DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ASKED TO DO SO

DCA ENTRANCE EXAMINATION - X

DEFENCE CAREER ACADEMY, AURANGABAD.

As an ISO 9001 : 2008 - Certified

| ENT : 2020-2021 | **MATH & GAT** | Sr. No. |
| TIME : 2.00 Hrs. | | MAXIMUM MARKS : 100 |

QUESTION - BOOKLET

GENERAL INSTRUCTIONS

1.   Do not carry any book, paper or any other material with you inside the Examination Hall.

2.   Use only Black / Blue ball pen.

3.   Keep the Hall Ticket with you ready for scrutiny.

4.   Result of this Examination will be displayed on the Notice Board. The Result Sheet will include the successful/ qualified candidates ONLY.

5.   All successful candidates indicated on the list shall present themselves for the invetview on the same day.

6.   This Test Booklet contains 100 items (Questions). Question No. 1 to 100 (MCQ) carry 1 mark each You have to select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, Choose Only One response for each item.

7.   All the answers must be marked on the Answer Sheet only. Do not write anything on this Test Booklet.

8.   IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR QUESTION ETC. IF SO, GET IT REPLACED BY THE SUPERVISOR.

9.   Ask for a separate paper for rough work.

10.   Read the questions carefully, Remember, answers are to be indicated in the Answer Sheet

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Only. Return the Test Booklet, Rough work papers and the Answer Sheet immediately when asked to do so. You are NOT permitted to take away with you any paper concerning the Examination.

ANSWER SHEET

11.   The Answer Sheet contains 150 counts, each subdivided in four { (1) (2) (3) (4)} subdivisions for indicating the correct choice of answers. After having selected the correct choice from the test Booklet, you should indicate that choice by completely blackening the respective circle, DO NOT merely cross the circle. You should indicate correct answer by blackening ONLY ONE circle in each answer. Any answer having more than ONE blackened circle will be treated as a WRONG answer.

12.   Before starting the answering ensure that you have filled the complete information at the top of this Answer Sheet. Incomplete Answer Sheet will be regarded as invalid.

THANK YOU AND BEST OF LUCK

1. Factors of $3\sqrt{2}\ a^2 - 5ab - \sqrt{32}\ b^2$ are,

   1) $(\sqrt{2}\ a - 2)(3a + 4\sqrt{2})^2$ 2) $(\sqrt{2}\ a + 2)(3a - 4\sqrt{2})^2$

   3) $(\sqrt{2}\ a - 2)(3a - \sqrt{32})^2$ 4) $(3a - 2)(\sqrt{2}a + \sqrt{32})^2$

2. Which of the following is not a factor of $(x^3 - 19x - 30)$

   1) $(x + 2)$ 2) $(x - 5)$ 3) $(x + 5)$ 4) $(x + 3)$

3. In a cricket tournament average runs of first four players is 66 and that of the remaining seven players is 22. Find the average runs by all the players in that innings.

   1) 44   2) 41   3) 39   4) 38

4. Factors of $x^2 - 2\sqrt{5}\ x - 15$ are:

   1) $(x - \sqrt{5})(x + 3\sqrt{5})$ 2) $(x - 3\sqrt{5})(x + 5\sqrt{5})$

   3) $(x + \sqrt{5})(x - 3\sqrt{5})$ 4) $(x - 5\sqrt{3})(x + \sqrt{3})$

5. If $9x^2 + 24y + (m + 5)^2$ is a perfect square, what is the value of m?

   1) -4 2) 11   3) -2 4) 10

6. $x + y = 4; x - y = 2$

   1) $(3, 1)$ 2) $(2, 1)$ 3) $(1, 2)$ 4) $(1,3)$

7. $x + y = 4 ; 2x - 5y = 1$ then what is the value of x and y.

