



MAJOR KULTHE DEFENCE EDUCATION INSTITUTE

Admission Test
Year 2022 (Nagpur-Centre)

A

TIME – 3 HOURS

FULL MARKS – 100

ALL QUESTIONS ARE COMPULSORY

1. A chemical equation should be balanced to
 - a. Display conservation of energy
 - b. Display conservation of mass
 - c. To make equation attractive
 - d. All of the above
2. A substance X, turns colour of red litmus blue, it will change methyl orange to?
 - a. Colourless
 - b. Pink
 - c. Red
 - d. Yellow
3. More the pH of a solution less the
 - a. Concentration of H⁺
 - b. Concentration of H₃O⁺
 - c. Concentration of OH⁻
 - d. Both (a) and (b)
4. Identify the correct order of reactivity of metals among the following.
 - a. Cu < Fe << Zn < Al < Na
 - b. Fe < Zn < Cu < Na < Al
 - c. Zn < Cu < Fe < Al < Na
 - d. Cu < Zn < Al < Na < Fe
5. An additional substance added during smelting, which reacts with impurities to form a fusible product is called
 - a. Gangue
 - b. Slag
 - c. Flux
 - d. Mud
6. Which of the following metals does not liberate hydrogen from dilute acids?
 - a. Copper
 - b. Tin
 - c. Iron
 - d. Aluminium
7. Which of the following is an odd compound?
 - a. Ethene
 - b. Ethane
 - c. Propene
 - d. Acetylene
8. Which of the following is not an aliphatic hydrocarbon?
 - a. Ethene
 - b. Ethane
 - c. Propyne
 - d. Benzene
9. In which part of the vascular tissue, translocation that is the transportation of soluble products of photosynthesis occurs?
 - a. Xylem
 - b. Sclerenchyma
 - c. Phloem
 - d. Collenchyma



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A

10. When carrying out the starch test on a leaf, why is it important to boil the leaf in alcohol?
- to dissolve the waxy cuticle
 - to make the cells more permeable to iodine solution
 - to remove the chlorophyll
 - to stop chemical reactions in the cells.
11. The first enzyme to mix with food in the digestive tract is:
- Pepsin
 - Cellulose
 - Amylase
 - Trypsin
12. The enzyme Pepsin is inactive in stomach without the presence of _____
- Nitric Acid
 - Hydrochloric acid
 - Acetic acid
 - Butyric acid
13. The pain in muscle due to excess physical exercises is due to?
- Formation of lactic acid
 - Formation of acetic acid
 - Formation of Pyruvic acid
 - Formation of Hydrochloric acid
14. Respiration is a process in which
- Energy is stored in the form of ADP
 - Energy is used up
 - Energy is released and stored in the form of ATP
 - Energy is not released at all
15. Oxytocin is secreted by:
- Anterior pituitary
 - Posterior pituitary
 - Middle lobe of pituitary
 - Hypothalamus
16. On crossing Tall plant with Dwarf plant Mendel found the ratio of dwarf plants in F₂ generation was?
- 25%
 - 40%
 - 60%
 - 75%
17. What is f if you have an object 2.0 m from the concave mirror, and the image is 4.0 m from the mirror?
- 2.0m
 - 0.67 m
 - 1.3 m
 - 4.0 m
18. In a concave mirror, an object placed _____ will result in a virtual image.
- twice the distance of the focal point
 - between the focal point and mirror
 - between the focal point and twice the distance of the focal point
 - past the focal point
19. Which of the following are the primary colours?
- Red Blue Yellow
 - Red Green Violet
 - Yellow Green Blue
 - Red Green Blue
20. A person cannot see objects clearly beyond 50 cm. The power of lens to correct the vision is:
- +5 D
 - 0.5 D



