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ई-पाठशाला कार्यक्रम

CLASS 10th SCIENCE

कार्बन एवं उसके यौगिक



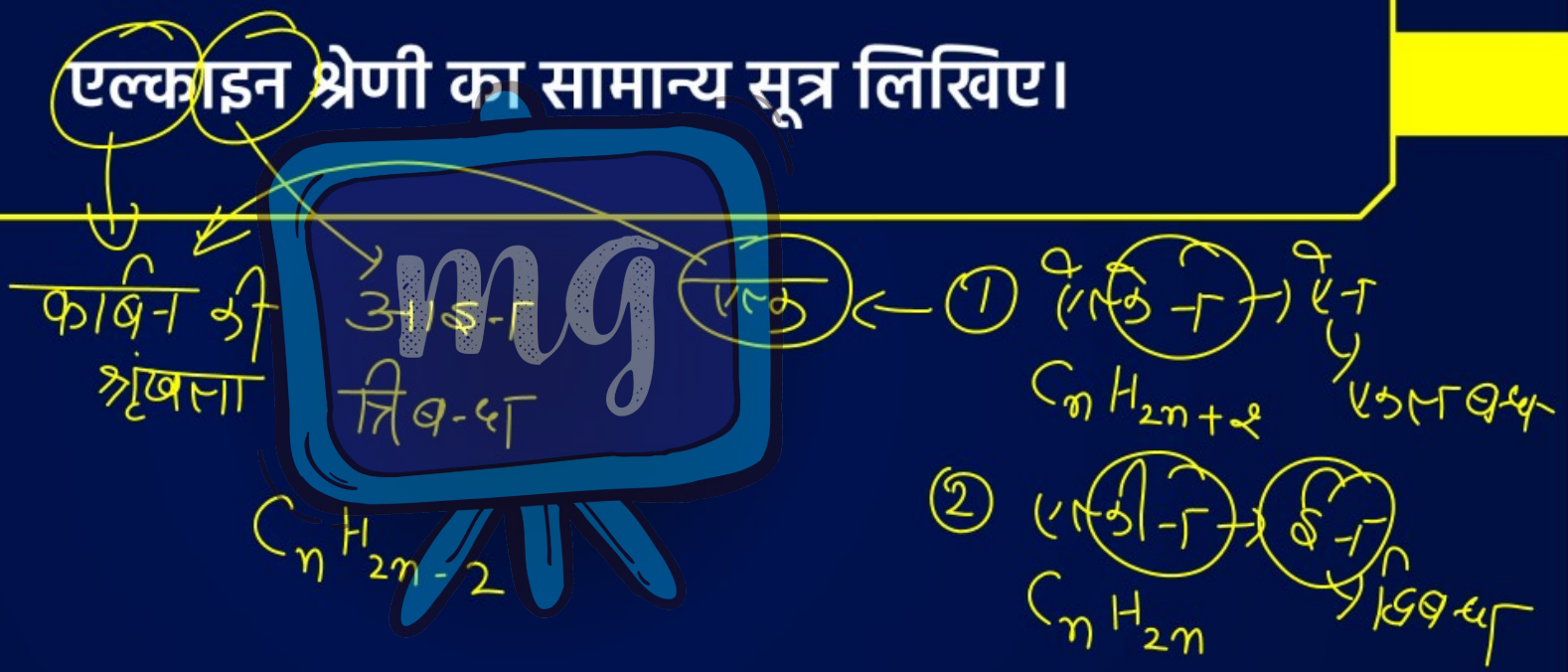
RAPID REVISION

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Q.1

एल्काइन श्रेणी का सामान्य सूत्र लिखिए।



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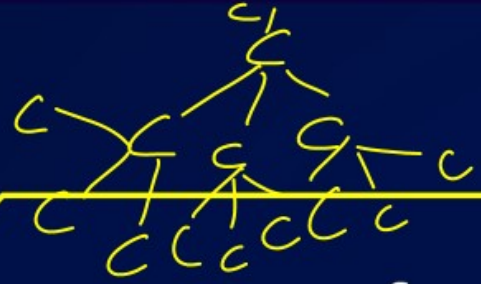
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Q.1

एल्काइन श्रेणी का सामान्य सूत्र लिखिए।

एल्काइन श्रेणी का सामान्य सूत्र C_nH_{2n-2} होता है।

उदा.– C_2H_2, C_3H_4



Q.2

कार्बन परमाणु की दो विशेषताएँ लिखिए।

① गुणधर्म :- C-C-C-C-C-C-C

② चतुसंयोजकता

C-C, C=C, C≡C

चतु + संयोजकता

4

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Q.2

कार्बन परमाणु की दो विशेषताएँ लिखिए।

कार्बन परमाणु की निम्न विशेषताएँ प्रमुख है। जिनके कारण कार्बन यौगिक बहुत अधिक मात्रा में होते है।

श्रृंखलन (Catenation)– कार्बन में कार्बन के ही अन्य परमाणुओं के साथ बंध बनाने की क्षमता होती है। इस गुण को श्रृंखलन कहते है।

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चतुः संयोजकता – कार्बन की संयोजकता चार होती है। अतः इसमें कार्बन के चार अन्य परमाणुओं अथवा कुछ अन्य एक संयोजक तत्वों के परमाणुओं के साथ आबंधन की क्षमता होती है।



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Q.3

शुद्ध एसीटिक अम्ल को ग्लैशल एसीटिक अम्ल क्यों कहते है।



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Q.3

शुद्ध एसीटिक अम्ल को ग्लैशल एसीटिक अम्ल क्यों कहते है।

शुद्ध एसीटिक अम्ल (IUPAC नाम – एथेनॉइक अम्ल) का गलनांक 290 k होता है। इसलिए यह ठण्डी जलवायु में शीत के दिनों में जम जाता है। अतः इसे ग्लैशल एसीटिक अम्ल कहते है।

