

A CENTURY OF CODLING MOTH CONTROL IN SOUTH AFRICA

I. HISTORICAL PERSPECTIVE

J.H. Giliomee¹ & H. Riedl²

¹Department of Entomology and Nematology, University of Stellenbosch, Stellenbosch 7600, South Africa

²Mid-Columbia Agricultural Research and Extension Centre, Oregon State University, Hood River, Oregon 97031-9512, USA

KEYWORDS: Codling moth, *Cydia pomonella*, control, pest management

ABSTRACT

The various control measures used against codling moth (*Cydia pomonella* Linn.) since it was first found in South Africa around 1885 are described. Over the years continuous changes were made to adapt to new situations and technology but no final answer to the problem has been found.

INTRODUCTION

The codling moth, *Cydia pomonella* Linn. (family Olethreutidae) is a key insect pest of apple and pear tree fruit in South Africa (Myburgh *et al.*, 1973; Nel, 1983) and most of the countries where these fruits are produced (Barnes, 1991). It probably originated in Eurasia (Barnes, 1991) and was first reported in South Africa from Graaff-Reinet around 1885 where it is reputed to have arrived in apples from Madeira brought in by a visitor who stopped over on the island on the way home from Europe (Loansbury, 1898). It rapidly spread to the fruit producing areas of Constantia, Stellenbosch, Somerset West and Wellington, despite advice given to farmers that they should avoid "returned empties" that might contain codling moth larvae (Loansbury, 1899). An attempt was made to delay the spread of codling moth by prohibiting the transfer

and one to be reckoned with in apple and pear orchards; later its pest status also increased in apricot orchards (Stubbings & Hattlingh, 1945).

Strategies had to be developed to control codling moth. Some of them proved very effective, but even after a century of codling moth control in South Africa and elsewhere no final answer to the problem has been found. The insect dynamically adapted to overcome all control measures applied against it and today the industry is facing new challenges because the standard chemical control measures are no longer effective in many areas of South Africa and abroad. In this paper we trace the history of codling moth control in South Africa, hoping that we can learn from the experiences of the past. In a subsequent paper various modern control strategies available or potentially available for codling moth control will be discussed.

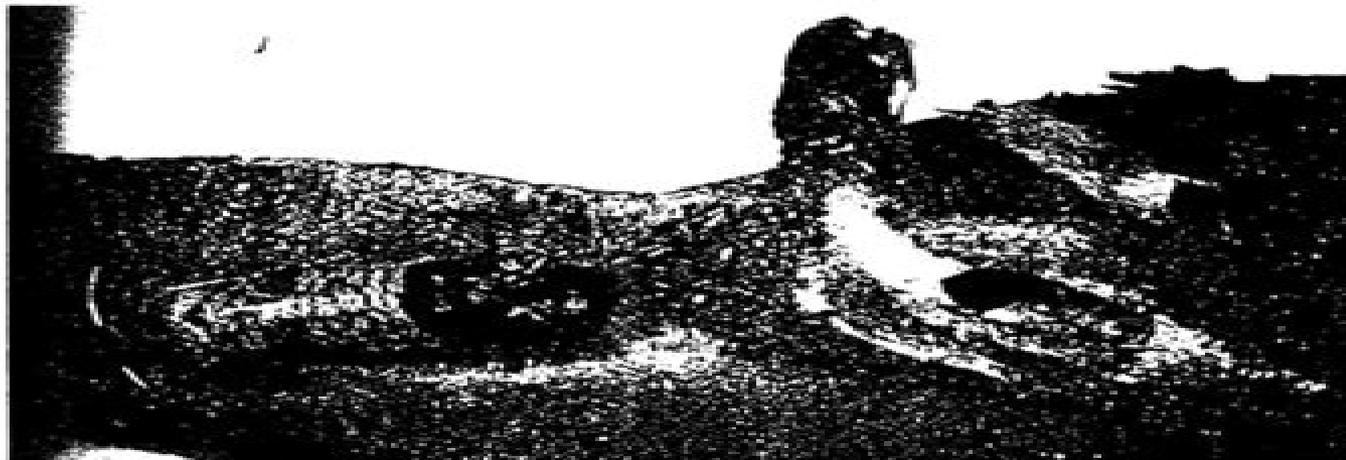


FIGURE 1. Newly emerged codling moth with empty cocoon and protruding pupal skin (Photo: Infrutec).

