

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



DCA ENTRANCE EXAMINATION - IX
DEFENCE CAREER ACADEMY,
AURANGABAD.

As an ISO 9001 : 2008 - Certified

ENT : 2020-2021

TIME : 2.00 Hrs.

MATH & GAT

Sr. No.

MAXIMUM MARKS : 150

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 interview 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.

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

C

A

PART - I MATHS

- $\frac{5}{7}$ of 35 equals $\frac{5}{2}$ of which number ?
1) 5 2) 7 3) 10 4) 14
- The set of negative numbers and whole numbers is called as
1) natural numbers 2) integers 3) positive numbers 4) 0
- $ax^2 + ax + 9x^2 + 4$ is an
1) algerbic expression 2) polynomial
3) equation in one variable 4) none of these
- Factorization of $a^2 - 4$ is.
1) $(a + 2)(a - 2)$ 2) $(a^2 + 2)(a - 2)$ 3) $(a^2 + 2)(a^2 + 2)$ 4) None of these
- If $x + \frac{1}{x} = 6$, then $x^2 + \frac{1}{x^2}$ is
1) 32 2) 34 3) 36 4) 38
- Algebraic expression $a^3 - b^3$ has the factors
1) $(1 + a + b)(1 + a - b)$ 2) $(1 + a - b)(1 - a + b)$
3) $(a - b)(a^2 + ab + b^2)$ 4) $(1 - a + b)(1 - a - b)$
- The number which is neither positive nor negative is
1) 1 2) 5 3) 0 4) 10
- If $a + b = x$ and $ab = y$, then $\frac{1}{a^3} + \frac{1}{b^3}$ is
1) $\frac{x^3 - xy}{y^3}$ 2) $\frac{x^3 - 3xy}{y^3}$ 3) $\frac{x^3 - 3y}{y^3}$ 4) $\frac{x^3 - y^3}{xy}$
- Which of the following has a definite length?
1) Ray 2) Straight line 3) Line segment 4) All of these
- If two lines are perpendicular to the third line, then the two lines are
1) perpendicular to each other 2) paraller to each other
3) intersect each other at some point 4) none of these
- $(-43) - (-12) =$
1) + 55 2) - 21 3) - 31 4) +31
- If one angle is the average of other two angles and the difference of the least and greatest angle is 60° , then the triangle-formed is
1) right angled triangle 2) equilateral triangle
3) isoceles triangle 4) scalene triangle

13. If a, b and c are three sides of a triangle, then
 1) $a + b = c$ 2) $a - b > c$ 3) $a + b > c$ 4) $c > a + b$
14. Two sides of an isosceles triangle are 7 cm and 8 cm, then measure of third side is
 1) 7 cm 2) 8 cm 3) 7 cm or 8 cm 4) neither 7 cm nor 8 cm
15. Multiplying a negative integer for odd times gives a result.
 1) positive 2) negative 3) 0 4) none
16. $(-12) \times (-3) \times (+4) \times (-6) =$
 1) -144 2) -908 3) + 864 4) -864
17. $(-32) \times (-4) \times (+3) \times 0 \times (-6) =$
 1) +27, 648 2) +276, 480 3) zero 4) -27, 648
18. If the dividend and divisor have unlike signs then the quotient will be
 1) positive 2) negative 3) zero 4) None of these
19. Value of $124 \times 4 - 3 + 118 \div 2$
 1) 552 2) 496 3) 553 4) -553
20. 15 of $\frac{1}{5}$ is
 1) $\frac{1}{75}$ 2) $\frac{151}{5}$ 3) 3 4) -3
21. The surface area of a cube whose volume is 64, is
 1) 8 2) 16 3) 32 4) 96
22. The length of a rectangular solid whose volume is 42 m^3 and width and height are 2m and 3m respectively is
 1) 1 2) 2 3) 3 4) 7
23. The ratio of the volume of a cylinder with radius R and height H to the volume of a cylinder with radius H and height R is
 1) $\frac{H}{R}$ 2) $\frac{H}{\pi R}$ 3) $\frac{R}{H}$ 4) $\frac{\pi R}{H}$
24. Number of bricks, each measuring $25 \text{ cm} \times 12 \text{ cm} \times 6 \text{ cm}$ needed to construct a wall 8 m long, 6m high and 24cm thick, is
 1) 600 2) 800 3) 1600 4) 6400
25. If surface area of the cube is 216 m^2 , then diagonal of the cube is
 1) 6 2) $6\sqrt{3}$ 3) 24 4) 36