   1) $(3, 1)$ 2) $(2, 1)$ 3) $(1, 2)$ 4) $(1,3)$

8. If Principal amounts to Rs. 5800 after 2 years and to Rs. 7000 after 5 years. Find the principal and the rate of interest.

   1) Rs. 1200; 8 p.c.p.a.   2) Rs. 5000; 10 p.c.p.a.

   3) Rs. 5000; 8 p.c.p.a.   4) None of these

9. $3x - 2y = -12; x + 6 = y$

   1) $(3, 1)$ 2) $(0, 6)$ 3) $(6, 0)$ 4) $(6,1)$

10. The distance between the point $(2, -3)$ and $(2, 2)$ is :

    1) 5 units   2) 2 units   3) 4 units   4) 3 units

11. The perimeter of a triangle whose vertices are $(7, 0)$, $(0, 24)$ and $(-10, 0)$ is units

    1) 34   2) 68   3) 51   4) 65

12. The co-ordinates of a point situated on y-axis at a distance 8 units from x - axis is :

    1) $(-8, 8)$ 2) $(8, 0)$ 3) $(0, 8)$ 4) $(8, -8)$

13. The ratio of two numbers is 7 : 3. difference between the numbers is 60. Then the greater number is

1) 45　　　　　　2) 70　　　　　　3) 90　　　　　　4) 105

14. The ratio of the present ages of supriya and her mother is 2 : 9. Mother's age at the time of the birth of supriya was 28 years, then their present ages in year are respectively.

1) 8, 36　　　　　2) 6, 34　　　　　3) 4, 32　　　　　4) 2,30

15. ☐ABCD is a parallelogram, the ratio of the measures of its $\angle$ A and $\angle$ B is 13 : 7, then the measure of $\angle$ A is :

1) 55^0　　　　　2) 63^0　　　　　3) 117^0　　　　　4) 125^0

16. A sack contains 20 kg of rice. How many such sacks are required to fill in 460 kg. of rice.

1) 230　　　　　　2) 23　　　　　　3) 46　　　　　　4) 64

17. The average score of boys in an examination is 71, and that of girls is 73. If average score of the class is 71.8, the ratio of number of boys and number of girls is .....

1) 2 : 1　　　　　2) 1 : 2　　　　　3) 3 : 2　　　　　4) 2 : 3

18. .... data is collected by the reasearcher for one self

1) Group　　　　2) Secondary　　　3) Primary　　　　4) All of these

19. Raw data : 50, 60, 70, 72, 74, 75, 80, 88, 75, 100 $\therefore$ Frequency of the class 60 - 68 is

1) 5　　　　　　　2) 1　　　　　　　3) 6　　　　　　　4) 3

20. The average of 4 consecutive odd numbers is 42. What is the largest of these odd numbers?

1) 45　　　　　　2) 39　　　　　　3) 33　　　　　　4) 43

21. The measure of an angle is four times the measure of its supplementary angle. The the measure of the angle is ....

1) 36^0　　　　　2) 72^0　　　　　3) 108^0　　　　　4) 144^0

22. Which of the following statements are true?

1. Similar trianges are congruent

2. Congruent triangles are similar

3. If two triangles are not congruent, they ar not similar.

4. If two triangles are not similar then they are congruent.

1) 1 and 2　　　　2) 2 and 4　　　　3) 2 and 3　　　　4) 1 and 4

23. If two triangles are similar then ....

1) Their two sides are in proportion

2) The length of their two sides is same.

3) The corresponding angles between their two pairs is equal.

4) The corresponding pairs of two angles are in proportion.

24. The ratio of the lengths of the corresponding sides of two triangles is 1. Then the triangles......

1) are not similar　　2) are congruent　　3) are similar　　4) (2) and (3) both

25. In two sides of a triangle are congruent then the angles oppoisite to them are ....

1) Complementary 2) Supplementary

3) Of equal measure 4) None of these

26. At least .... one-one correspondence between the vertices of twoo triangles is necessary to make the triangles congruent.