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A

- c. -2 D
d. +2 D
21. When light passes through a prism, the colour which deviates the least is:
a. Red
b. Blue
c. Violet
d. Green
22. How many electrons will be there in 1.6C charge?
a. 10^{17}
b. 10^{18}
c. 10^{19}
d. 10^{20}
23. Two free parallel wires carrying currents in opposite directions:
a. attract each other
b. repel each other
c. do not affect each other
d. get moved to perpendicular to each other
24. Wood is a _____
a. primary fuel
b. secondary fuel
c. liquid fuel
d. processed fuel
25. Indo-China comprises the modern countries of
a. Vietnam, Laos and China
b. Vietnam, Cambodia and Laos
c. India, Vietnam and China
d. Cambodia, China and Vietnam
26. Which imperialist powers dominated Vietnam?
a. Russian
b. USA
c. French
d. Germans
27. During French colonization then Thailand was known as
a. Mekong
b. Yunan
c. Saigon
d. Siam
28. Who is the author of book "Anandmath"?
a. Rabindra Nath Tagore
b. Bankim C. Chattopadhyay
c. Aurbindo Ghosh
d. Abandranath Tagore
29. The Swaraj Flag was designed by:
a. Lala Lajpat Rai
b. J. L. Nehru
c. S. C. Bose
d. M. K. Gandhi
30. In which Year of the Battle of Plassey was fought?
a. 1557
b. 1657
c. 1757
d. 1857
31. One Caste One Religion, One God for Man is the teaching of _____.
a. Rajaram Mohan Roy
b. C. Kesavan
c. Mahatma Gandhi
d. Sree Narayana Guru
32. Which of the following system of power sharing is called checks and balances?
a. Federal division of powers
b. Separation of powers
c. Vertical Division of powers
d. Horizontal distribution of powers
33. Who among the following is the founder of the Bahujan Samaj Party
a. Kanshi Ram
b. Sahu Maharaj
c. B.R. Ambedker
d. Jotiba Phule



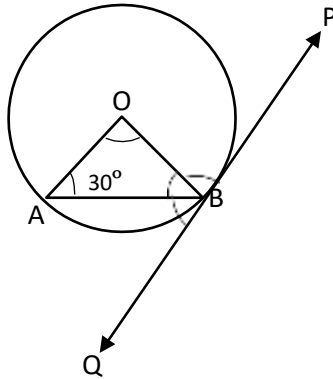
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Admission Test

Year 2022 (Nagpur-Centre)

A

34. Who among the following said that religion can never be separated from politics?
- Acharya VinobhaBhave
 - Mahatma Gandhi
 - Sarojini Naidu
 - Rajendra Prasad
35. Laterite soil is developed in areas with
- low temperature and low rainfall
 - high temperature and low rainfall
 - low temperature and heavy rainfall
 - high temperature and heavy rainfall
36. Regur soil is the other name of
- Black soil
 - Alluvial soil
 - Arid soil
 - Laterite soil
37. Rooftop rainwater harvesting system in Rajasthan is known as:
- Guls
 - Kuls
 - Tankas
 - Baolis
38. Hirakud dam is built on which river?
- Chenab
 - Mahanadi
 - Krishna
 - Satluj
39. Which one of the following prices is announced by the government in support of a crop?
- Moderate support price
 - Maximum support price
 - Influential support price
 - Minimum support price
40. Which one of the following crops is known as 'Golden Fiber'?
- Wheat
 - Rice
 - Groundnut
 - Jute
41. Which of the following crops is not a millet?
- Jowar
 - Maize
 - Ragi
 - Bajra
42. Which one of the following steel plants is located in Chhattisgarh?
- Bokaro
 - Durgapur
 - Bhilai
 - Rourkela
43. Which one of the following industries uses bauxite as a raw material?
- Aluminium
 - Cement
 - Jute
 - Steel
44. Which two of the following extreme locations are connected by the East-West Corridor?
- Mumbai and Nagpur
 - Silchar and Porbandar
 - Mumbai and Kolkata
 - Nagpur and Siliguri
45. If α and β are the roots of $ax^2 - bx + c = 0$ ($a \neq 0$), then calculate $\alpha + \beta$.
- $-b/a$
 - b/a
 - c/a
 - $-c/a$
46. Find the first four terms of an A.P whose first term is -2 and the common difference is -2.
- 2, 0, 2, 4
 - 2, 2, -4, 6
 - 2, -2, -2, -2
 - 2, -4, -6, -8
47. In the given figure, AOB is a diameter of the circle with centre O and AC is a tangent to the circle at A . If $\angle BOC = 130^\circ$, then find $\angle ACO$.