of apples, pears and quinces to areas where it was still absent (Loansbury, 1907; Ason, 1912). However, by 1918 the Government entomologists recommended that the regulations be abandoned (Loansbury, 1918). Codling moth had become an established pest

CONTROL MEASURES

Over the years entomologists in many parts of the world battled with the control of codling moth and in South Africa there was usually at least one worker studying the biology and control of this

Guide To Historical Codling Moth Events

S Nieto



Guide To Historical Codling Moth Events:

Guide to the catalogues of the reference library; with regulations for visitors, hints to readers and students, and rules for cataloguing New South Wales state libr,1897 *Crop Protection Guide for Tree Fruits in Washington* ,2007 *Study Guide for Agricultural Pest Control Advisers on Insects, Mites, and Other Invertebrates and Their Control in California* ,1981

Intended to be used as a study guide by aspiring agricultural pest control advisors this publication covers the identification and management of insect mite and other invertebrate pests in California Biological as well as chemical control equipment and application techniques and environmental impacts of pesticides are discussed A glossary of basic entomology terms extensive chapter reference lists and numerous ready reference tables are included *Papers and Discussions* ,1929

Biennial Report Illinois. Office of the Superintendent of Public Instruction,1917 **The Farmer's Guide to Agricultural Research** ,1937 **Biennial Report of the Superintendent of Public Instruction, State of Illinois** Illinois. Office of the Superintendent of Public Instruction,1917 **Biennial Report of the Superintendent of Public Instruction of the State of Illinois** Illinois. Office of the Superintendent of Public Instruction,1917 **Farmers' Guide** ,1905 **Plant & Pest Advisory** ,2011 **Educational Film Guide** H.W. Wilson Company,1947 Izvestii i po prikladnoi entomologii ,1928 A Dictionary of Americanisms on Historical Principles: A-Lincolnism Mitford McLeod Mathews,1951 **Extension Bulletin** ,2004 *Indiana Farmer's Guide* ,1935 Educational Motion Pictures ... Catalog ,1939 **Agrindex** ,1993 **Bulletin of the Extension Division, Indiana University** ,1938 Catalog of Educational Captioned Films/videos for the Deaf ,1988 **The Fruit Grower and Farmer** ,1914

As recognized, adventure as competently as experience roughly lesson, amusement, as well as bargain can be gotten by just checking out a book **Guide To Historical Codling Moth Events** then it is not directly done, you could endure even more going on for this life, with reference to the world.

We come up with the money for you this proper as skillfully as easy mannerism to acquire those all. We manage to pay for Guide To Historical Codling Moth Events and numerous ebook collections from fictions to scientific research in any way. among them is this Guide To Historical Codling Moth Events that can be your partner.

https://blog.gospelcrusade.org/results/book-search/default.aspx/mpi_architectural_painting_specification_manual_2013.pdf

Table of Contents Guide To Historical Codling Moth Events

1. Understanding the eBook Guide To Historical Codling Moth Events
 - The Rise of Digital Reading Guide To Historical Codling Moth Events
 - Advantages of eBooks Over Traditional Books
2. Identifying Guide To Historical Codling Moth Events
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Guide To Historical Codling Moth Events
 - User-Friendly Interface
4. Exploring eBook Recommendations from Guide To Historical Codling Moth Events
 - Personalized Recommendations
 - Guide To Historical Codling Moth Events User Reviews and Ratings
 - Guide To Historical Codling Moth Events and Bestseller Lists
5. Accessing Guide To Historical Codling Moth Events Free and Paid eBooks