1) 1 2) 2 3) 3 4) 4

27. A chord subtending an angle of 120^0 at the centre of the circle of radius 10 cm is cm. long.

1) $10\sqrt{3}$ 2) $12\sqrt{3}$ 3) $5\sqrt{3}$ 4) $25\sqrt{3}$

28. Line AB is tangent to the circle of centre C at poin t A. BC = 10 cm, AB = 5 cm. $\therefore$ Radius CA = ... cm.

1) $3\sqrt{5}$ 2) $5\sqrt{3}$ 3) $2.5\sqrt{3}$ 4) None of these

29. C is the centre of two concentric circles. a is any point of outer circle of radius 10. Radius of inner circle is 8. Then the length of then tangent segment from A to the linner circle is ....

1) 4 2) 5 3) 6 4) 7

30. Which of the folloiwng statements are not true?

1) Every square is a parallelogram 2) Every rectangle is not a parallelogram

3) Every parallelogram is not a square 4) Every rhombus is a rectangle.

31. The measures of two consecutive angles of a parallelogram are $(3y + 20^0)$ and $(2y - 30^0)$ then these measures are respectively ......

1) $134^0, 46^0$ 2) $46^0, 134^0$ 3) $122^0, 58^0$ 4) $58^0, 122^0$

32. The measures of the angles in the pair of consecutive angles of a parallelogram are $(a + 60^0)$ and $(2a + 30^0)$. Then the parallelogram is .....

1) Trapezium 2) Rectangle 3) Rhombus 4) None of these

33. The distance between the points $P = (-6, -3)$ and $Q = (-1, -9)$ is

1) 12 2) 15 3) 9 4) 11

34. The segment AB is divided at $P = (4, 5)$ internally in the ratio 3 : 4. If $B = (8, 9)$ Then the coordinates of A are.

1) (2, 1) 2) (1, 2) 3) (−1, 2) 4) (−2, 1)

35. The line segment joining A $(-2, -1)$, B (3, 3) is extended to C. If BC = 3 AB, then the coordinates of C are.

1) (−18, −15) 2) (15, 18) 3) (18, −15) 4) (18, 15)

36. If $\sin\theta = \dfrac{3}{5}$, then the value of cose θ is :

1) $\dfrac{3}{5}$ 2) $\dfrac{5}{3}$ 3) $\dfrac{1}{3}$ 4) $\dfrac{1}{5}$

37. If $\tan \theta = \dfrac{2}{7}$, then the value of $\cot \theta$ is :

1) $\dfrac{7}{2}$ 2) $\dfrac{2}{7}$ 3) $\dfrac{1}{2}$ 4) $\dfrac{1}{7}$

38. The perimeter of triangle is 48 cm and one of two congruent sides as length 18 cm then, the area is .... sq. cm.

1) $72\sqrt{2}$ 2) 72   3) $72\sqrt{3}$ 4) $72\sqrt{5}$

39. Right angled triangle as hypotenuse of length 41 cm and one of the remaining side is of lenght 9 cm then, the area is .... sq. cm.

1) 180   2) 108   3) 90   4) 45

40. The length of the sides of a triangle are in the ratio 17 : 12 : 25 and its semiperimeter is 270 cm then, the area in sq. cm. is.

1) 9050   2) 9000   3) 10,000   4) None of these

41. How many type of quadrilateral

1) 6   2) 5   3) 8   4) 7

42. The sum of the measure of the angles of a triangle is ....

1) 90^0 2) 360^0 3) -180^0 4) 180^0

43. Two years ago, the ratio of the ages of Meenakshi and Bhagyashri was 5 : 6 Today the ratio of their ages is 6 : 7. What is Meenakshi's present age ?