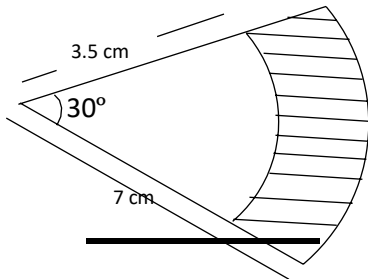


- a. $60^\circ, 120^\circ$
- b. $30^\circ, 60^\circ$
- c. $60^\circ, 90^\circ$
- d. $120^\circ, 60^\circ$

57. If the point $C(1, -2)$ divides internally the line segment joining the points $A(2, 5)$ and $B(x, y)$ in the ratio $3:4$, find the value of x and y .

- a. $x = 3, y = 4$
- b. $x = -3, y = -4$
- c. $x = -1/3, y = -34/3$
- d. $x = -1, y = -3$

58. In the fig., sectors of two concentric circles of radii 7 cm and 3.5 cm are given. Find the area of the shaded region. [use $\pi = 22/7$].



- a. $77/8\text{ cm}^2$
- b. $38.5/8\text{ cm}^2$
- c. $147/8\text{ cm}^2$
- d. $154/8\text{ cm}^2$

59. In a single throw of a pair of different dice, what is the probability of getting a prime number on each die?

- a. $1/4$
- b. $1/5$
- c. $1/6$
- d. $1/7$

60. The difference of two numbers is 5 and the difference of their reciprocals is $1/10$. Find the numbers.

- a. $-10, -5$
- b. $-10, 5$
- c. $10, 5$
- d. $-5, 10$

61. An arithmetic progression $5, 12, 19, \dots$ has 50 terms. Find its last term.

- a. 358
- b. 345
- c. 340
- d. 348

62. Find the mode of the following frequency distribution:

Class Interval	f
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MAJOR KULTHE DEFENCE EDUCATION INSTITUTE

Admission Test

Year 2022 (Nagpur-Centre)

A

25-35	7
35-45	31
45-55	33
55-65	17
65-75	11
75-85	1

- a. 26.11
c. 36.11
- b. 56.11
d. 46.11
63. If the points $A(-2, 1)$, $B(a, b)$ and $C(4, 1)$ are collinear and $a - b = 1$, find a and b .
a. $a = -2, b = -1$
c. $a = -2, b = 1$
b. $a = 2, b = 1$
d. $a = 2, b = -1$
64. Find the next term of the series $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}, \dots$
a. $\sqrt{50}$
c. $\sqrt{48}$
b. $\sqrt{40}$
d. $\sqrt{52}$
65. Find the positive root of $\sqrt{3x^2 + 6} = 9$.
a. 3
c. 5
b. 4
d. 9
66. What is the perimeter of the sector with radius 21 cm and sector angle 60° .
a. 33 cm
c. 132 cm
b. 64 cm
d. 99 cm
67. The radius of a solid sphere is r cm. It is divided into two equal parts. Find the whole surface of two parts.
a. $2\pi r^2$
c. $4\pi r^2$
b. $3\pi r^2$
d. $6\pi r^2$
68. Find the roots of the quadratic equation $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$.
a. $-\sqrt{2}, -5\sqrt{2}$
c. $-\sqrt{2}, -5/\sqrt{2}$
b. $\sqrt{2}, 5\sqrt{2}$
d. $\sqrt{2}, 5/\sqrt{2}$
69. Find how many integers between 200 and 500 are divisible by 8.
a. 37
c. 35
b. 36
d. 38
70. From a point on the ground, the angles of elevation of the bottom and top of a tower fixed at the top of a 20m high building are 45° and 60° respectively. Find the height of the tower.
a. $40(\sqrt{3} - 1)$
c. $20(\sqrt{3} + 1)$
b. $20(1 - \sqrt{3})$
d. $20(\sqrt{3} - 1)$
71. A three-digit number is made using the digits 4, 5, 9 (without repetition). If a number among them is selected at random, what is the probability that the number will be a multiple of 9?
a. $1/3$
c. $2/3$
b. 1
d. -1



