

**AUGUST 2007**

**NATIONAL CERTIFICATE**

**ENGINEERING SCIENCE N4**

**TIME: 3 HOURS**

**MARKS: 100**

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**INSTRUCTIONS AND INFORMATION**

1. Answer ALL the questions.
  2. Marks indicated are percentages obtainable.
  3. Questions may be answered in any order, but subsections of questions must be kept together.
  4. ALL formulae used must be written out.
  5. Show ALL the intermediate steps.
  6. Questions must be answered in blue or black ink.
  7. ALL the sketches and diagrams must be done in pencil in the answer book.
  8.  $g = 9,8 \text{ m/s}^2$
- 

**QUESTION 1**

- 1.1 Two aeroplanes leave an airport simultaneously. Aeroplane V flies north-west at 130 km/h and aeroplane W flies S 40° W at 175 km/h. Calculate the velocity of aeroplane W relative to the velocity of aeroplane V in magnitude and direction. (5)
- 1.2 A body is projected at such an angle that the horizontal displacement (range) is five times the maximum height reached. The initial velocity is 200 m/s. Calculate the angle of projection. (5)
- 1.3 An aeroplane can fly at 310 km/h in still air. Calculate how long does it take, in hours, to reach an airport 750 km to the south-west if a wind is blowing at 110 km/h from the west. (5)

# Engineering Science N4 Questions Answers

**EW Minium**



## **Engineering Science N4 Questions Answers:**

*IJER Vol 2-N4 International Journal of Educational Reform, 1993-10-01* The mission of the International Journal of Educational Reform IJER is to keep readers up to date with worldwide developments in education reform by providing scholarly information and practical analysis from recognized international authorities As the only peer reviewed scholarly publication that combines authors voices without regard for the political affiliations perspectives or research methodologies IJER provides readers with a balanced view of all sides of the political and educational mainstream To this end IJER includes but is not limited to inquiry based and opinion pieces on developments in such areas as policy administration curriculum instruction law and research IJER should thus be of interest to professional educators with decision making roles and policymakers at all levels turn since it provides a broad based conversation between and among policymakers practitioners and academicians about reform goals objectives and methods for success throughout the world Readers can call on IJER to learn from an international group of reform implementers by discovering what they can do that has actually worked IJER can also help readers to understand the pitfalls of current reforms in order to avoid making similar mistakes Finally it is the mission of IJER to help readers to learn about key issues in school reform from movers and shakers who help to study and shape the power base directing educational reform in the U S and the world

Internal Combustion Engineering: Science & Technology P.M. Weaving, 2012-12-06 Sir Diarmuid Downs CBE FEng FRS Engineering is about designing and making marketable artefacts The element of design is what principally distinguishes engineering from science The engineer is a creator He brings together knowledge and experience from a variety of sources to serve his ends producing goods of value to the individual and to the community An important source of information on which the engineer draws is the work of the scientist or the scientifically minded engineer The pure scientist is concerned with knowledge for its own sake and receives his greatest satisfaction if his experimental observations fit into an aesthetically satisfying theory The applied scientist or engineer is also concerned with theory but as a means to an end He tries to devise a theory which will encompass the known experimental facts both because an all embracing theory somehow serves as an extra validation of the facts and because the theory provides us with new leads to further fruitful experimental investigation I have laboured these perhaps rather obvious points because they are well exemplified in this present book The first internal combustion engines produced just over one hundred years ago were very simple the design being based on very limited experimental information The current engines are extremely complex and while the basic design of cylinder piston connecting rod and crankshaft has changed but little the overall performance in respect of specific power fuel economy pollution noise and cost has been absolutely transformed