- Guide To Historical Codling Moth Events Public Domain eBooks
 - Guide To Historical Codling Moth Events eBook Subscription Services
 - Guide To Historical Codling Moth Events Budget-Friendly Options
6. Navigating Guide To Historical Codling Moth Events eBook Formats
 - ePub, PDF, MOBI, and More
 - Guide To Historical Codling Moth Events Compatibility with Devices
 - Guide To Historical Codling Moth Events Enhanced eBook Features
 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Guide To Historical Codling Moth Events
 - Highlighting and Note-Taking Guide To Historical Codling Moth Events
 - Interactive Elements Guide To Historical Codling Moth Events
 8. Staying Engaged with Guide To Historical Codling Moth Events
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Guide To Historical Codling Moth Events
 9. Balancing eBooks and Physical Books Guide To Historical Codling Moth Events
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Guide To Historical Codling Moth Events
 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
 11. Cultivating a Reading Routine Guide To Historical Codling Moth Events
 - Setting Reading Goals Guide To Historical Codling Moth Events
 - Carving Out Dedicated Reading Time
 12. Sourcing Reliable Information of Guide To Historical Codling Moth Events
 - Fact-Checking eBook Content of Guide To Historical Codling Moth Events
 - Distinguishing Credible Sources
 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development

- Exploring Educational eBooks
14. Embracing eBook Trends
- Integration of Multimedia Elements
 - Interactive and Gamified eBooks

Guide To Historical Codling Moth Events Introduction

In this digital age, the convenience of accessing information at our fingertips has become a necessity. Whether its research papers, eBooks, or user manuals, PDF files have become the preferred format for sharing and reading documents. However, the cost associated with purchasing PDF files can sometimes be a barrier for many individuals and organizations. Thankfully, there are numerous websites and platforms that allow users to download free PDF files legally. In this article, we will explore some of the best platforms to download free PDFs. One of the most popular platforms to download free PDF files is Project Gutenberg. This online library offers over 60,000 free eBooks that are in the public domain. From classic literature to historical documents, Project Gutenberg provides a wide range of PDF files that can be downloaded and enjoyed on various devices. The website is user-friendly and allows users to search for specific titles or browse through different categories. Another reliable platform for downloading Guide To Historical Codling Moth Events free PDF files is Open Library. With its vast collection of over 1 million eBooks, Open Library has something for every reader. The website offers a seamless experience by providing options to borrow or download PDF files. Users simply need to create a free account to access this treasure trove of knowledge. Open Library also allows users to contribute by uploading and sharing their own PDF files, making it a collaborative platform for book enthusiasts. For those interested in academic resources, there are websites dedicated to providing free PDFs of research papers and scientific articles. One such website is Academia.edu, which allows researchers and scholars to share their work with a global audience. Users can download PDF files of research papers, theses, and dissertations covering a wide range of subjects. Academia.edu also provides a platform for discussions and networking within the academic community. When it comes to downloading Guide To Historical Codling Moth Events free PDF files of magazines, brochures, and catalogs, Issuu is a popular choice. This digital publishing platform hosts a vast collection of publications from around the world. Users can search for specific titles or explore various categories and genres. Issuu offers a seamless reading experience with its user-friendly interface and allows users to download PDF files for offline reading. Apart from dedicated platforms, search engines also play a crucial role in finding free PDF files. Google, for instance, has an advanced search feature that allows users to filter results by file type. By specifying the file type as "PDF," users can find websites that offer free PDF downloads on a specific topic. While downloading Guide To Historical Codling Moth Events free PDF files is convenient, its important to note that copyright laws must be respected. Always ensure that the

PDF files you download are legally available for free. Many authors and publishers voluntarily provide free PDF versions of their work, but its essential to be cautious and verify the authenticity of the source before downloading Guide To Historical Codling Moth Events. In conclusion, the internet offers numerous platforms and websites that allow users to download free PDF files legally. Whether its classic literature, research papers, or magazines, there is something for everyone. The platforms mentioned in this article, such as Project Gutenberg, Open Library, Academia.edu, and Issuu, provide access to a vast collection of PDF files. However, users should always be cautious and verify the legality of the source before downloading Guide To Historical Codling Moth Events any PDF files. With these platforms, the world of PDF downloads is just a click away.