72. Calculate the average daily income (in Rs) of the following data about men working in a company.

Daily Income (Rs)	<100	<200	<300	<400	<500
No. of Men	12	28	34	41	50

- a. 203.93
- b. 403.93
- c. 303.93
- d. 333.93

73. A rectangular sheet of paper 40 cm x 22 cm is rolled to form a hollow cylinder of height 40 cm. Find the radius of the cylinder.

- a. 7 cm
- b. 3.5 cm
- c. 10.5 cm
- d. 14 cm

74. The diameters of two circles with centres A and B are 16 cm and 30 cm respectively. If the area of a circle with centre C is equal to the sum of the areas of the other two circles, then find the circumference of the circle with centre C.

- a. 17π cm
- b. 34π cm
- c. 51π cm
- d. 68π cm

Read the following passage carefully and answer the questions by writing the options that you consider the most appropriate in your answer sheet.

Fifty years ago, people ate ice cream only in summer. Now it is eaten all the year round. It originated in the Orient, centuries before English schoolboys first tasted it. Marco Polo saw people eating ice cream there and brought back the idea to Italy. From Italy the idea was carried to France, it became very popular in France with the rich, and an effort was even made to keep the recipes a secret from the common people. But, of course, they soon learned about this delicious new food and ice cream became popular with everyone. Soon it spread all over the world. The first factory to manufacture ice cream was started in Baltimore, Maryland, in 1851. However, the real development of ice cream and the ice cream business didn't take place until after 1900 with new developments in refrigeration.

The basis of all ice cream is cream, milk or milk solids, sugar, and sometimes eggs. Vanilla, chocolate, berries, fruit ingredients, and nuts are added as flavors. This is the usual proportion of ingredients in ice cream: about 80 to 85 percent cream and milk products, 15 percent sugar, half to four and a half per cent flavoring, and three-tenths of one per cent stabilizer.

A small amount of gelatin is used in order to retain the smoothness of the ice cream by preventing the formation of ice crystals.

When you eat a third of a pint of vanilla ice cream, you are getting about as much calcium, protein, and vitamin B as are in half a cup of whole milk, and as much vitamin A and calories as are in one cup of milk.



75. The major change towards Ice cream is that

- a. it is eaten throughout the year
- b. it is eaten as a desert
- c. it is eaten in summer
- d. it is eaten in winter

76. Ice cream became popular with everyone

- a. when the idea was carried from Italy to France
- b. when English school boys tasted it
- c. when the rich in France started eating it
- d. when the common people learned about its recipe

77. The introduction of refrigeration led to the

- a. increased consumption of ice cream
- b. development of the ice cream business
- c. increase in the production of ice cream
- d. improvement in the quality of ice cream

78. The smoothness of ice cream is retained by

- a. forming ice crystals
- b. using a small amount of gelatin
- c. using eggs
- d. using cream and milk

79. Find a word from the passage that means the same as "tasty"

- a. recipes
- b. gelatin
- c. delicious
- d. flavouring

Choose the most appropriate options from the ones given below to complete the following passage. Write the answers in your answer sheet against the correct blank number. Do not copy the whole passage.