1) 10 years   2) 12 years   3) 14 years   4) 13 years

44. How many percent of Rs. 5 is 90 paise?

1) 12   2) 14   3) 16   4) 18

45. G.C.D of 144 and a number which is between 300 and 400 is 72. Find the number.

1) 310   2) 260   3) 340   4) 360

46. The opposite angles of a parallelogram are ....

1) different   2) perpandicular   3) congruent   4) supplementary

47. How many times should $\dfrac{4}{7}$ be added to $\dfrac{4}{7}$, so that the sum is 4?

1) 4   2) 5   3) 6   4) 8

48. The observation with maximum frequency is called the ....

1) Mean   2) Mode   3) Median   4) None of these

49. Measures of central tendency.

1) Mean   2) Median   3) Mode   4) all of above

50. Find the mean of the following data 87, 92, 63, 78, 92, 59, 72, 66,

1) Mean = 76.125   2) Mean = 76.7   3) Mean = 76   4) Mean = 67

FILL IN THE BLANKS

* **Directions :** Choose the word or phrase (a, b, c, or 4) which best completes each sentence.

51. Geeta was badly …….. in a car accident.
    1) harmed   2) damaged   3) pinched   4) wounded

52. She lost her socks. She will have to buy a new…
    1) set   2) couple   3) ones   4) pair

53. When he's 58, he'll ……… with pension.
    1) Dismiss   2) resign   3) retire   4) withdraw

54. The fire brigade's prompt action prevented the fire from………
    1) Spreading   2) flowing   3) scattering   4) spilling

55. How much is the…….. to Mumbai, if you travel by train in first class?
    1) cost   2) bill   3) fare   4) fee

* **Directions : Give the Synonyms of :**

56. Pure
    1) clean   2) unmixed   3) fresh   4) clear

57. Doubt
    1) ignorance   2) dullness   3) mistake   4) disbelief

58. Triumph
    1) excitement   2) victory   3) gain   4) joy

59. Outstanding
    1) admirable   2) prominent   3) notorious   4) interesting

60. Voluminous
    1) long   2) bulky   3) shining   4) loud

* **Directions : Give the Antonyms of :**

61. Artificial
    1) red   2) natural   3) truthful   4) solid

52. Virtue
    1) crime   2) wickedness   3) fraud   4) vice

63. Shallow
    1) deep   2) hollow   3) hidden   4) high

64. Gather
    1) spend   2) scatter   3) suspend   4) separate

65. Reserved

   1) companionable   2) popular   3) talkative   4) silent

66. In a certain code, COMPUTER is written as RFUVQNPC. How is MEDICINE written in the same code?

   1) EOJDJEFM   2) EOJDEJFM   3) MFEJDJOE   4) MFEDJJOE

* **Direction : In each of the following questions, four words have been given, out of which four are alike in some manner and the forth one is different. Choose out the odd one.**

67. 1) Sleet   2) Fog   3) Hailstone   4) Vapour

* **Direction : In each of the following questions, a number series is given with one term missing. Choose the correct alternative that will continue the same pattern and fill in the blank spaces.**

68. 1, 2, 3, 6, 9, 18, (........), 54

   1) 18   2) 27   3) 36   4) 81

69. Going 50 m to the South of her house, Radhika turns left and goes another 20m. Then, turning to the North, she goes 30 m and then starts walking to her house. In which direction is she walking now?

   1) North-west   2) North   3) South-east   4) East

* **Direction : In each of the following questions, there is a certain relationship between two given words on one side of : :and one word is given on another side of : : while another word is to be found from the given alternatives, having the same relation with this word as the words of the given pair bear. Choose the correct alternative.**

