



# basic education

Department:  
Basic Education  
REPUBLIC OF SOUTH AFRICA

## NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICS P2

EXEMPLAR 2014

MEMORANDUM

MARKS: 150

This memorandum consists of 13 pages.

# Matric Exemplar In 2014 November

**Hongru Du**



### **Matric Exemplar In 2014 November:**

*Biochemistry of Collagens, Laminins and Elastin* Morten Karsdal, 2019-05-28 There are 28 different collagens with 46 unique chains which allows for a collagen for each time and place Some collagens are specialized for basement membrane whereas others are the central structural component of the interstitial matrix There are eight collagens among the 20 most abundant proteins in the body which makes these molecules essential building blocks of tissues In addition lessons learned from monogenic mutations in these proteins result in grave pathologies exemplifying their importance in development These molecules and their post translationally modified products serve as biomarkers of diseases in a range of pathologies associated with the extracellular matrix *Biochemistry of Collagens Laminins and Elastin Structure Function and Biomarkers Second Edition* provides researchers and students current data on key structural proteins collagens laminins and elastin reviews on how these molecules affect pathologies and information on how selected modifications of proteins can result in altered signaling properties of the original extracellular matrix component Further it discusses the novel concept that an increasing number of components of the extracellular matrix harbor cryptic signaling functions that may be viewed as endocrine function and it highlights how this knowledge can be exploited to modulate fibrotic disease Provides an updated comprehensive introduction to collagen and structural proteins Gives insight into emerging analytical technologies that can detect biomarkers of extracellular matrix degradation Includes seven new chapters including one on how collagen biomarkers are used in clinical research to support drug development and in precision medicine Contains insights into the biochemical interactions and changes to structural composition of proteins in disease states Proves the importance of proteins for collagen assembly function and durability

**Emotion Recognition** Amit Konar, Aruna Chakraborty, 2015-01-27 A timely book containing foundations and current research directions on emotion recognition by facial expression voice gesture and biopotential signals This book provides a comprehensive examination of the research methodology of different modalities of emotion recognition Key topics of discussion include facial expression voice and biopotential signal based emotion recognition Special emphasis is given to feature selection feature reduction classifier design and multi modal fusion to improve performance of emotion classifiers Written by several experts the book includes several tools and techniques including dynamic Bayesian networks neural nets hidden Markov model rough sets type 2 fuzzy sets support vector machines and their applications in emotion recognition by different modalities The book ends with a discussion on emotion recognition in automotive fields to determine stress and anger of the drivers responsible for degradation of their performance and driving ability There is an increasing demand of emotion recognition in diverse fields including psycho therapy bio medicine and security in government public and private agencies The importance of emotion recognition has been given priority by industries including Hewlett Packard in the design and development of the next generation human computer interface HCI systems *Emotion Recognition A Pattern Analysis Approach* would be of great interest to researchers graduate students and

practitioners as the book Offers both foundations and advances on emotion recognition in a single volume Provides a thorough and insightful introduction to the subject by utilizing computational tools of diverse domains Inspires young researchers to prepare themselves for their own research Demonstrates direction of future research through new technologies such as Microsoft Kinect EEG systems etc

**The Semantic Web - ISWC 2023** Terry R. Payne,Valentina Presutti,Guilin Qi,María Poveda-Villalón,Giorgos Stoilos,Laura Hollink,Zoi Kaoudi,Gong Cheng,Juanzi Li,2023-11-01 This book constitutes the proceedings of the 22nd International Semantic Web Conference ISWC 2023 which took place in October 2023 in Athens Greece The 58 full papers presented in this double volume were thoroughly reviewed and selected from 248 submissions Many submissions focused on the use of reasoning and query answering with a number addressing engineering maintenance and alignment tasks for ontologies Likewise there has been a healthy batch of submissions on search query integration and the analysis of knowledge Finally following the growing interest in neuro symbolic approaches there has been a rise in the number of studies that focus on the use of Large Language Models and Deep Learning techniques such as Graph Neural Networks

**Policy Analytics, Modelling, and Informatics** J Ramon Gil-Garcia,Theresa A. Pardo,Luis F. Luna-Reyes,2017-10-03 This book provides a comprehensive approach to the study of policy analytics modelling and informatics It includes theories and concepts for understanding tools and techniques used by governments seeking to improve decision making through the use of technology data modelling and other analytics and provides relevant case studies and practical recommendations Governments around the world face policy issues that require strategies and solutions using new technologies new access to data and new analytical tools and techniques such as computer simulation geographic information systems and social network analysis for the successful implementation of public policy and government programs Chapters include cases concepts methodologies theories experiences and practical recommendations on data analytics and modelling for public policy and practice and addresses a diversity of data tools applied to different policy stages in several contexts and levels and branches of government This book will be of interest of researchers students and practitioners in e government public policy public administration policy analytics and policy informatics