एथेनॉइक अम्ल
या
कार्बोक्सिलिक अम्ल

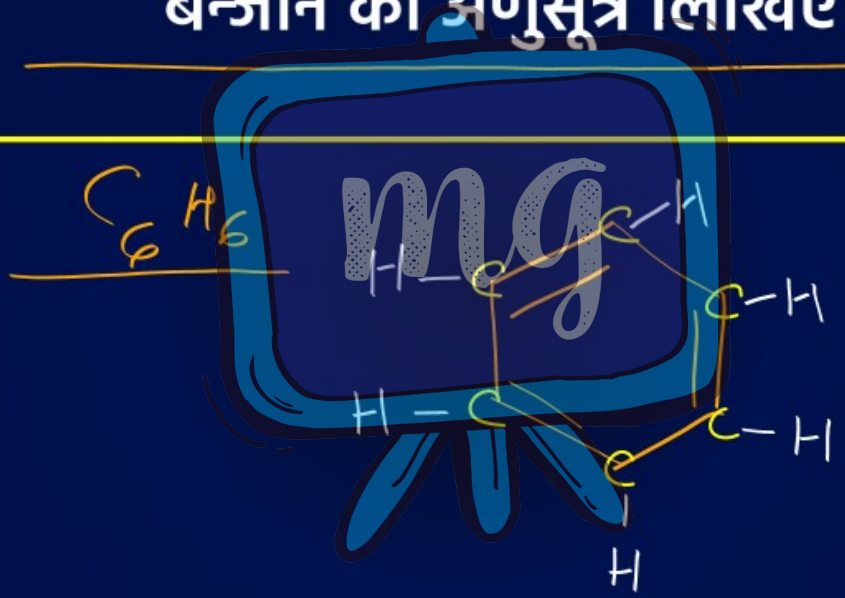
CH_3COOH

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Q.4

बेन्जीन का अणुसूत्र लिखिए।



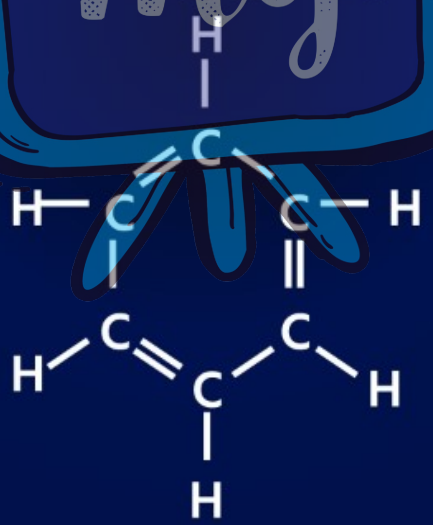
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Q.4

बेन्जीन का अणुसूत्र लिखिए।

बेन्जीन का अणुसूत्र C_6H_6 होता है।

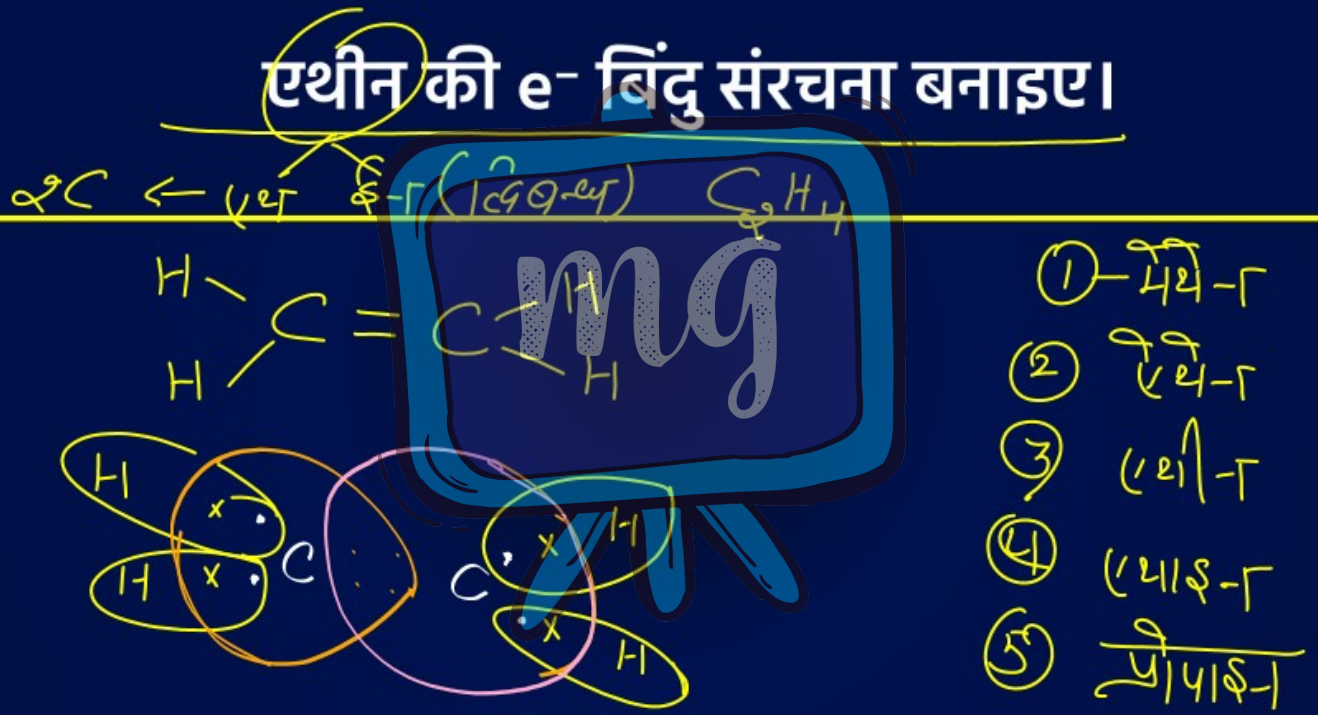


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Q.5

एथीन की e⁻ बिंदु संरचना बनाइए।



1. मेथेन
2. ईथेन
3. एथीन
4. एथाइन
5. प्रोपाइन

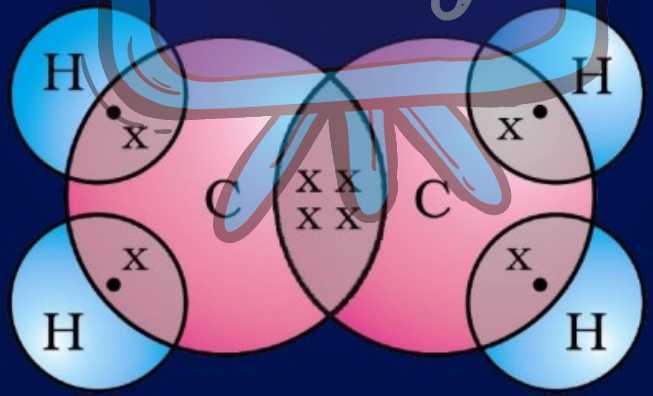
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Q.5