26. The height h of a cylinder is equal to the edge of a cube. If the cylinder and the cube have the same volume, then radius of the cylinder is
- 1) $\frac{h}{\sqrt{\pi}}$ 2) $h\sqrt{\pi}$ 3) $\frac{\sqrt{\pi}}{h}$ 4) $\frac{h^2}{\pi}$
27. P is the population of a city at the beginning of a certain year. If population decreases at the rate of $R\%$ per annum, then population after n -year is
- 1) $P \times R \times n$ 2) $P \times R \times (n-1)$ 3) $P \left(1 + \frac{R}{100}\right)^n$ 4) $P \left(1 - \frac{R}{100}\right)^n$
28. In order to clear the stock, a shopkeeper offers a certain percent of rebate on the marked price (M.P.) Then the buyer pays
- 1) S.P. discount 2) C.P. discount 3) M.P. discount 4) M.P. - S.P.
29. To convert a given percentage to a fraction
- 1) add 100 2) subtract 100 3) multiply by 100 4) divide by 100
30. Rajesh's salary is reduced by 20%. In order to have his salary back to the original amount, it must be raised by
- 1) 10% 2) 20% 3) 25% 4) 30%
31. If C.P of 25 mangoes is equal to S.P of 30 mangoes, then % loss is
- 1) 10% 2) 12.5% 3) $13\frac{4}{5}\%$ 4) $16\frac{2}{3}\%$
32. Product of two integers with unlike signs is
- 1) negative 2) 0 3) positive 4) none
33. The exponential form of $3 \times 3 \times 3 \times 3$
- 1) 4^3 2) 3^3 3) 3^4 4) 35
34. Subtract - 28 from - 12
- 1) -16 2) +16 3) + 40 4) -40
35. $156 \times \underline{\hspace{2cm}} = 0$
- 1) 1 2) 0 3) 156 4) -1
36. The median of 30, 17, 43, 39, 40, 18 is
- 1) 30.5 2) 32.5 3) 33.5 4) 34.5
37. Sum of two integers is + 62. If one of the integer is -48 then the other is.
- 1) 112 2) 200 3) 110 4) 116
38. If $x < y < z$, $z < ky$, $x = 0$ and average of the numbers x , y and z is 3 times the median, then value of k is
- 1) -2 2) 3 3) 5.5 4) 8

39. Smallest negative number.
 1) -1 2) -10 3) 0 4) -20
40. Cube of (-3) is
 1) $+27$ 2) -9 3) -27 4) -6
41. A 30 m long ladder is leaned against the top of the pole. If the bottom of ladder is 24 m away from the base of the pole on the ground, what is the height of the pole?
 1) 12 2) 18 3) 16 4) 20
42. How many edges does a cube have?
 1) 12 2) 8 3) 4 4) 2
43. What is the degree of polynomial $28 - 9m^2 + 13m^3$
 1) 2 2) 1 3) 3 4) 0
44. Rajendra purchased a Pendrive for Rs. 300 and sold for Rs. 350 what his profit percent ?
 1) 20 % 2) 25 % 3) 45 % 4) 80 %
45. The measure of a semicircular arc is
- 1) 90° 2) 260° 3) 360° 4) 180°
46. The square root of 2025 is
 1) 45 2) 54 3) 55 4) 65
47. If $m \propto n$, when $m = 7.5$, $n = 10$
 1) 75 2) 7.05 3) 75.01 4) 0.75
48. A cuboid has edges.
 1) 3 2) 6 3) 9 4) 12
49. The opposite angles of a cyclic quadrilateral are
- 1) complementary 2) supplementary 3) both (1) & (2) 4) None of these
50. When we divide $-30n^2$ by $3n$ then quotient will get
- 1) $-10n^2$ 2) $-10n$ 3) $10n$ 4) $10n^3$

PART - II GAT

FILL IN THE BLANKS

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

51. She took an umbrella with her, to..... getting wet.
 1) deny 2) avoid 3) prevent 4) resist
52. Luckily, she was not..... injured in the scooter accident.
 1) seriously 2) slightly 3) strictly 4) strongly

53. If you want children to be polite, you must..... them up properly.

- 1) grow 2) bring 3) rise 4) take

54. He's always tense when he has to make a.....

- 1) discussion 2) pronunciation 3) speech 4) talk

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

55. Applaud

- 1) request 2) praise 3) pray 4) flatter

56. Abundant

- 1) long 2) heavy 3) plentiful 4) excessive

57. Thrive

- 1) survive 2) revive 3) entertain 4) prosper

58. Economise

- 1) reduce 2) save 3) minimize 4) accumulate

59. Gruesome

- 1) dark 2) rude 3) painful 4) horrible

60. Pleasure

- 1) disappointment 2) happiness 3) grief 4) anxiety

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

61. Venerate

- 1) defame 2) abuse 3) criticize 4) accuse

62. Jubilant

- 1) disturbed 2) scared 3) gloomy 4) quiet

63. Innocent

- 1) guilty 2) corrupt 3) deadly 4) sinful

64. Reward

- 1) retribution 2) penalty 3) forfeiture 4) demotion

65. Concealed

- 1) released 2) disclosed 3) opened 4) publicized

66. Foreigner

- 1) alien 2) native 3) stranger 4) national

67. 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 fourth one is different. Choose out the odd one.**

68. 1) Listen 2) Swim 3) Walk 4) Climb

* **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.**

69. 5, 16, 49, 104, (.....)

