 12.5. By error one observation was noted as **-15** instead of **15**. Then the correct mean is

 A) 11 B) 11.75 C) 13 D) 14

52. $\frac{tanɵ + secɵ-1}{tanɵ- secɵ+ 1}$ **=**

 A) $\frac{1 + sinɵ}{cosɵ}$B) $\frac{1+cosɵ }{sinɵ}$

 C) $\frac{cosɵ}{1+sinɵ}$ D) $\frac{1-sinɵ }{cosɵ}$

 53. Assume that $x+^{1}/\_{x}$= **15,** then$ x^{2 }$**+** $\frac{1}{x^{2 }}$is equal to

 A) 210 B) $225+^{1}/\_{225}$ C) 223 D) 225

54. Which of the statements given below is correct, if discriminant for equation $5x^{2}-4x+2=0$is D?

 A) D< 0 B) D > 0 C) D = 0 D) D is not defined

55. In the figure given below $<Q $and $<B $are right angles. If AQ = 15cm, BC + 16cm, AP =17cm, then QC is

 A) 18 cm

 B) 19 cm

 C) 16 cm

 D) 12 cm

56. If **cosɵ = 2 tanɵ,** what is the numerical value of **cos2ɵ**?

 A) -2 + 2$√2$ B) -2 - 2$√2$ C) -1 - $√3$ D) None of these.

57. In the figure given below, O is the centre and OC = BC. Then $<AOC$ is

 A) 120$°$

 B) 2$<C$

 C) 2$<B$A

 D) All the above.

58. LCM of two prime numbers **p** and **q** (p > q) is 161. The value of **3q – p** is

 A) 1 B) -1 C) -2 D) 2

59. The height of a tower is **‘h’** and angle of elevation of the top of the tower is ***x.*** on moving a distance **h/2** towards the tower, the angle of elevation becomes ***y.*** What is the value of **cot x – cot y**?

 A) 2/3 B) ½ C) 1 D) 2

60. What is the remainder when $3x^{3}$ **-** $2x^{2 }y$ **-** $13xy^{2} $**+** $10y^{3}$isdivided by ***x -2y*?**

 A) y B) x + y C) 0 D) x +2y

**SECTION B**

61. Which one of the following can’t act as input and output device to the computer?

 A) Visual display Unit B) CD

 C) Pen Drive D) Key Board

62. E Commerce is mainly using to mention which one of the following

 A) Networks B) Research

 C) Business D) Communication

63. What does the “Search” option of start menu do?

 A) Display all files

B) Find the file or folder in the memory and gives its exact path

C) Display all files

D) Allow to change the basic setting of computer.

64. Given below are two statements. Which one of the following option is correct?

 Statement A: ***The print dialog box enables to you to preview the web page***

 ***before it is printed.***

 Statement B: ***You can use print preview dialog box to see how a printed a***

 ***printed web page will look and to adjust page orientation,***

 ***scaling and margin***

 A) Statement A is correct B) Statement B is correct

 C) Both statement A and B are correct D) Both A and B are wrong

65. Match the following

|  |  |
| --- | --- |
| (i) Home page - | (1) location on the internet that contains information in the form of web page |
| (ii) Hyper links - | (2) The first page that you would Hypertextsee on the website. |
| (iii) Web page - | (3) They allow you to navigate from one document to another |
| (iv) Web server |  (4) a document on the web |

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

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

66. Which of this operating system is professionally designed for networking?

 A) Windows NT B) Windows 95

 C) MS DOS D) Windows WP

67. A library charges a fine for books returned late. Following are the fees

 ***First five days: 40 paise per day***

 ***Six to ten days: 65 paise per day***

 ***Above 10 days: 80 paise per day***

 A program in BASIC is designed to calculate the fine assuming that a book is

 returned N days late as given below:

 **10 INPUT “no. of day”;N**

 **20 If N < = 5Then F = 40 \* 5**

 **30 If N > 5and N< = 10Then F = 40\*5+(N - 5) \* 65**

 **40 If N > 10Then F= 40 \* 5 + 65 \* 5+ (N - 10) \* 80**

 **50 PRINT “Fine=”; F**

 **60 END**

 **Is the given program written in basic is correct?**

 A) No B) Incomplete C) Can’t Say D) Yes

68. Which one of the following shortcut key we use in an MS Word to go to the

 beginning of a line

 A) Shift + Home B) Shift + Enter

 C) Home D) End

69. In MS – Excel the function that is used to find the highest value in a given range of

 value is called

 A) Min( ) B) Max( ) C) Average ( ) D) Sum ( )

70. Which one of the following is not a hardware component?

 A) Chip B) Semi – conductor Memory

 C) LAN D) Keyboard

71. Where do these famous words appear – “If there be a paradise on earth it is here,

 here, it is here”?