एथीन की e^- बिंदु संरचना बनाइए।

एथीन का अणुसूत्र C_2H_4 होता है।

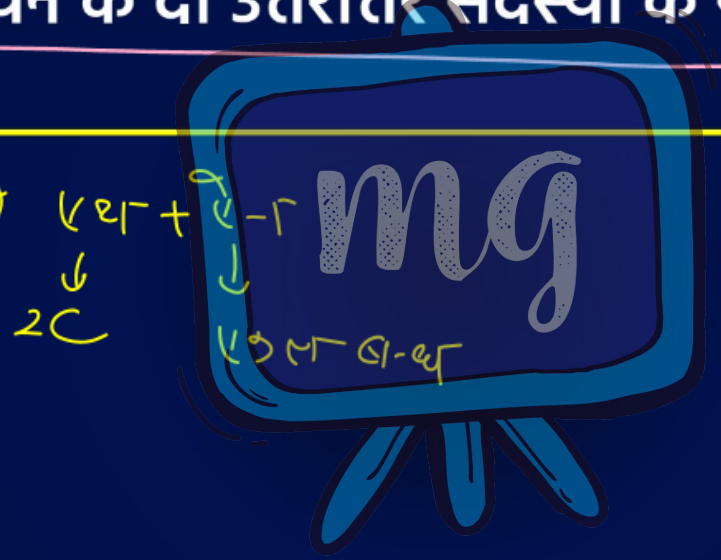


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Q.6

एथेन के दो उत्तरोत्तर सदस्यों के सूत्र लिखिए।

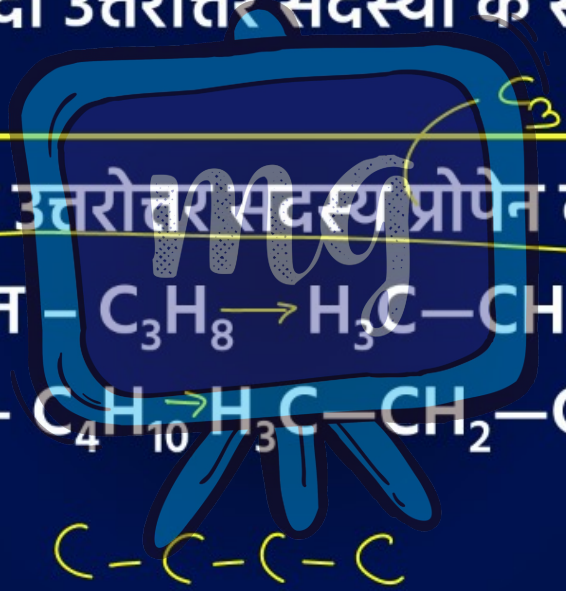


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Q.6

एथेन के दो उत्तरोत्तर सदस्यों के सूत्र लिखिए।



एथेन के उत्तरोत्तर सदस्य प्रोपेन व ब्यूटेन है।

प्रोपेन – $C_3H_8 \rightarrow H_3C-CH_2-CH_3$

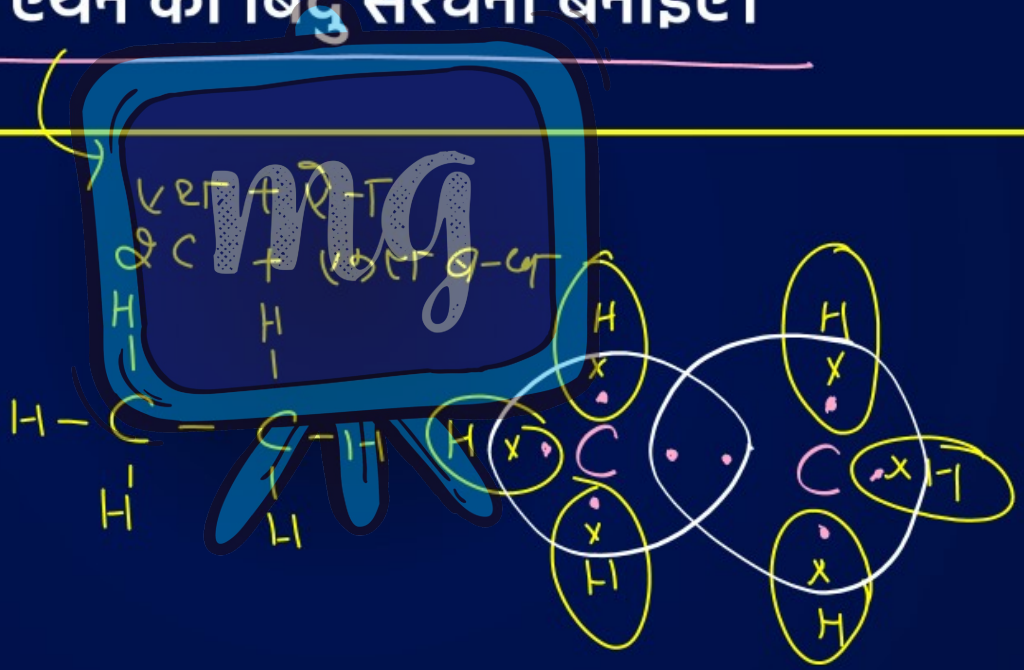
ब्यूटेन – $C_4H_{10} \rightarrow H_3C-CH_2-CH_2-CH_3$

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Q.7

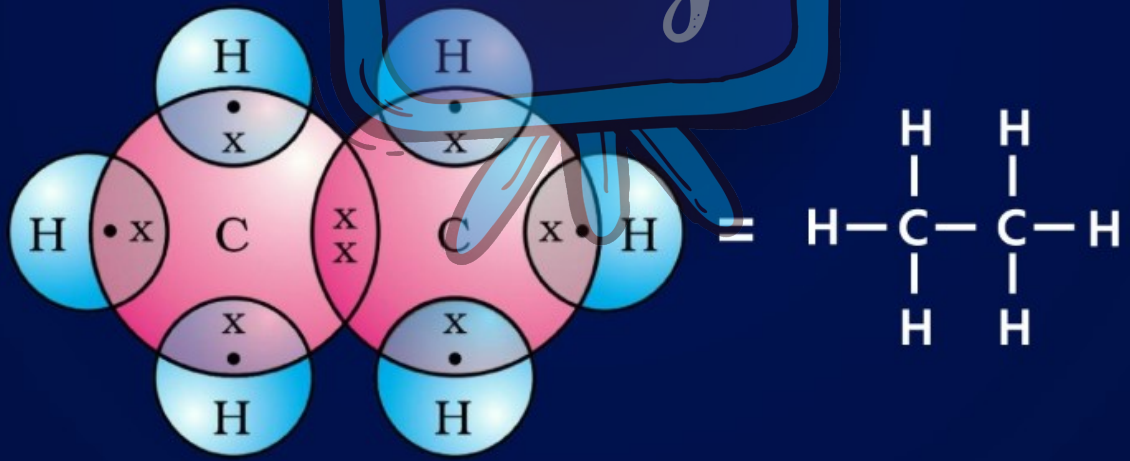
एथेन की बिंदु संरचना बनाइए।



Q.7

एथेन की बिंदु संरचना बनाइए।

एथेन का अणुसूत्र C_2H_6 होता है।



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Q.8

एथेनॉल के निर्जलीकरण का समीकरण लिखिए, तथा निर्जलीकरण का नाम लिखिए।

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Q.8

एथेनॉल के निर्जलीकरण का समीकरण लिखिए, तथा निर्जलीकरण का नाम लिखिए।

निर्जलीकरण का समीकरण–

$$\underset{\text{एथेनॉल}}{CH_3—CH_2—OH} \xrightarrow[H_2SO_4]{\text{गर्म सांद्र}} \underset{\text{एथीन}}{CH_2=CH_2} + \underset{\text{जल}}{H_2O}$$