- 1) 115 2) 148 3) 170 4) 181

70. A, B, C and D are playing cards. A and B are partners. D faces towards North. If A faces towards West, then who faces towards South?

- 1) B 2) C 3) D 4) Data inadequate

* **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.**

71. Nurture : Neglect :: Denigrate ?

- 1) Reveal 2) Extol 3) Recognise 4) Calumniate

72. Electric charge is measured in _____

- 1) coulombs 2) amperes 3) volts 4) watts

73. The phenomenon of light passing through the object is called.

- 1) reflection 2) refraction 3) dispersion 4) total internal reflection

74. Combustion is an _____

- 1) exothermic reaction 2) endothermic reaction
3) displacement reaction 4) reduction reaction

75. Ozone consists of :

- 1) 3- carbon atoms 2) 3- oxygen atoms
3) 1- carbon & 2- oxygen atoms 4) 1 - oxygen & 2 - hydrogen atoms

76. Energy currency of the cell is.

- 1) ADP 2) FTP 3) ATP 4) all of these

77. Which of the following is an abiotic component?

- 1) Cow 2) Grass 3) Bacteria 4) Temperature

78. In monocot plants roots are of _____ type

- 1) fibrous 2) tap 3) both A & B 4) none of these

79. Animals in class reptilia are _____ blooded.

- 1) cold 2) some what warm 3) warm 4) none of these

80. Animal which gives rise to babies are known as _____
 1) oviporan 2) viviparous 3) both A & B 4) none of these
81. Formula to find out pressure is
 1) $\frac{\text{thrust}}{\text{area}}$ 2) $\frac{\text{area}}{\text{thrust}}$ 3) thrust-area 4) none of these
82. A body can have energy become of its shape or position or configuration this is known as _____
 _____ energy
 1) chemical 2) nuclear 3) potential 4) solar
83. Commercial unit of power is _____
 1) Ampere 2) kilowatt 3) watt 4) joules
84. Example of phylum mollusc is
 1) butterfly 2) pila 3) earthworm 4) nereis
85. Scientific name of lion is _____
 1) panther tigris 2) panther pardus 3) panther leo 4) rosa gallica
86. Which of the following is not used for locomotion by organisms.
 1) flagella 2) vili 3) pseudopodia 4) cilia
87. The printing press was invented around
 1) 1450 2) 1550 3) 1650 4) 1498
88. Vasco-da-Gama, The portuguese sailor visited India in
 1) 1450 2) 1498 3) 1453 4) 1733
89. The followers of Martin Luther are called as
 1) Catholics 2) Roman 3) Raoman Catholics 4) Protestants
90. How many colonies were established by the British in North America between 1607 A.D. to 1733 A.D.
 1) 23 2) 14 3) 13 4) 17
91. is regarded as the Father of French Revolution.
 1) Voltaire 2) Montesquieu 3) Musolini 4) Rousseau
92. Who introduced the policy of the subsidiary Alliance in India?
 1) Lord Dalhousie 2) Lord Mountbatton 3) Lord Bentinck 4) Lord Wellesly
93. The Peshwa entered into a subsidiary alliance in 1802.
 1) Madhavrao 2) Raghunathrao 3) Bajirao II 4) Nanasaheb
94. At the time of the battle of plassey in 1757. Who was the Nawab of Bengal?
 1) Siraj-ud-Daulah 2) Mir Kasim 3) Shah Alam 4) Mir Jafar

95. Which one of the following does not make substance a resource?
1) Utility 2) Value 3) Quantity 4) Measurement
96. Which one of the following is a human made resource?
1) Medicines to treat cancer 2) Spring water
3) tropical forest 4) Soil
97. Complete the statement
- Biotic resources are
- 1) derived from living things 2) made by human being
3) derived from non-living things 4) non-living things.
98. Which one of the following is not a factor of soil formation ?
1) time 2) soil texture 3) organic mater 4) flowing water
99. Which method is most appropriate to check soil erosion on steep slope?
1) shelter belts 2) mulching 3) terrace cultivation 4) agriculture
100. Which one is not favourable for the conservation of nature?
1) Switch off the bulb when not in use 2) always close the tap
3) Not to waste agricultural waste 4) dispose carrybags after shopping.
