

**LIFE SCIENCES GRADE 12 - PAPER 2**  
**(Answers from past Assessment Guidelines)**

**MEIOSIS**

**STRUCTURE AND ARRANGEMENT OF CHROMOSOMES IN A NORMAL HUMAN KARYOTYPE**

- Each chromosome comprises two chromatids✓
- held together by a centromere✓
- There are 23 pairs✓/46 chromosomes in
- human somatic cells✓/body cells
- which are arranged into homologous pairs✓
- that are similar in length✓
- carry genes for the same characteristics✓
- have alleles of a particular gene at the same loci✓and
- have the same centromere position✓
- Each somatic cell has 22 pairs/44 autosomes✓and
- a pair/2 gonosomes✓/sex chromosomes/X and Y chromosomes
- Autosomes are arranged in pairs from largest to smallest✓ in a karyotype
- Males have XY chromosomes✓
- Females have XX chromosomes✓
- The X chromosome is larger than the Y chromosome✓

**BEHAVIOUR OF THE CHROMOSOMES DURING THE DIFFERENT PHASES OF MEIOSIS I**

- During prophase✓ I
- chromosomes pair✓ up/homologous pairs /bivalents form
- Crossing over✓/exchange of genetic material occurs
- between chromatids✓/adjacent chromosome pairs
- During metaphase✓ I of meiosis
- homologous chromosomes✓/chromosome pairs are arranged
- at the equator✓ of the cell
- in a random✓ way
- with the chromosome attached to the spindle fibre✓
- During anaphase ✓ I
- chromosome pairs separate✓/chromosomes move to opposite poles
- During telophase ✓ I
- the chromosomes reach the poles of the cell✓

**EVENTS THAT LEAD TO DOWN SYNDROME**

- Non-disjunction occurred✓./A homologous pair of chromosomes
- at position 21✓
- failed to separate✓
- during anaphase✓
- resulting in one gamete with 24 chromosomes✓ / an extra chromosome /
- chromosomes at position 21
- The fertilisation of this gamete with a normal gamete✓/gamete
- with 23 chromosomes /1 chromosome at position 21
- results in a zygote with 47 chromosomes✓
- There are 3 chromosomes✓/an extra chromosome at position 21/ this is Trisomy 21

# Life Sciences Paper 22

**Daniel F McAuley**



## **Life Sciences Paper 22:**

**SET Life Science: Solved Exam Questions** Kailash Choudhary, D. Sondge, R.P. Saran, N. Soni, 2017-12-01 The present book SET Life Science Solved Papers is specially developed for the aspirants of SET Life Sciences Examinations This book includes previous solved papers SET Life Science papers of Maharashtra Andhra Pradesh Karnataka Tamil Nadu Kerala Gujarat and Rajasthan Main objective of this book is to develop confidence among the candidates appearing for SET examination in the field of Life Sciences Both fundamental and practical aspects of the subject have been covered by solved questions This book meets the challenging requirements of CSIR NET GATE IARI BARC and Ph D entrance of various Indian universities Official Gazette of the United States Patent and Trademark Office, 2003

**Gas Dynamics with Applications in Industry and Life Sciences** Mohammad Asadzadeh, Larisa Beilina, Shigeru Takata, 2023-10-30 This proceedings volume gathers selected contributions presented at two instances of the JSPS SAC Seminar On Gas Kinetic Dynamics and Life Science held by the Chalmers University of Technology and University of Gothenburg Sweden on March 25 26 2021 virtual and March 17 18 2022 virtual Works in this book provide a concise approach to the theoretical and numerical analysis of kinetic type equations that arise for example in modeling industrial medical and environmental problems Readers will find some of the most recent theoretical results newly developed numerical methods in the field and some open problems Possible application areas encompass fission fusion energy electromagnetics nuclear science and engineering medical service radiation oncology and plants growth conditions to name a few The JSPS SAC seminars are jointly organized by JSPS Japan Society for the Promotion of Science Stockholm Office and the Department of Mathematical Sciences Chalmers University of Technology University of Gothenburg Sweden These seminars foster discussions on the mathematical theory industrial and life science applications and numerical analysis of non linear hyperbolic partial differential equations modeling collision less plasma and charged particles Chapter 4 is available open access under a Creative Commons Attribution 4 0 International License via link [springer.com](https://www.springer.com) Chapter 11 is available open access under a Creative Commons Attribution 4 0 International License via link [springer.com](https://www.springer.com)

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introduce algorithm design and programming principles address data mining and knowledge discovery as well as applications arising from real projects Chapters are largely independent and often flanked by illustrative examples and practical advise

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## **Table of Contents Life Sciences Paper 22**

1. Understanding the eBook Life Sciences Paper 22
  - The Rise of Digital Reading Life Sciences Paper 22
  - Advantages of eBooks Over Traditional Books
2. Identifying Life Sciences Paper 22
  - 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 Life Sciences Paper 22
  - User-Friendly Interface
4. Exploring eBook Recommendations from Life Sciences Paper 22
  - Personalized Recommendations
  - Life Sciences Paper 22 User Reviews and Ratings
  - Life Sciences Paper 22 and Bestseller Lists
5. Accessing Life Sciences Paper 22 Free and Paid eBooks
  - Life Sciences Paper 22 Public Domain eBooks

- Life Sciences Paper 22 eBook Subscription Services
- Life Sciences Paper 22 Budget-Friendly Options
- 6. Navigating Life Sciences Paper 22 eBook Formats
  - ePub, PDF, MOBI, and More
  - Life Sciences Paper 22 Compatibility with Devices
  - Life Sciences Paper 22 Enhanced eBook Features
- 7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of Life Sciences Paper 22
  - Highlighting and Note-Taking Life Sciences Paper 22
  - Interactive Elements Life Sciences Paper 22
- 8. Staying Engaged with Life Sciences Paper 22
  - Joining Online Reading Communities
  - Participating in Virtual Book Clubs
  - Following Authors and Publishers Life Sciences Paper 22
- 9. Balancing eBooks and Physical Books Life Sciences Paper 22
  - Benefits of a Digital Library
  - Creating a Diverse Reading Collection Life Sciences Paper 22
- 10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
- 11. Cultivating a Reading Routine Life Sciences Paper 22
  - Setting Reading Goals Life Sciences Paper 22
  - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Life Sciences Paper 22
  - Fact-Checking eBook Content of Life Sciences Paper 22
  - 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

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