निर्जलीकरण – सल्फ्यूरिक अम्ल (H_2SO_4)

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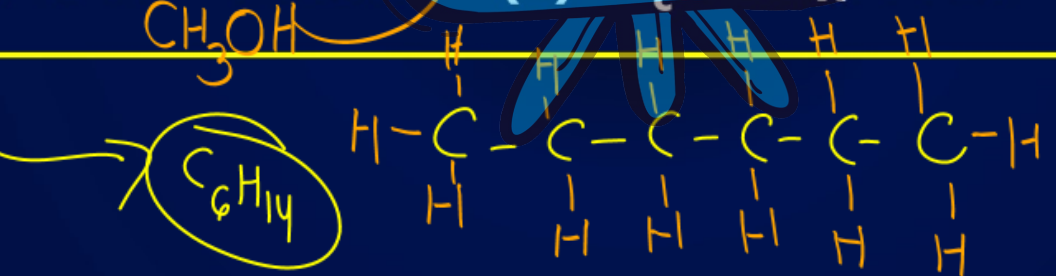
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Q.9

निम्न यौगिकों की सही श्रेणी पहचानिए।

यौगिक	श्रेणी
(i) एथेन → C_2H_6	(a) असंतृप्त हाइड्रोकार्बन
(ii) बेन्जीन → C_6H_6	(b) लम्बी श्रृंखला वाले संतृप्त हाइड्रोकार्बन
(iii) हेक्सेन → C_6H_{14}	(c) विषम परमाणु युक्त हाइड्रोकार्बन
(iv) मेथिल एल्कोहल	(d) संतृप्त हाइड्रोकार्बन

CH_3OH



Q.9

निम्न यौगिकों की सही श्रेणी पहचानिए।

यौगिक	श्रेणी
(i) एथेन	(a) असंतृप्त हाइड्रोकार्बन
(ii) बेन्जीन	(b) लम्बी श्रृंखला वाले संतृप्त हाइड्रोकार्बन
(iii) हेक्सेन	(c) विषम परमाणु युक्त हाइड्रोकार्बन
(iv) मेथिल एल्कोहल	(d) संतृप्त हाइड्रोकार्बन

(i)–(d), (ii)–(a), (iii)–(b), (iv)–(c)

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Q.10

मेथेन के दहन का संतुलित समीकरण लिखिए।

$CH_4 + O_2 \rightarrow$

मीथेन ऑक्सीजन



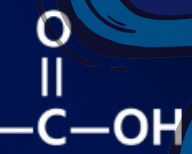
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Q.10

मेथेन के दहन का संतुलित समीकरण लिखिए।

$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O +$ ऊष्मा एवं प्रकाश मेथेन के दहन से CO_2 (कार्बन डाई ऑक्साइड) व जल तथा ऊष्मा प्राप्त होते है।

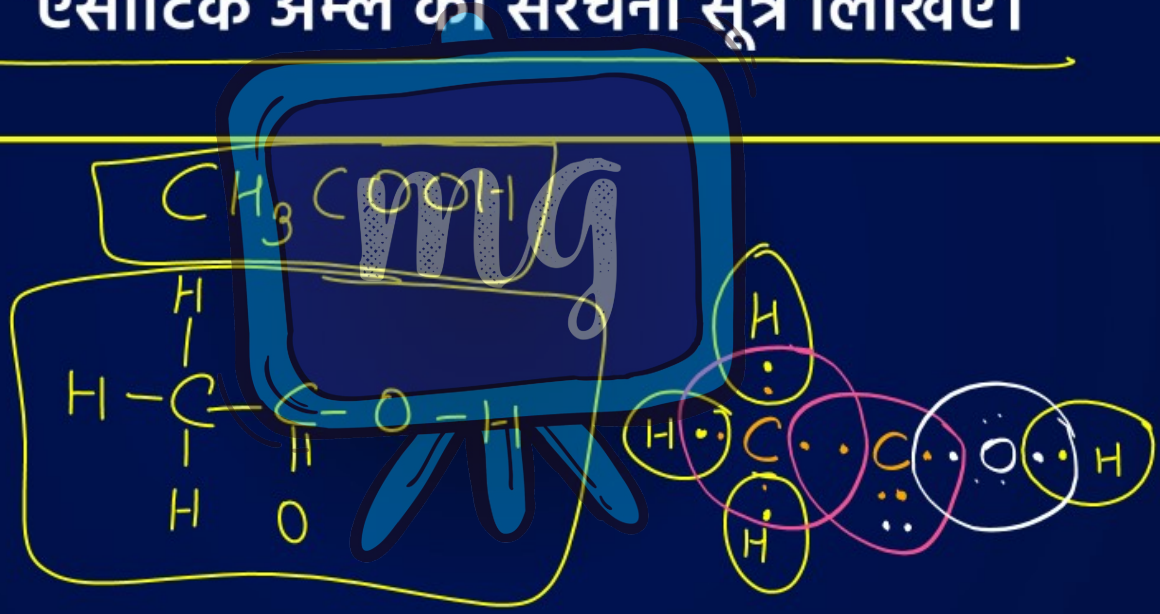


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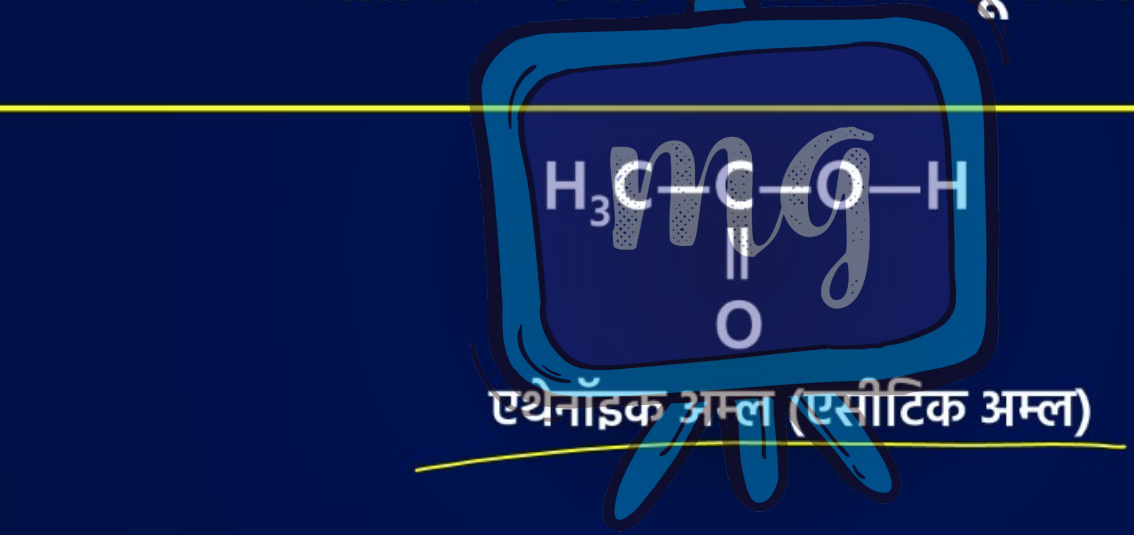
Q.11