Father wanted (80)_____say something but the bus had started moving. I saw (81)_____father receding into the distance. I saw (82)_____the road we had come by looked like a giant motionless rope. Father (83)_____use the same road to go back home. Simultaneously our journey started (84)_____two opposite directions, with



MAJOR KULTHE DEFENCE EDUCATION INSTITUTE

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A

(85) _____ seated in the luxurious seat of a bus and father walking back with weary legs on the pebble stream road.

- | | | | |
|--------------|----------|-----------|------------|
| 80. a) too | b) so | c) to | d) for |
| 81. a) his | b) my | c) her | d) him |
| 82. a) if | b) which | c) that | d) whether |
| 83. a) could | b) would | c) should | d) will |
| 84. a) at | b) in | c) of | d) for |
| 85. a) him | b) us | c) he | d) me |

Select the suitable words

SYNONYMS

86. FICTIONAL

- | | | | |
|------------|--------------|-------------|---------|
| a. Genuine | b. Authentic | c. Fanciful | d. Real |
|------------|--------------|-------------|---------|

87. BELITTLE

- | | | | |
|------------|-----------|------------|-----------|
| a. Quarrel | b. Honour | c. Shorten | d. Insult |
|------------|-----------|------------|-----------|

88. VALOUR

- | | | | |
|------------|------------|------------|------------|
| a. Courage | b. Velvety | c. Vicious | d. Parlour |
|------------|------------|------------|------------|

ANTONYMS

89. AGONY

- | | | | |
|--------|----------|-------------|------------|
| a. Joy | b. Anger | c. Pleasure | d. Ecstasy |
|--------|----------|-------------|------------|

90. VOCIFEROUS

- | | | | |
|---------|----------------|------------|---------------|
| a. Loud | b. Soft-spoken | c. Abusive | d. Supportive |
|---------|----------------|------------|---------------|

91. AMBULATORY

- | | | | |
|-----------|-----------|-------------|-------------|
| a. Static | b. Mobile | c. Moveable | d. Immobile |
|-----------|-----------|-------------|-------------|

Read the following dialogue and then complete the report by choosing the correct options from the ones given below. Write your answers in your answer sheet with the correct blank number. Do not copy the dialogue and the report: -

Utkarsh: I have lost my wallet

Inspector: How did you lose it?

Utkarsh: My pocket was picked

Inspector: Where did it happen?



MAJOR KULTHE DEFENCE EDUCATION INSTITUTE

Admission Test
Year 2022 (Nagpur-Centre)

A

Utkarsh: In the local market, sir.

Utkarsh reported to the inspector (92)_____lost his wallet. The inspector asked him (93)_____Utkarsh replied(94)_____. The inspector further asked him where it had happened.

92. a. that I had b. that he had c. that he has d. that I have
93. a. how he has lost it b. how he had lost it. c. how had he lost it. d. how he had lost that
94. a. my pocket has b. if his pocket had c. that his pocket d. whether his pocket has been picked been picked had been picked been picked
95. In the recently concluded Common Wealth Games 2018, India was placed 3rd. Which country was placed 1st as per medals tally?
a. England b. South Africa c. New Zealand d. Australia
96. The Indian Defence Minister is:
a. Manohar Parrikar b. Arun Jaitley c. N. Sitharaman d. P.M. Modi
97. The "Supreme Commander of the Indian Armed Forces is:
a. General b. Admiral c. Air Chief Marshal d. President
98. The "Arihant" class is a type of:
a. Destroyer b. Fighter Jet c. Army Tank d. Submarine
99. The SIM card in mobile phones stands for:
a. Special Identification Mobile
b. Super Identity Member
c. Subscriber Identity Mobile
d. Standard Incoming Module
100. "WhatsApp" messenger is owned by:
a. Microsoft b. Twitter c. Nobody. It is Free d. Facebook