



Time Alloted : 2 hours

Total Marks : 100

Instructions

The scholarship test will be 2 hours in duration and will be 100 marks in total.

The test consists of multiple-choice questions only .

All questions must be answered on the provided answer sheet.

You are not allowed to use any electronic devices during the test.

You will not be allowed to leave the test room until the end of the test.

Any form of cheating will result in disqualification from the scholarship.

You will be notified of your test results within a week after the test.

If you have any questions or concerns, please ask the invigilator before the test.

Read all instructions and questions carefully before answering

Do not spend too much time on a single question. Attempt all questions to the best of your ability

You will be required to submit your answer sheet before leaving the test room.

Do not forget to fill in your personal details on the answer sheet.

The scholarship test is a competitive process and only a limited number of scholarships will be awarded.

Name : _____

Class : 11th Maths School : _____

Education Board : _____ Contact : _____

Signature of Invigilator

Excel Institute

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EXSAT 11TH MATHS
Class 11 - Admission Test

Time Allowed: 1 hour and 30 minutes

Maximum Marks: 100

1. He said, "I have often told you not to waste your time".

Reported speech: _____

- a) He told that he had often told him not to waste his time. b) He said that he had often told not to waste your time.
c) He said that he had often suggested to him not to waste his time. d) He said that he had often told him not to waste his time.

2. Fill in the blank by choosing the correct option to complete the following.

Dressing up for his office party, Rohan mumbled, "Does this tie _____ my shirt?"

- a) go with b) go for
c) go well d) go along

3. Complete the given sentence by selecting the correct option:

The information given here _____ to all the products in this section.

- a) apply b) is applied
c) applied d) applies

4. Choose the correct reported speech of a given sentence:

"Don't play on the grass, boys," she said.

- a) She tells the boys not to play on the grass b) She tells the boys not to played on the grass
c) She told the boys not to played on the grass d) She told the boys not to play on the grass

5. If -2 and 3 are the zeros of the quadratic polynomial $x^2 + (a + 1)x + b$ then

- a) $a = -2, b = 6$ b) $a = -2, b = -6$
c) $a = 2, b = -6$ d) $a = 2, b = 6$

6. If $\sin \theta - \cos \theta = 0$ then the value of $(\sin^4 \theta + \cos^4 \theta)$ is

- a) $\frac{3}{4}$ b) $\frac{1}{2}$
c) 1 d) $\frac{1}{4}$

7. If α, β are the zeros of the polynomial $f(x) = x^2 + x + 1$, then $\frac{1}{\alpha} + \frac{1}{\beta} =$

- a) 0 b) -1
c) 1 d) 2

8. The n th term of the A.P. 63, 65, 67, 69, ... and the A.P. 3, 10, 17, 24, ... are equal, then the value of n is

- c) Look towards the raindrops with the light source behind him
- d) Look anywhere in the room

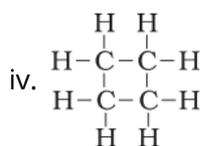
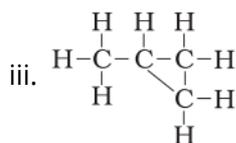
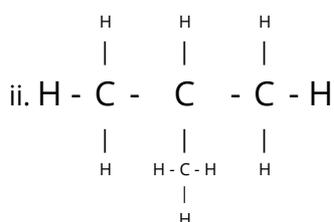
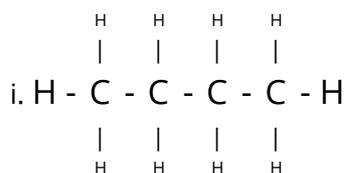
18. What is the value of refractive index of the medium if the critical angle of incidence in a denser - rarer inter face is equal to 45° ?

- a) 2.0
- b) 3.25
- c) 2.414
- d) 1.414

19. The balanced chemical equation showing reaction between quicklime and water is:

- a) $2 \text{CaO} + 3 \text{H}_2\text{O} \rightarrow 2 \text{Ca(OH)}_3 + \text{O}_2 + \text{Heat}$
- b) $2 \text{CaO} + \text{H}_2\text{O} \rightarrow 2 \text{CaOH} + \text{H}_2 + \text{Heat}$
- c) $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2 + \text{Heat}$
- d) $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2 + \text{H}_2 + \text{Heat}$

20. Which of the following are correct structural isomers of butane?



- a) (i) and (iii)
- b) (iii) and (iv)
- c) (i) and (ii)
- d) (ii) and (iv)

21. In the soap micelles

- a) the ionic end of soap is on the surface of the cluster while the carbon chain is in the interior of the cluster.
- b) both ionic end and carbon chain are on the exterior of the cluster.
- c) ionic end of soap is in the interior of the cluster and the carbon chain is out of the cluster.
- d) both ionic end and carbon chain are in the interior of the cluster.