एसीटिक अम्ल का संरचना सूत्र लिखिए।



Q.11

एसीटिक अम्ल का संरचना सूत्र लिखिए।



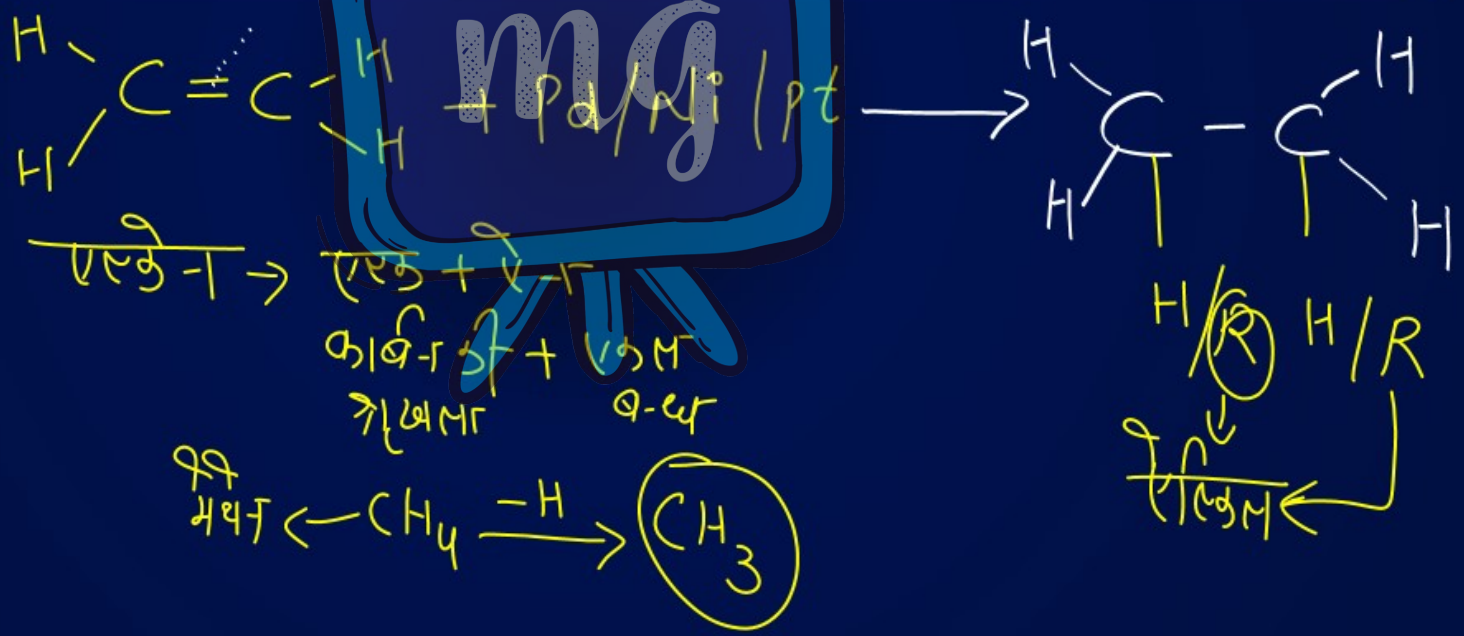
एथेनॉइक अम्ल (एसीटिक अम्ल)

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Q.12

असंतृप्त हाइड्रोकार्बन का हाइड्रोजनीकरण कैसे होता है? अथवा संकलन अभिक्रिया क्या है।



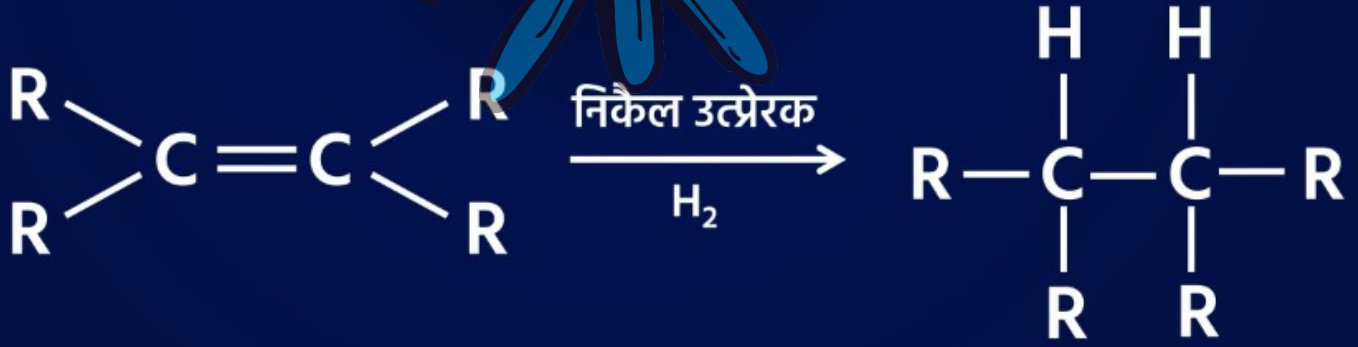
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Q.12

असंतृप्त हाइड्रोकार्बन का हाइड्रोजनीकरण कैसे होता है? अथवा संकलन अभिक्रिया क्या है।

पैलेडियम (Pd) तथा निकैल (Ni) जैसे उत्प्रेरकों की उपस्थिति में असंतृप्त हाइड्रोकार्बन, हाइड्रोजन जोड़कर संतृप्त हाइड्रोकार्बन देते है। इसे असंतृप्त हाइड्रोकार्बन का हाइड्रोजनीकरण कहते है।