Digital Twins and Simulation Technology Lavanya Sharma,Pradeep Kumar Garg,2025-07-04 This book provides a comprehensive overview of the concept of digital twins emphasising its strategic importance across various commercial domains This book covers the fundamentals data requirements tools and technologies essential for understanding and implementing digital twins It discusses how digital twins are used for running simulations analysing performance issues and generating potential improvements to optimise business processes The book explores the architecture historical background and real time applications in sectors including urban planning healthcare smart cities and manufacturing Explains digital twin technology including its core principles architecture and how it replicates physical objects in virtual platforms in detail Covers the data types and tools necessary for creating and maintaining digital twins including sensors data processing systems and integration methodologies Explores

technologies such as Computer Vision IoT AI ML 5G AR and VR that drive the functionality and application of digital twins Analyses practical applications in diverse sectors like urban planning smart cities healthcare manufacturing operations and power generation equipment showcasing real world use cases and benefits Examines real time challenges and limitations associated with implementing digital twin technology providing a balanced view of its capabilities and constraints It is a reference book for researchers scholars and students who are working or interested in learning about digital twin technology

Contemporary Strategy Analysis, with eBook Access Code Robert M. Grant, 2024-11-19 THE UPDATED NEW EDITION OF THE CLASSIC STRATEGIC ANALYSIS TEXTBOOK ADDRESSES THE EMERGING CHALLENGES THAT BUSINESSES FACE IN AN INCREASINGLY COMPLEX AND DYNAMIC ENVIRONMENT A market leading title across the world in upper level undergraduate and MBA courses Contemporary Strategy Analysis combines a rigorous approach to business strategy analysis with highly relevant examples of current practice and a rich collection of case studies With a lively narrative style expert strategist and lecturer Robert M Grant introduces students to some of the latest thinking in the strategy field while addressing the strategic issues that business enterprises face today Designed to be accessible for students from different backgrounds with varying levels of experience the twelfth edition of Contemporary Strategy Analysis builds upon its tradition of clarity of exposition emphasis on practicality and concentration on the fundamentals of value creation and appropriation A wide range of contemporary topics are presented alongside fully integrated business models real world examples of business model innovation and practical tools for formulating and implementing business strategies Contemporary Strategy Analysis Twelfth Edition remains the ideal textbook for core strategy courses in Business Studies Management and MBA programs as well as for executive courses on competitive strategy corporate strategy and management consulting skills It is also a valuable resource for managers business owners founders and other professionals who are responsible for the strategic direction of a modern enterprise AN INTERACTIVE MULTIMEDIA LEARNING EXPERIENCE This textbook includes access to an interactive multimedia e text Icons throughout the print book signal corresponding digital content in the e text Videos and Animations Contemporary Strategy Analysis integrates abundant video content developed to complement the text and engage readers more deeply Content Review Videos provide a detailed review of each learning objective in each chapter and help students learn key concepts and an understanding of strategic management Self Tests and Practice Questions The e text also includes self scoring concept check quizzes

**The Business Year: Colombia 2024** , Colombia was expected to grow at a strong rate after bouncing back from the COVID 19 pandemic However the country s GDP only grew 1% during 2023 according to the National Administrative Department of Statistics DANE and during the third quarter of the year it decreased by 0.3% Inflation reached a peak of 13.34% in March 2023 yet had dropped to 8.35% by February 2024 The outlook and general feel of the economy has revolved around uncertainty since the election of Gustavo Petro yet the country has achieved notable milestones of late including the implementation of tax reform progress in energy transition and the re vitalization of

key sectors such as tourism Through this over 100 page publication The Business Year invites you to explore how Colombia s business landscape despite challenges has demonstrated resilience through technology and the application of sustainability focused tools It features interviews with leaders from every major sector of the economy and a range of articles and analysis

**Rational Approaches in Language Science** Matthew W. Crocker, Gerhard Jäger, Gina Kuperberg, Hannah Rohde, Elke Teich, Rory Turnbull, 2022-03-25      **Government Reports Announcements & Index** , 1996-09      **Annales Mycologici** , 1939

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