

Third Semester B.E. Degree Examination, June/July 2016
Basic Thermodynamics

Time: 3 hrs.

Max. Marks: 100

- Note:** 1. Answer FIVE full questions, selecting at least TWO questions from each part.
 2. Use of thermodynamic charts and Tables is permitted.

PART – A

1. a. Distinguish between :
 - i) Macroscopic and Microscopic approaches
 - ii) Diathermic and adiabatic walls
 - iii) Intensive and extensive properties
 - iv) Thermal equilibrium and Mechanical equilibrium
 - v) Quasistatic and actual process
 - vi) Point function and path function. (12 Marks)
- b. The readings t_A and t_B of two Celsius thermometers A and B agree at the ice point (0°C) and steam point (100°C), but else where they are related by the equation $t_A = L + m t_B + m_B^2$ where L , m and n are constants, when both the thermometers are immersed in a well stirred bath, A registers 51°C , whereas B registers 50°C . Determine the reading on B when A registers 25°C . (08 Marks)
2. a. Starting from a common stage point, draw the following process on the PV – plane and derive an expression for the work done in each case
 - i) Isobaric process
 - ii) Isothermal process
 - iii) Polytropic process. (09 Marks)
- b. Distinguish between heat and work in thermodynamics. (04 Marks)
- c. A spherical balloon has an initial diameter of 25cm and contains air at 1.2 bar. Because of heating the diameter of the balloon increases to 30cm and during the heating process the pressure is found to be proportional to the diameter. Calculate the work done during the process. (07 Marks)
3. a. State First Law of Thermodynamics for a process and show that energy is a property of the system. (06 Marks)
- b. Derive the steady flow energy equation for a single stream of fluid entering and a single stream of fluid leaving the control volume. (06 Marks)
- c. The following expression gives the specific heat at constant pressure of a gas that undergoes a non flow constant pressure process $c_p = \left[2.5 + \frac{60}{T + 40} \right] \text{kJ/kg } ^\circ\text{K}$, where T is in $^\circ\text{C}$. The pressure during the process is maintained at 2 bar and the volume changes from 0.3 to $0.56 \text{ m}^3/\text{kg}$. The corresponding change in temperature is from 25°C to 300°C . Determine
 - i) Work done and heat added
 - ii) Change in internal energy and enthalpy. (08 Marks)
4. a. State and prove that Kelvin Planck and clausius statements of second Law of Thermodynamics are equivalent. (12 Marks)
- b. A heat engine working on Carnot cycle absorbs heat from three thermal reservoirs at 1000K, 800K and 600K. The engine does 10kW of network and rejects 400kJ/min of heat to a heat sink at 300K. If the heat supplied by the reservoir at 1000K is 60% of the heat supplied by the reservoir at 600K. Make calculations for the quantity of heat absorbed by each reservoir. (08 Marks)

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AN Whitehead



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The Drifting Stones Anis Bari,Nilay Bipul,2023-02-09 Anis Bari is the author of two acclaimed books Dreams of The Mango People an inspirational book on how ordinary people choose to become extra ordinary and a monograph Decoding Startups which has notes on startups along with useful entrepreneurial frameworks He has received many awards including the most promising entrepreneur of the year award by TiE The Indus Entrepreneur and has been a winner of the European Union Business Challenge Born in Patna Bihar Anis went on to study engineering from PES Institute of Technology Bangalore and an MBA from the Asian Institute of Management Founded by Harvard Business School Ford Foundation Manila He is an International Rated Chess Player and a Global Shaper Alumni of the World Economic Forum Currently he is a Mason Fellow at Harvard Kennedy School

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practical situation in the organizations as well as in daily life

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ENGINEERING MECHANICS M. N. SHESHA PRAKASH, GANESH B. MOGAVEER, 2014-07-30 This book in its third edition continues to focus on the basics of civil engineering and engineering mechanics to provide students with a balanced and cohesive study of the two areas as needed by them in the beginning of their engineering education A basic undergraduate textbook for the first year students of all branches of engineering this book is specifically designed to conform to the syllabus of Visvesvaraya Technological University VTU Imparting the basic knowledge in various facets of civil engineering and the related engineering structures and infrastructure such as buildings roads highways dams and bridges the third edition covers the engineering mechanics portion in eleven chapters Each chapter introduces the concepts to the reader stepwise Providing a wealth of practice examples the book emphasizes the importance of building strong analytical skills Practice problems at the end of each chapter give students an opportunity to absorb concepts and hone their problem solving skills The book comes with a companion CD containing the software developed using MS Excel to work out the problems on Forces Centroid Friction and Moment of Inertia The use of this software will enable the students to understand the concepts in a relatively better way NEW TO THIS EDITION Introduces a chapter on Kinematics as per the revised Civil Engineering syllabus of VTU Updates with the latest examination Question Papers including the one held in the month of December 2013 **A Textbook**