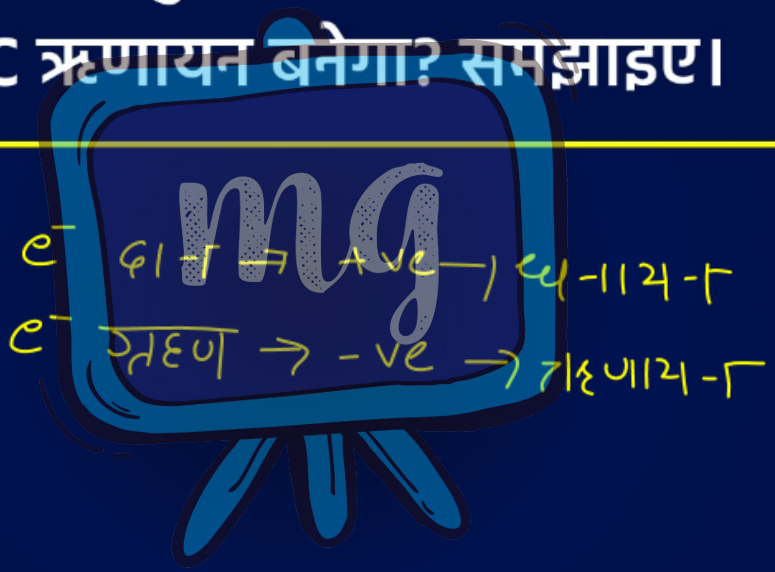


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Q.13

कार्बन परमाणु में कौन-सा परिवर्तन होने पर C ऋणायन बनेगा? समझाइए।

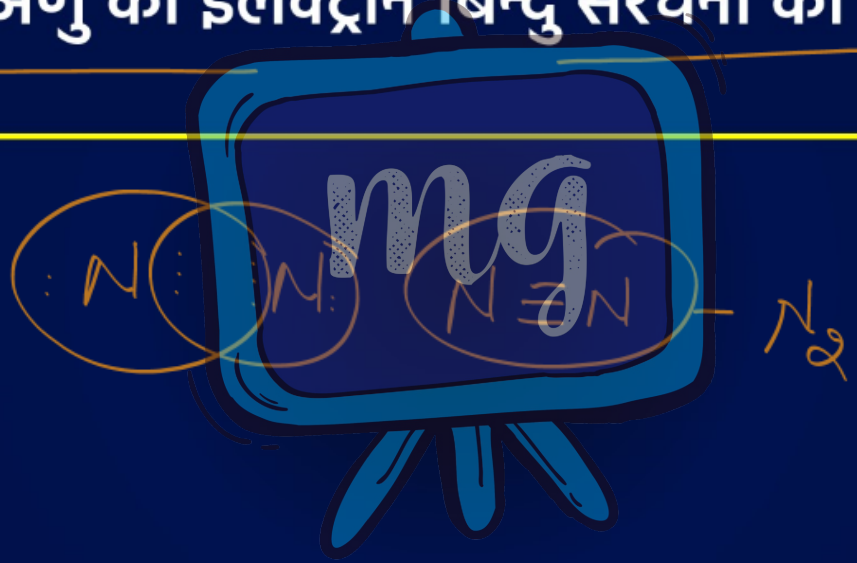


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Q.14

नाइट्रोजन अणु की इलेक्ट्रॉन बिन्दु संरचना को चित्रित कीजिए।

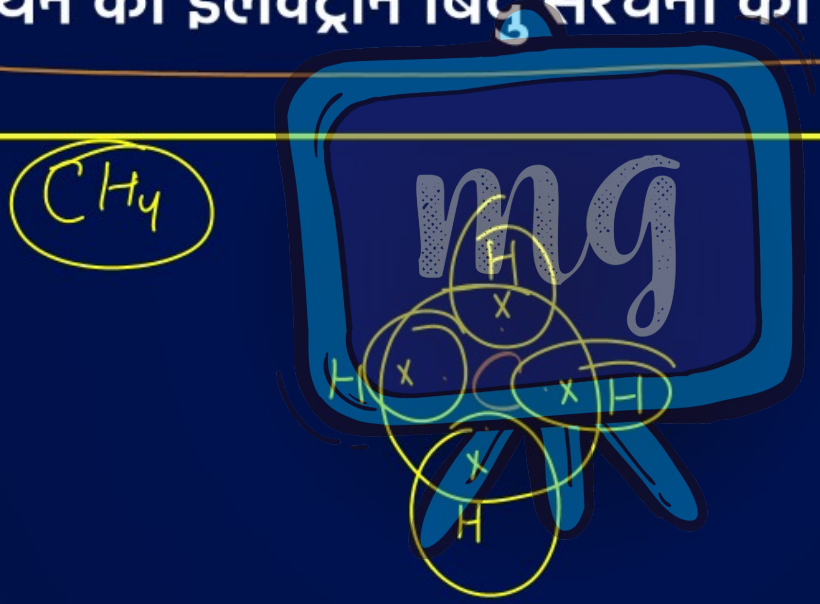


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Q.15

मेथेन की इलेक्ट्रॉन बिंदु संरचना को चित्रित कीजिए।



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Q.16

कार्बोक्सिलिक अम्ल में उपस्थित प्रकार्यात्मक समूह का सूत्र लिखिए।



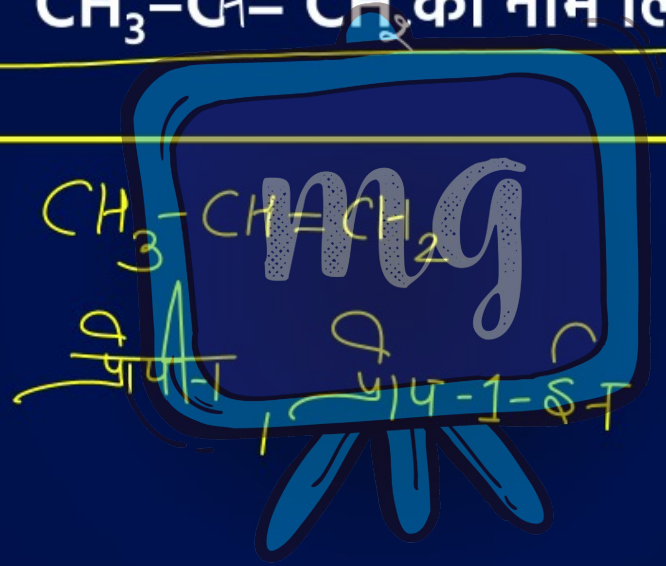
$-\overset{\overset{O}{\|}}{C}-O-H$ ऑक्सो अम्ल

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Q.17

$CH_3-CH=CH_2$ का नाम लिखिए।



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Q.18

एथीन अणु की इलेक्ट्रॉन बिंदु संरचना को चित्रित कीजिए।



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H.W

Q.19

क्या होता है जब एथेनॉल को अम्लीकृत $K_2Cr_2O_7$ द्वारा ऑक्सीकृत किया जाता है ?



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Q.20

क्या होता है जबकि–

(अ) एथेनॉइक अम्ल, सोडियम हाइड्रोजन कार्बोनेट के साथ



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Q.21

क्या होता है जबकि–

(ब) एथेनॉइक अम्ल को सोडियम हाइड्रोक्साइड के साथ क्रिया करवाते है?