FAQs About Guide To Historical Codling Moth Events Books

How do I know which eBook platform is the best for me? Finding the best eBook platform depends on your reading preferences and device compatibility. Research different platforms, read user reviews, and explore their features before making a choice. Are free eBooks of good quality? Yes, many reputable platforms offer high-quality free eBooks, including classics and public domain works. However, make sure to verify the source to ensure the eBook credibility. Can I read eBooks without an eReader? Absolutely! Most eBook platforms offer web-based readers or mobile apps that allow you to read eBooks on your computer, tablet, or smartphone. How do I avoid digital eye strain while reading eBooks? To prevent digital eye strain, take regular breaks, adjust the font size and background color, and ensure proper lighting while reading eBooks. What the advantage of interactive eBooks? Interactive eBooks incorporate multimedia elements, quizzes, and activities, enhancing the reader engagement and providing a more immersive learning experience. Guide To Historical Codling Moth Events is one of the best book in our library for free trial. We provide copy of Guide To Historical Codling Moth Events in digital format, so the resources that you find are reliable. There are also many Ebooks of related with Guide To Historical Codling Moth Events. Where to download Guide To Historical Codling Moth Events online for free? Are you looking for Guide To Historical Codling Moth Events PDF? This is definitely going to save you time and cash in something you should think about.

Find Guide To Historical Codling Moth Events :

[mpi architectural painting specification manual 2013](#)

[**motorola w22user guide**](#)

~~moulinex abke rezepte user guide~~

~~mr sia fly past~~

mount rushmore corned beef hash recipe

movado 605024 watches owners manual

mountain brook images of america

~~moving cellular materials answer guide~~

~~ms 9713 o n 14~~

~~mrcog past papers 1~~

mr nice une autobiographie

mr fitzwilliam darcy the last man in the world

~~mr fire et moi vol~~

mpumalanga maths p2 november 2014

~~mp board maths guide 8th class~~

Guide To Historical Codling Moth Events :

gerico la rivoluzione della preistoria paperback amazon in - Nov 05 2022

web jul 21 2023 *la rivoluzione della preistoria friggitrice ad aria ricette facili e veloci per friggere cuocere grigliare e arrostitire con la tua friggitrice ad aria inclusi importanti*

scarica pdf gerico la rivoluzione della preistoria gratis - Oct 04 2022

web select the department you want to search in

gerico la rivoluzione della preistoria scavare è il mio peccato - May 11 2023

web attraverso il racconto di una campagna di scavi archeologica a gerico la più antica città del mondo l autore racconta il ruolo del primo insediamento umano stabile durante la

gerico la rivoluzione della preistoria libreria universitaria - Aug 02 2022

web aug 9 2019 *gerico la rivoluzione della preistoria scavare è il mio peccato italian edition kindle edition by nigro lorenzo*
download it once and read it on your kindle

pdf epub gerico la rivoluzione della preistoria gratis - Apr 10 2023

web dettagli e book gerico la rivoluzione della preistoria autore s lorenzo nigro titolo gerico la rivoluzione della preistoria
valutazione 4 5 su 5 stelle 42 voti isbn 10

gerico la rivoluzione della preistoria scavare è il mio peccato - Jul 01 2022

web gerico la rivoluzione della preistoria scavare è il mio peccato italian edition ebook nigro lorenzo amazon in kindle store
[gerico la rivoluzione della preistoria amazon it](#) - Aug 14 2023

web attraverso il racconto di una campagna di scavi archeologica a gerico la più antica città del mondo l autore racconta il ruolo del primo insediamento umano stabile durante la rivoluzione neolitica la vita della missione a gerico è scandita dalla lotta dei

[gerico la rivoluzione della preistoria lorenzo nigro libro il](#) - Jun 12 2023

web gerico la rivoluzione della preistoria è un libro di lorenzo nigro pubblicato da il vomere nella collana missione archeologica palestina e giordania acquista su ibs a 15 00

gerico la rivoluzione della preistoria blu star - Jan 07 2023

web merely said the gerico la rivoluzione della preistoria is universally compatible past any devices to read enciclopedia italiana di scienze lettere ed arti quinta appendice 1979

gerico la rivoluzione della preistoria lorenzo nigro libro il - Mar 29 2022

web aug 27 2019 gerico la rivoluzione della preistoria 27 08 19 di alessandra intraversato a settembre in uscita nelle librerie il romanzo archeologico sulle origini

gerico la rivoluzione della preistoria nigro lorenzo libro - Nov 24 2021

web con il suo primo romanzo lorenzo nigro ci conduce in palestina a gerico la città più antica del mondo situata nei pressi di una rigogliosa sorgente

[gerico la rivoluzione della preistoria comunicati stampa net](#) - Feb 25 2022

web presentazione del libro gerico la rivoluzione della preistoria

mvoem 25 7 2019 gerico la rivoluzione della preistoria - Jan 27 2022

web jan 8 2021 presentazione al museo salinas di palermo del romanzo archeologico gerico la rivoluzione della preistoria