22. The salt present in tooth enamel is:

- a) Aluminium phosphate
- b) Calcium phosphate
- c) Sodium phosphate
- d) Magnesium phosphate

23. During the preparation of hydrogen chloride gas on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to
- a) Absorb moisture from the gas
 - b) Moisten the gas
 - c) Absorb Cl^- ions from the evolved gas
 - d) Absorb the evolved gas
24. Which of the following is not an allotropic form of carbon?
- a) Graphite
 - b) Fluorine
 - c) Fullerene
 - d) Diamond
25. Bleaching powder is treated with CO_2 :
- a) CaCO_3 and Cl_2 are formed.
 - b) It absorbs the gas.
 - c) CaCl_2 is formed.
 - d) CaO is formed.

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Solution
EXSAT 11TH MATHS
Class 11 - Admission Test

1.

(d) He said that he had often told him not to waste his time.

Explanation:

He said that he had often told him not to waste his time.

2. **(a)** go with

Explanation:

Combine nicely

3.

(d) applies

Explanation:

applies

4.

(d) She told the boys not to play on the grass

Explanation:

She told the boys not to play on the grass.

Request, negative: not to + rest of the sentence (don't are dropped here)

5.

(b) $a = -2$, $b = -6$

Explanation:

$$\alpha + \beta = 3 + (-2) = 1 \quad \text{and} \quad \alpha\beta = 3 \times (-2) = -6$$

$$\therefore -(a + 1) = 1$$

$$\Rightarrow a + 1 = -1 \Rightarrow a = -2$$

Also, $b = -6$

6.

(b) $\frac{1}{2}$

Explanation:

It is given that,

$$\sin \theta - \cos \theta = 0$$

$$\Rightarrow \sin \theta = \cos \theta$$

$$\Rightarrow \frac{\sin \theta}{\cos \theta} = 1$$

$$\Rightarrow \tan \theta = 1$$

$$\Rightarrow \tan \theta = \tan 45^\circ$$

$$\Rightarrow \theta = 45^\circ$$

$$\therefore \sin^4 \theta + \cos^4 \theta$$

$$= \sin^4 45^\circ + \cos^4 45^\circ$$

$$= \left(\frac{1}{\sqrt{2}}\right)^4 + \left(\frac{1}{\sqrt{2}}\right)^4$$

$$= \frac{1}{4} + \frac{1}{4}$$

$$= \frac{1}{2}$$

7.

(b) -1

Explanation:

Since α and β are the zeros of the quadratic polynomial $f(x) = x^2 + x + 1$

$$\alpha + \beta = -\frac{\text{coefficient of } x}{\text{coefficient of } x^2}$$

$$= \frac{-1}{1} = -1$$

$$\alpha \times \beta = \frac{\text{constant term}}{\text{coefficient of } x^2} = \frac{1}{1} = 1$$

Now, $\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\beta + \alpha}{\alpha\beta} = \frac{-1}{1} = -1$

Thus, the value of $\frac{1}{\alpha} + \frac{1}{\beta}$ is -1.

8.

(c) 13

Explanation:

For 1st A.P.; $a = 63$ and $d = 2$, hence $T_n = 63 + (n - 1)2$

$$\Rightarrow T_n = 2n + 61 \dots (i)$$

for 2nd AP $a = 3$, $d = 7$, hence $t_n = 3 + (n - 1)7$

$$t_n = 7n - 4 \dots (ii)$$

by condition, from (i) & (ii),

$$7n - 4 = 2n + 61$$

$$\Rightarrow 5n = 65$$

$$\therefore n = 13$$

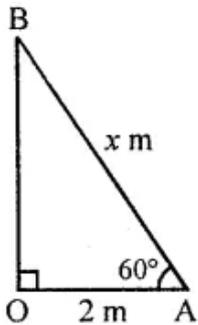
9.