Using R for Numerical Analysis in Science and Engineering Victor A. Bloomfield, 2018-09-03 Instead of presenting the standard theoretical treatments that underlie the various numerical methods used by scientists and engineers Using R for Numerical Analysis in Science and Engineering shows how to use R and its add on packages to obtain numerical solutions to

the complex mathematical problems commonly faced by scientists and engineers This practical guide to the capabilities of R demonstrates Monte Carlo stochastic deterministic and other numerical methods through an abundance of worked examples and code covering the solution of systems of linear algebraic equations and nonlinear equations as well as ordinary differential equations and partial differential equations It not only shows how to use R's powerful graphic tools to construct the types of plots most useful in scientific and engineering work but also Explains how to statistically analyze and fit data to linear and nonlinear models Explores numerical differentiation integration and optimization Describes how to find eigenvalues and eigenfunctions Discusses interpolation and curve fitting Considers the analysis of time series Using R for Numerical Analysis in Science and Engineering provides a solid introduction to the most useful numerical methods for scientific and engineering data analysis using R

**Collections Vol 1 N4 Collections**,2005-04-26 Collections A Journal for Museum and Archives Professionals is a multi disciplinary peer reviewed journal dedicated to the discussion of all aspects of handling preserving researching and organizing collections Curators archivists collections managers preparators registrars educators students and others contribute *Knowledge Science, Engineering and Management* Gerard Memmi,Baijian Yang,Linghe Kong,Tianwei Zhang,Meikang Qiu,2022-07-19 The three volume sets constitute the refereed proceedings of the 15th International Conference on Knowledge Science Engineering and Management KSEM 2022 held in Singapore during August 6 8 2022 The 169 full papers presented in these proceedings were carefully reviewed and selected from 498 submissions The papers are organized in the following topical sections Volume I Knowledge Science with Learning and AI KSLA Volume II Knowledge Engineering Research and Applications KERA Volume III Knowledge Management with Optimization and Security KMOS

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**Resources in Education** ,1997 **Linear Operator Theory in Engineering and Science** Arch W. Naylor,George R. Sell,1982 This book is a unique introduction to the theory of linear operators on Hilbert space The authors goal is to present the basic facts of functional analysis in a form suitable for engineers scientists and applied mathematicians Although the Definition Theorem Proof format of mathematics is used careful attention is given to motivation

of the material covered and many illustrative examples are presented First published in 1971 Linear Operator in Engineering and Sciences has since proved to be a popular and very useful textbook *Internal Combustion Engineering: Science & Technology* John H. Weaving, 1990-05-31 Sir Diarmuid Downs CBE FEng FRS Engineering is about designing and making marketable artefacts The element of design is what principally distinguishes engineering from science The engineer is a creator He brings together knowledge and experience from a variety of sources to serve his ends producing goods of value to the individual and to the community An important source of information on which the engineer draws is the work of the scientist or the scientifically minded engineer The pure scientist is concerned with knowledge for its own sake and receives his greatest satisfaction if his experimental observations fit into an aesthetically satisfying theory The applied scientist or engineer is also concerned with theory but as a means to an end He tries to devise a theory which will encompass the known experimental facts both because an all embracing theory somehow serves as an extra validation of the facts and because the theory provides us with new leads to further fruitful experimental investigation I have laboured these perhaps rather obvious points because they are well exemplified in this present book The first internal combustion engines produced just over one hundred years ago were very simple the design being based on very limited experimental information The current engines are extremely complex and while the basic design of cylinder piston connecting rod and crankshaft has changed but little the overall performance in respect of specific power fuel economy pollution noise and cost has been absolutely transformed

**The Popular Science Monthly** ,1919      **Resources in Women's Educational Equity** ,1979      **Managing Technological Change in Architectural Practice** Alfredo Stelzer Andia,1998      Electrical Engineering ,1918      *Popular Science Monthly and World's Advance* ,1916      **GATE Computer Science and Information Technology** Nagpal D.P.,2009 This book has been prepared to meet the requirements of students preparing for GATE examination in Computer Science Engineering discipline as per the prescribed      **Popular Mechanics Magazine** ,1915

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