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Q.22

मिसेल की संरचना देते हुए साबुन और अपमार्जक की सफाई क्रिया का विश्लेषण कीजिए।



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Q.23

निहित रासायनिक समीकरण देकर एथेनोइक अम्ल की निम्नलिखित अभिक्रियाओं का विश्लेषण कीजिए।

(i) एस्टरीकरण अभिक्रिया (ii) क्षारक के साथ अभिक्रिया।



Q.24

जल की उपस्थिति में मैले कपड़े पर साबुन लगाने पर कपड़ा साफ क्यों हो जाता है? कारण लिखिए।

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Q.25

साबुन की मिसेल संरचना को चित्रित कीजिए।



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Q.26

निम्नलिखित अभिकर्मकों के साथ एथेनॉल की रासायनिक अभिक्रियाओं के संतुलित समीकरण लिखिए-

(i) Na

(ii) 443K तापमान पर सान्द्र H_2SO_4


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GROW WITH RAJASTHAN
ई-पाठशाला कार्यक्रम
CLASS 10th ENGLISH
FIRST FLIGHT
THE SERMON
AT BENARES
RAPID REVISION
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The Sermon at Benares

प्रवचन

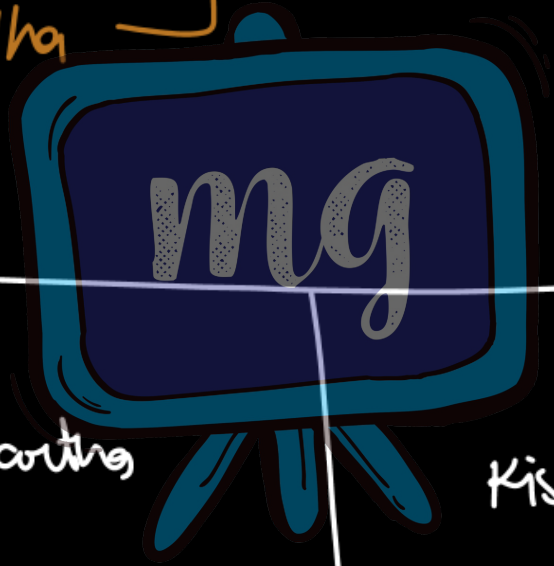
Gautam Buddha

Part - 1

The life of Siddhartha Gautama

Part - 2

Kisa Gotmi (death)



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Siddhartha Gautam

Old
Sick

Monk
Funeral

Prince — 4 sights — question (why is there so much suffering in the world)

Bodhi tree

7 days —



7 years

THE SERMON AT BENARES

1. Gautama Buddha, born as Siddhartha Gautama in 563 B.C., was raised as a prince in northern India and shielded from the sufferings of the world during his early life.

बोध
↓
समझ / ज्ञान



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1. बूढ़ा आदमी
2. बीमार आदमी
3. शव यात्रा
4. भिक्षुक

2. At 25, Siddhartha encountered the realities of human suffering: a sick man, an aged man, a funeral procession, and a monk. These encounters deeply impacted him and led him to leave his royal life in search of enlightenment.

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7 साल – अनेक

पीपल वृक्ष – नीचे

7 दिन – सात

3. After wandering for seven years, Siddhartha meditated under a peepal tree, vowing not to rise until he attained enlightenment (ज्ञानोदय). After seven days, he achieved enlightenment, becoming known as the Buddha.



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4. The Buddha's first sermon was delivered at Benares, a sacred place on the River Ganges, where he imparted profound wisdom about suffering and the nature of life.



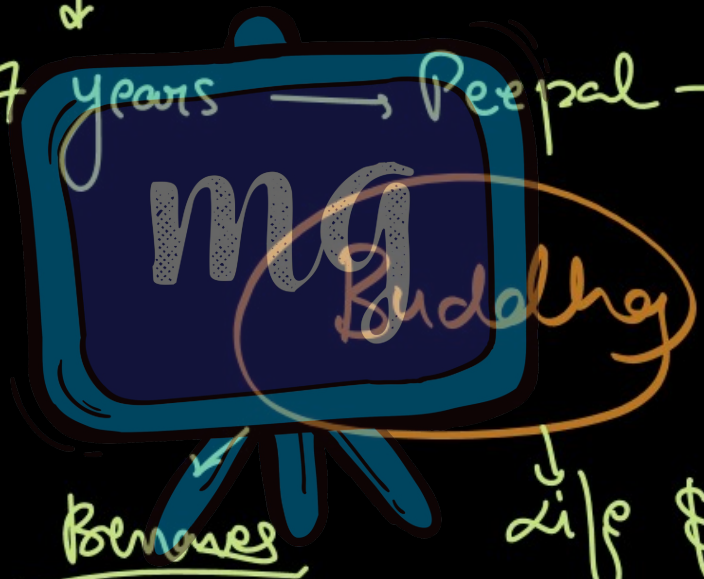
SG → enlightenment

↓

Old man
Sick
funeral
monk

↓

7 years → Peepal → 7 days



Banaras

↓

Life & suffering

THE SERMON AT BENARES

5. Kisa Gotami, a grief-stricken woman, approached her neighbors carrying her deceased child, seeking medicine to revive him.



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6. Neighbors, recognizing her desperation, dismissed her request, calling her out of her senses.



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7. A compassionate (दयालु) man directed her to the Buddha, saying he might provide her with the medicine she sought.



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8. The Buddha told Kisa Gotami to bring him a handful of mustard seeds from a household where no one had experienced death.



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9. Kisa Gotami visited house after house, but in each, she learned that death had touched every family.

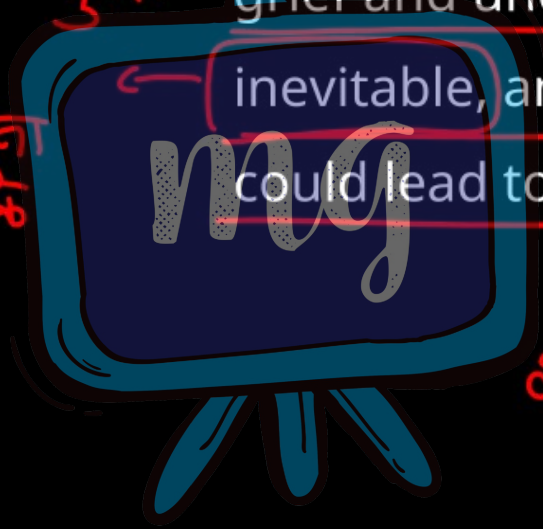
THE SERMON AT BENARES

10. Realizing the universality of death, Kisa Gotami reflected on human mortality and the transient nature of life.



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11. She acknowledged her selfishness in grief and understood that death is inevitable, and surrendering selfishness could lead to peace.



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Life – फूल
मिट्टी

12. Buddha explained that mortal life is fraught with pain, brevity, and the certainty of death, likening life to ripe fruits that inevitably fall and to earthen vessels destined to break.

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13. He emphasized that grief and lamentation cannot save the deceased and only worsen the sufferer's pain.