[gerico la rivoluzione della preistoria lorenzo nigro arbor](#) - Mar 09 2023

web attraverso il racconto di una campagna di scavi archeologica a gerico la più antica città del mondo l autore racconta il ruolo del primo insediamento umano stabile durante la

gerico la rivoluzione della preistoria scavare è il mio peccato - May 31 2022

web attraverso il racconto di una campagna di scavi archeologica a gerico la più antica città del mondo l autore racconta come i nostri antenati siano riusciti a compiere la più

gerico la rivoluzione della preistoria - Dec 06 2022

web amazon in buy gerico la rivoluzione della preistoria book online at best prices in india on amazon in read gerico la rivoluzione della preistoria book reviews author

presentazione del romanzo archeologico gerico la rivoluzione - Dec 26 2021

web la rivoluzione della preistoria è un libro di nigro lorenzo edito da missione archeol in pale a settembre 2019 ean 9788898154135 puoi acquistarlo sul sito hoepli it la

gerico la rivoluzione della preistoria by lorenzo nigro goodreads - Jul 13 2023

web aug 9 2019 attraverso il racconto di una campagna di scavi archeologica a gerico la più antica città del mondo l autore racconta il ruolo del primo insediamento umano

gerico la rivoluzione della preistoria amazon co uk books - Sep 03 2022

web scritto in modo avvincente il libro induce a riflettere in modo semplice e quasi spontaneo sulla concezione della vita e della morte il ruolo della comunità umana e la riscoperta

libro gerico la rivoluzione della preistoria - Apr 29 2022

web scritto in modo avvincente il libro induce a riflettere in modo semplice e quasi spontaneo sulla concezione della vita e della morte il ruolo della comunità umana e la riscoperta

scaricare pdf gerico la rivoluzione della preistoria lorenzo - Feb 08 2023

web attraverso il racconto di una campagna di scavi archeologica a gerico la più antica città del mondo l autore racconta il ruolo del primo insediamento umano stabile durante la

[gerico la rivoluzione della preistoria facebook](#) - Oct 24 2021

elisha and the invisible angel army coloring page jehovah sabaoth - Feb 09 2023

web elisha and the invisible angel army coloring page jehovah sabaoth coloring home 9 views 4 prints elisha and the invisible angel army coloring page jehovah sabaoth view more elisha coloring pages 2 ratings download print pdf

elisha invisible army coloring page - Apr 11 2023

web oct 17 2013 click the elisha invisible army coloring pages to view printable version or color it online compatible with ipad and android tablets you might also be interested in coloring pages from prophet elisha category

[angels all around gracelink](#) - Dec 07 2022

web sees all the shining angels god has sent to protect them there are many more angels than soldiers and the servant knows that god is protecting them this is a lesson about community elisha cares about his servant his servant is a part of his family and a part of god s family elisha wants his ser vant to know that god is taking care of them

elisha fiery army coloring page free printable coloring pages pinterest - Jun 13 2023

web elisha fiery army coloring page from prophet elisha category select from 72574 printable crafts of cartoons nature animals bible and many more s supercoloring com 143k followers bible story crafts bible stories for

angels protect elisha coloring page pdf uniport edu - Sep 04 2022

web mar 24 2023 angels protect elisha coloring page 1 5 downloaded from uniport edu ng on march 24 2023 by guest
angels protect elisha coloring page right here we have countless books angels protect elisha coloring page and collections to
check out we additionally meet the expense of variant types and as well as type of the books to browse

the angels help elijah coloring page kidadl - Apr 30 2022

web more free the angels help elijah coloring page coloring page printables related content 122 best boundaries quotes to
help honor your space top 78 as a man thinketh quotes from one of the first and most popular self help books ever 110
helping hands quotes about for when you need some support

free printable angel coloring pages for kids - Jan 28 2022

web jun 29 2013 angel coloring pages are perfect for children from all age groups as these coloring sheets teach them
about the culture and religion the activity sheets often carry some words of wisdom so that your kids can learn to help others
and to differentiate between right and wrong they also make good holiday crafts with many christmas