70. Melt : Liquid : : Freeze : ?

   1) Ice   2) Condense   3) Solid   4) Crystal

71. What is chemical formula of POP?

   1) $CaSO_4$ 2) $CaSO_4, H_2O$ 3) $CaSO_4, 2H_2O$ 4) $Ca(OH)_2$

72. How is corosion of iron prevented?

   1) Using anti-rust solution   2) coating surface by paint

   3) Gal vanising the surface   4) All of these

73. Magnetism is induced in the disc with the help of _____

   1) Light   2) Sound   3) Heat   4) Electricity

74. Find odd

   1) Liver   2) Pancrease   3) Thyroid   4) Salivary
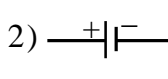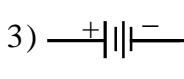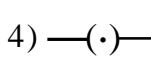
75. Functional unit of reproduction in plant is __

   1) Leaf   2) Flower   3) Inflorencence   4) stem

76. What kind of taste gives Amla?

   1) Sweet   2) Sour   3) Salty   4) Bitter

77. An element has one electron in its valence shell, the element is likely to be a —————

   1) noble gas   2) halogen   3) metal   4) non-metal

78. —————— is used in black & white photography

   1) silver nitrate   2) silver bromide   3) alumina   4) gypsum

79. The S.I. unit of an electric charge is ——————

   1) volt   2) ampere   3) coulomb   4) ohm

80. When a ray of light passes from a rarer medium to a denser medium the angle of refraction is ——

   1) equal to angle of incidence   2) equal to 90^0

   3) smaller than angle of incidence   4) greater than angle of incidence

81. The sulphide ores ores first converted into oxides by heating strongly in excess of air. This process is called as ————————————

   1) calcinations   2) refining   3) roasting   4) corrosion

82. Electronic configuration of Al is

   1) 8,8,2   2) 2,8,1   3) 2,8,3,   4) 2,8,2

83. Symbol of wire crossing is

   1) ⊣⊢   2) —±|⊢—   3) —±‖⊢—   4) —(·)—

84. Formula of washing soda is

   1) $Na_2 Co_3\ 10H_2O$ 2) $Na_2Co_3\ H_2O$ 3) $NaHco_3\ H_2O$ 4) $NaHCo_3\ 10H_2O$

85. Symbol of heat used in reaction is

   1) Δ   2) ⊔   3) ↑   4) →

86. The father of History is ....

   1) Socrates   2) Herodotus   3) Thucydies   4) Sophocles

87. Man in prehistoric period was unknown of the ....

   1) Use of fire   2) Use of stone   3) Writing skill   4) Use of Iron

88. The revoluation of Prophet Muhammad wer compiled in the book named ....

   1) Holy Quran   2) Safarnama   3) Tarikh-i Hind   4) Al Beruni

89. The well fortified castle of the Lords was known as ....

   1) Manors   2) Palace   3) Mansion   4) Forts

90. The book entitled "In Praise of Folly" has been written by

   1) Erasums   2) Zwingly   3) John Calvin   4) John Huss

91. Research on blood circulation was made by ....

   1) Gilbert   2) Holdmont   3) Willian Harvey   4) John Kepler

92. In England .... was the main business.

   1) Iron   2) Coal   3) Cotton   4) Garment

93. The British Parliament passed .... in the year 1764 in American colonies.

   1) Sugar Act   2) Stamp Act   3) Income Tax Act   4) None of these

94. There are approximately .... thousand villages in Maharashtra.

   1) 65   2) 41   3) 51   4) 53

95. In Maharashtra maximum area is under .... type of irrigation.

   1) Well   2) Canal   3) Tank   4) Lift

96. .... Occupation depends entirely on natural resources.

   1) Secondary   2) Primary   3) Tertiary   4) Quaternary

97. Rice Research centre is at .... in Maharashtra.

   1) Pune   2) Karjat   3) Amravati   4) Nandurbar

98. The first cotton mill was set up at Mumbai .... in Maharashtra.

   1) 1852   2) 1854   3) 1856   4) 1851

99. Which is not in a natural ecosystem?

   1) Desert   2) Aquarium   3) Forest   4) Grassland

100. The rock which is made up of molten magma is.

   1) Sedimentary   2) Metamorphic

   3) Igneous   4) Metamorphosed igneous

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