(b) 4

Explanation:

Suppose AB is the ladder of length x m

$$\therefore OA = 2\text{m}, \angle OAB = 60^\circ$$



In right $\triangle AOB$, $\sec 60^\circ = \frac{x}{2}$

$$\Rightarrow 2 = \frac{x}{2} \Rightarrow x = 4 \text{ m}$$

10. (a) 2p

Explanation:

Given: $\sin\theta + \cos\theta = p$

squaring both sides we get

$$\sin^2\theta + \cos^2\theta + \cos^2\theta + 2\sin\theta \cos\theta = p^2$$

$$1 + 2\sin\theta \cos\theta = p^2 (\sin^2\theta + \cos^2\theta = 1)$$

$$2\sin\theta \cos\theta = p^2 - 1 \dots (i)$$

and also $\sec\theta + \operatorname{cosec}\theta = q$ (given)

$$\frac{1}{\cos\theta} + \frac{1}{\sin\theta} = q$$

$$\frac{\sin\theta + \cos\theta}{\sin\theta \cos\theta} = q$$

but $\sin\theta + \cos\theta = p$... (given)

$$\frac{p}{\sin\theta\cos\theta} = q \dots \text{(ii)}$$

from (i) and (ii) we get

$$q(p^2 - 1) = 2p$$

11.

(d) $\frac{60\sqrt{10}}{7}$ units

Explanation:

$$\text{Area of sector} = \frac{\theta}{360} \times \pi r^2$$

$$\Rightarrow \frac{49}{360} \times \pi r^2 = 100\pi$$

$$\Rightarrow \frac{49}{360} \times r^2 = 100$$

$$\Rightarrow r^2 = \frac{100 \times 360}{49}$$

$$\Rightarrow r = \frac{10 \times 6\sqrt{10}}{7}$$

$$\Rightarrow r = \frac{60\sqrt{10}}{7} \text{ units}$$

12. (a) if one lamp fails the others remain lit

Explanation:

When the lamps are arranged in parallel connection, the current flowing through them is different. Therefore, if one lamp fails, the others remain lit.

13.

(b) light is least scattered

Explanation:

light is least scattered

14. (a) at the focus of reflector

Explanation:

at the focus of reflector

15.

(b) one-fourth

Explanation:

When the potential difference between the ends of a fixed resistor is halved, the electric power becomes one-fourth of the actual value.

16.

(c) Focus

Explanation:

Focus is the point where the rays parallel to the principal axis on reflection from a concave mirror converge (real point) after reflection, or in case of a convex mirror, rays seem to diverge away (virtual point) from focus after reflection. The distance of focus from pole is called focal length (f).

17.

(c) Look towards the raindrops with the light source behind him

Explanation:

Look towards the raindrops with the light source behind him

18.

(d) 1.414

Explanation:

The sine of the critical angle is equal to the reciprocal of the refractive index of that material i.e.

$$\sin c = \frac{1}{\mu}$$

$$\sin 45^\circ = \frac{1}{\mu}$$

$$\frac{1}{\sqrt{2}} = \frac{1}{\mu}$$

$$\mu = \sqrt{2} = 1.414$$

19. **(c)** $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2 + \text{Heat}$
Explanation:
 $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2 + \text{Heat}$
20. **(c)** (i) and (ii)
Explanation:
 (i) n-butane and (ii) iso-butane are structural isomer of butane.
 (iii) and (iv) are cycloalkanes that have different molecular formulas and therefore, these are not isomers of butane.
21. **(a)** the ionic end of soap is on the surface of the cluster while the carbon chain is in the interior of the cluster.
Explanation:
 The non-polar hydrophobic tails of soap are oil or grease-loving and so will embed into the grease and oils that help dirt and stains adhere to surfaces. The hydrophilic heads, however, remain surrounded by the water molecules to which they are attracted. In soap micelles, the ionic end of soap is on the surface of the cluster while the hydrocarbon chain is in the interior of the cluster.
22. **(b)** Calcium phosphate
Explanation:
 Calcium phosphate
23. **(a)** Absorb moisture from the gas
Explanation:
 Absorb moisture from the gas.
 Calcium chloride is a good dehydrating agent. It absorbs moisture or water content from the gas making it dry. Calcium chloride is widely used as a desiccant for drying gases and liquid hydrocarbons in many industries due to its ability to absorb water.
24. **(b)** Fluorine
Explanation:
 Fluorine
25. **(a)** CaCO_3 and Cl_2 are formed.
Explanation:
 CaCO_3 and Cl_2 are produced when Bleaching powder is treated with CO_2 .
 $\text{Ca(OCl)}_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 + \text{Cl}_2 \uparrow$