 A) Red Fort B) Taj Mahal

 C) Qutab Minar D) Babar’s Tomb

72. Which Indian state was called NEFA till 20th June 1972?

 A) Mizoram B) Jammu & Kashmir

 C) Goa D) Arunachal Pradesh

73. Name the largest jute producing country in the world.

 A) India B) Bangladesh C) China D) Pakistan

74. Which one of the following known as Blue Mountain

 A) Himadri range B) Vindya Satpura range

 C) Nilgiri Hills D) Western Ghats

75. Identify the country with the help of following two remarks:

 ***1. This country is known as land of rising sun***

 ***2. This country has nearly 3900 islands***

 A) Japan B) Greenland

 C) Australia D) Indonesia

76. Based on the following statement identify the name of the canal

 1. Construction of this canal completed in 1914.

 2. The length of this canal is 81.6 Km.

 A) Suez Canal B) Panama Canal

 C) Ohio Canal D) Erie Canal

77. Name the second and third highest mountain peak respectively in the world after

 Everest.

 A) Godwin Austen and Kilimanjaro B) Kilimanjaro and Godwin Austin

 C) Kanchenjunga and Kilimanjaro D) Godwin Austin and Kanchenjunga

78. Observe the following diagram of a volcano and answer the question



**“It is a circular depression in the ground caused by volcanic activity. It is typically a basin, circular in form within which occurs a opening from which magma erupts as gases and lava”. This statement is related to which feature of volcano**

 A) Throat B) Vent

 C) Vent D) Crater

79. The writer who wrote Chandra Kanta and Chandra Kanta Sanatati, started writing on

another book, but unfortunately could complete only six chapters before his death who was this writer?

 A) Jaya Prakash Bharathi B) Devaki Nandan Khatri

 C) O Chandu Menon D) Aditya Malla Burman

80. Which one of the following is not correctly matched?

 A) The first person to reach the South Pole - Roald Amundsen

 B) The first woman to conquer the Mount Everest -` Junko Tabei

 C) The first European invader on Indian soil - Muhammad Gazni

 D) The first President of Chinese Republic - Sun Yat Sen

81. Which one of the following is correctly matched?

 A) Largest populated city in India - Kolkata

 B) Highest Tower in India - Charminar

 C) Longest river in India - Brahmaputra

 D) Highest water falls in India - Jog falls

82. “This is a typical American game this was invented by William g Morgan in1895.

 This game introduced in India at the beginning of 20th century”. Identify the game

 A) Volley Ball B) Foot Ball

 C) Basket Ball D) Kho - Kho

83. Which one of the following is correctly matched?

 A) Swaraj is my birth right and I shall have it - Balagangadhar Tilak

 B) Give blood and I will give you freedom - J awaharlal Nehru

 C) Do or Die - Subash Chandra Bose

 D) A new star rises, the star of freedom in the east - Mahatma Gandhi

84. Which state of India is the largest producer of Ragi?

 A) Karnataka B) Rajasthan

 C) Himachal Pradesh D) Tamil Nadu

85. Which one of the following factor is not affecting the location of industries?

 A) Govt. Policies B) Transport facilities

 C) Type of govt. D) Climate

86. In certain code ‘ROAD’ is written as ‘URDG’ how is ‘SWAN’ written in that code?

 A) VZDQ B) VXDQ

 C) UXDQ D) VZCP

87. In certain code ‘RATIONAL’ is written as ‘RTANIOLA’ how would ‘TRIBAL’ be written

 in that code.

A) TRIALB B) TIRALB

 C) TIRLBA D) TIRLAB

88. In certain code ‘BCG’ means ‘oranges are sweet, ‘KUB’ means ‘buy good oranges’ ,’

 BGL’ means ‘red sweet oranges’ which letter in that code means ‘sweet’.

 A) K B) G C) L D) Cannot say

89. Replace the question mark.

 **Smoke : Pollution: : War : ?**

 A) Victory B) Treaty C) Army D) Death

90. Replace the question mark.

 Gun : Bullet : : Chimney : ?

 A) Smoke B) Roof C) House D) ground

***Direction for question No 91 to 95:- In each of the following question four words or four letters have been given of which three are alike in some way and one is different. Choose out the odd one***

91 A) Snake B) Lizard C) Whales D) Crocodile

92. A) S B) T C) U D) W

93. A) Bigger B) Faster C) Greater D) Taller

94. A) AJKL B) IBCD C) UFGH D) URPQ

95. A) Gold B) should C) Calm D) Calm

96. If ‘+’ means ‘x’, ‘-‘ means ‘÷’, x means ‘-‘ and ‘÷’ means ‘+’ then

 **6 ÷ 36- 4 x 3 + 4 =?**

 A) 5 B) 24 C)3 D) 10

97. If **1** is coded as **M, 2** is coded as **T, 3** is coded as **D, 4** is coded as **H, 5** is coded as **W, 6**

 is coded as **Y, 7** is coded as **B, 8** is coded as **R**, and **9** is coded as **Q** which of the

 following is the coded form of **729154638** ?

 A) BTQMWGYRD B) BTQMWHYDR

 C) BTQMWHYRD D) BTWQMHYRD

 ***Direction for question No 98 to 100:- In each row of figures below, the problem figures on the left make a series, they change from left to right in a specific order. The question is if the figures continue to change in the same order what should be the next figure be? You have to choose the correct answer out of four numbered answer figure.***

 **Problem Figure Answer figure**

**98**



 **A B C D**

****

****

**Space for Rough Works**