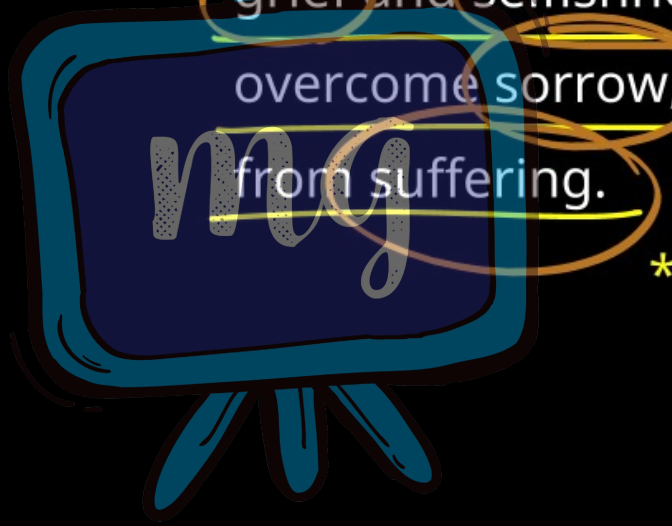
पीड़ा का गान



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तीर

14. He advised removing the "arrow" of grief and selfishness to attain peace and overcome sorrow, leading to freedom from suffering.



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THE SERMON AT BENARES

Questions – Answer

1. When her son dies, Kisa Gotami goes from house to house. What does she ask for? Does she get it? Why not?

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Answer :

When her son dies, Kisa Gotami goes from house to house and asks the people for a medicine to cure her son. She does not get it because there is none to cure the dead. It is so because death is incurable.

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Q.2 Kisa Gotami again goes from house to house after she speaks with the Buddha. What does she ask for, the second time around? Does she get it? Why not?

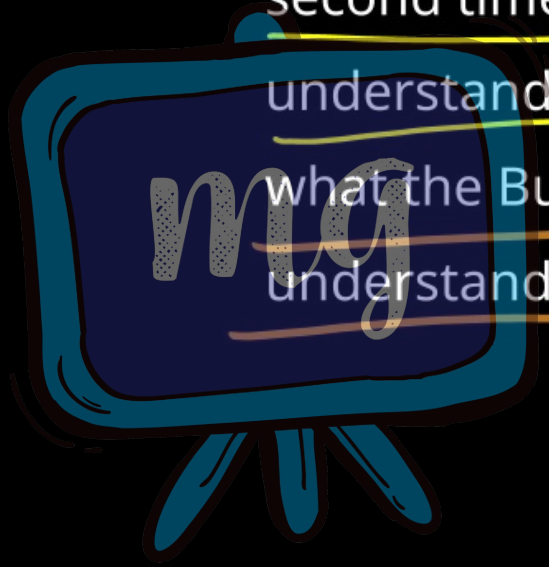
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Answer :

Gautama Buddha tells Kisa that he will cure her dead son. For that she should bring a handful of mustard seeds. It must be brought from a house where death hasn't occurred. Kisa does not get it because she can't find such a house where death has not occurred. Now she knows that death spares nobody who has been born.

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Q.3 What does Kisa Gotami understand the second time that she failed to understand the first time? Was this what the Buddha wanted her to understand?



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Answer :

Kisa Gotami now understands that death is inevitable and that she is being selfish in her grief. She thinks over the fate of men. Their lives are like the light of the city which flickers and extinguishes again. Yes, it is this truth that Gautama Buddha wanted her to understand that everyone who is born has to die one day.

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Q.4 Why do you think Kisa Gotami understood this only the second time? In what way did the Buddha change her understanding?



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Answer :

In the beginning, Kisa Gotami was consumed by her grief over the loss of her young son, unable to see beyond her personal tragedy. However, during her search for mustard seeds, she visited many homes and discovered that every household had experienced loss—whether it was a son, husband, parent, or friend.

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This realization struck her deeply, she understood that death is inevitable for all mortal beings. Through this experience, Gautama Buddha helped her grasp that while loss is painful, it is a shared part of life, leading her to accept her son's death and recognize the common fate of humanity.

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Q.5 How do you usually understand the idea of 'selfishness'? Do you agree with Kisa Gotami that she was being 'selfish in her grief '?



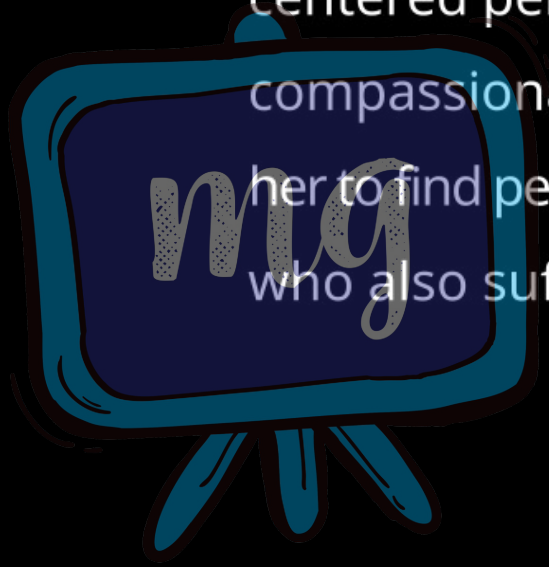
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Answer :

Selfishness often means focusing on one's own needs over others. Yes. I agree with Kisa Gotami's grief made her feel isolated and consumed by her loss, which could be seen as a form of selfishness. However, when she understood that everyone experiences death and loss, she recognized her grief was part of a shared human experience.

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This shift helped her move from a self-centered perspective to a more compassionate understanding, allowing her to find peace and connect with others who also suffer.



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Q.6 What was the effect of the sufferings of the world on the Buddha?



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Answer :

The sufferings of the world deeply affected the Buddha, prompting him to seek a way to overcome suffering. Witnessing old age, sickness, and death made him realize that suffering is a fundamental part of life.

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पीड़

This led him to renounce his royal life and pursue enlightenment. Ultimately, he attained understanding under the Peepal tree (Bodhi tree).



THE SERMON AT BENARES

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Q.7 What did Kisa Gotami say to Gautama Buddha? What reply did Gautama Buddha give to her?



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Answer :

Kisa Gotami reached Gautama Buddha. She told him everything about her dead son. She requested him to give medicine to cure her son. The buddha asked her to bring a handful of mustard seeds. But he laid a condition. It must be from a house where no one had lost a child, husband, parent or friend. It meant where death had not occurred.

THE SERMON AT BENARES

Q.8 Why was Gautama known as the Buddha?



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बौद्ध – Budahs

Answer :

'Buddha' means 'the Awakened or the Enlightened'. Siddhartha Gautama wandered for seven years and finally sat down under a Peepal tree till he got enlightenment. After seven days of enlightenment, he renamed the tree as 'Bodhi Tree' and began to teach and to share his new understanding and came to be known as the Buddha.