[angels coloring pages 100 images free printable raskrasil com](#) - Jul 02 2022

web this is the magic power of our angels welcome to the mysterious world of angels in coloring pages where you will get
acquainted with a wide variety of angels that surround us at different periods of our lives coloring pages angels large
collection 100 images the inhabitant of heaven

angels protect elisha coloring page uniport edu - Feb 26 2022

web jun 7 2023 you could buy guide angels protect elisha coloring page or get it as soon as feasible you could speedily
download this angels protect elisha coloring page after getting deal

angels protect elisha coloring page pdf betalantida - Jun 01 2022

web angels protect elisha coloring page pdf is available in our digital library an online access to it is set as public so you can
get it instantly our books collection saves in multiple locations allowing you to get the most less latency time to download any
of our books like this one merely said the angels protect elisha coloring page pdf is

elisha coloring pages coloring home - Jul 14 2023

web elisha coloring pages download and print these elisha coloring pages for free printable elisha coloring pages are a fun
way for kids of all ages to develop creativity focus motor skills and color recognition

20 elisha army angels coloring pages printable coloring pages - May 12 2023

web popular popular popular comments inspirational cocomelon memorial day coloring pages veterans us flag latest
categories speedboats verse 20 describes elisha praying for the soldiers sight to be restored once they entered the city and
god answered that prayer so they could finally see elisha and also the king of israel who was with him

[angels protect elisha coloring page pdf uniport edu](#) - Mar 30 2022

web jun 26 2023 angels protect elisha coloring page 1 4 downloaded from uniport edu ng on june 26 2023 by guest angels protect elisha coloring page when somebody should go to the ebook stores search opening by shop shelf by shelf it is in fact problematic this is why we present the book compilations in this website

angels protect elisha coloring page pdf uniport edu - Oct 05 2022

web jun 27 2023 angels protect elisha coloring page as well as it is not directly done you could resign yourself to even more not far off from this life in this area the world we find the money for you this proper as capably as simple way to acquire those all we give angels protect elisha coloring page and numerous ebook collections

[angels protect elisha coloring page pdf uniport edu](#) - Jan 08 2023

web jun 4 2023 angels protect elisha coloring page is available in our book collection an online access to it is set as public so you can download it instantly our digital library hosts in multiple countries allowing you to get the most less latency time to download any of our books like this one kindly say the angels protect elisha coloring page is

elisha s secret army coloring page sundayschoolist - Aug 15 2023

web elisha s secret army coloring page old testament elisha s secret army 10 2 kings elisha and the army of fire god sent invisible horses and chariots of fire to protect elisha and his servant from an enemy army because the servant could only see the enemy army he was very afraid

pin on bible names of god pinterest - Mar 10 2023

web elisha and the invisible angel army coloring page jehovah sabaoth the lord of hosts

angels protect elisha coloring page - Aug 03 2022

web angels protect elisha coloring page whispering the techniques of language an mental journey through angels protect elisha coloring page in a digitally driven earth where screens reign supreme and quick conversation drowns out the subtleties of language the profound secrets and psychological subtleties hidden within phrases often go unheard

angels protect elisha coloring page alexander heidel 2023 - Dec 27 2021

web protect elisha coloring page as one of the most functional sellers here will extremely be among the best options to review the encyclopædia britannica thomas spencer

angels protect elisha coloring page download only - Nov 06 2022

web angels protect elisha coloring page the selection coloring book aug 19 2020 prepare to be swept away by the gorgeous gowns and breathless romance of kiera cass s 1 new york times bestselling selection series now brought to life in this beautifully illustrated coloring book

[rtor exam](#) - Aug 15 2023

driving licence tests for ahmedabad and all over gujarat in gujarati - Jan 08 2023

web driving licence tests for ahmedabad vadodara and gujarat in gujarati please select a test from below take the mock test just the way you are going to face in the driving licence examination go with full preparation

online driving licence computer test exam for gujarat in english rto exam - Apr 11 2023

web online driving licence computer test exam for gujarat in english rto exam time and question bound test exactly same as actual rto test

gujarat rto exam 2023 gujarat driving licence dl llr test paper - Jun 01 2022

web practice free online rto gujarat sample mock test questions with answers for driver licence dl ll exam 2023 download previous year rto gujarat learner licence llr pdf papers rto gujarat dl ll llr mock test features important question bank for rto gujarat driving licence dl exam preparation