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Basic Electrical Engineering Semester-II (RTM)

Nagpur University B L Theraja, Kiran Manish Kimmatkar, Umesh E. Hiwase & A K Theraja, Basic Electrical Engineering is written exclusively for B Tech Second semester students of various branches as per the revised syllabus of Rashtrasant Tukadoji Maharaj Nagpur University Nagpur RTMNU Nagpur Each of the important topics that help the student in learning the principles of Electrical Engineering more effectively have been included

A Textbook of Electrical Technology - Volume I (Basic Electrical Engineering) BL Theraja, 2005 The primary objective of vol I of A Text Book of Electrical Technology is to provide a comprehensive treatment of topics in Basic Electrical Engineering both for electrical as well as nonelectrical students pursuing their studies in civil mechanical mining textile chemical industrial environmental aerospace electronic and computer engineering both at the Degree and diploma level Based on the suggestions received from our esteemed readers both from India and abroad the scope of the book has been enlarged according to their requirements Almost half the solved examples have been deleted and replaced by latest examination papers set up to 1994 in different engineering collage and technical institutions in India and abroad

Machine Learning Interview Questions Veena A and Gowrishankar S, 2024-05-30 The book aim of Machine Learning interview questions is to determine a candidate's level of knowledge and understanding of Machine Learning concepts algorithms and tools These types of interviews are often used by employers to assess an applicant's problem solving skills and technical proficiency in the field The scope of scope of this book Machine Learning interview questions can range from basic to more complex topics such as the fundamentals of supervised and unsupervised learning working with data sets and libraries building ML models and deploying and monitoring ML systems Additionally the interviewer may ask questions about the candidate's experience with specific Machine Learning frameworks data science techniques and software engineering practices Overall this book helps to assess the candidate's level of knowledge and experience in the field of Machine Learning As such it is important for the interviewer to ask questions that are relevant to the job and the candidate's qualifications as well as to provide a supportive environment where the candidate can demonstrate their skillset

Technology Road Mapping for Quantum Computing and Engineering Mishra, Brojo Kishore, 2022-03-25 Quantum computing is radically different from the conventional approach of transforming bit strings from one set of zeros and ones to another With quantum computing everything changes The physics used to understand bits of information and the devices that manipulate them are vastly different Quantum engineering is a revolutionary approach to quantum technology Technology Road Mapping for Quantum Computing and Engineering explores all the aspects of quantum computing concepts engineering technologies operations and applications from the basics to future advancements Covering topics such as machine learning quantum software technology and technology road mapping this book is an excellent resource for data scientists engineers students and professors of higher education computer scientists researchers and academicians

Aerodynamics 1 Mr. Rohit Manglik, 2023-09-23 Introduces the principles of aerodynamics including airflow lift drag and basic aircraft structures relevant to flight performance

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Television In India N.U. Rani,2006 Contents Rise of Indian Television SITE Satellite Instructional Television Experiment A Learning Experience in Connectivity Through Space in India Growth and Development of Education TV ETV in India Institutions Using Educational Media in India EDUSAT India s First Satellite Dedicated to Education GRAMSAT Village Satellite for Empowerment of Rural People in India Networking Technical Education Technical Education in New Millennium Instructional TV Courses in Canada A Case Study of Convergent Classroom for Adoption in Indian Universities Evaluation of Educational Technology and Media Research Classroom of the New Millennium *Fluid Mechanics* Anup Goel,2021-01-01 Fluid Mechanics is the branch of physics concerned with the mechanics of fluids and forces acting on them It includes unlimited practical applications ranging from microscopic biological systems to automobiles airplanes and spacecraft propulsion Fluid Mechanics is the study of fluid behavior at rest and in motion It also gives information about devices used to measure flow rate pressure and velocity of fluid The book uses plain Lucid language to explain fundamentals of this subject The book provides logical method of explaining various complicated concepts and stepwise methods to explain the important topics Each chapter is well supported with necessary illustrations practical examples and solved problems All the chapters in the book are arranged in a proper sequence that permits each topic to build upon earlier studies All care has been taken to make readers comfortable in understanding the basic concepts of the subject **Advances in IoT and Security with Computational Intelligence** Anurag Mishra,Deepak Gupta,Girija Chetty,2023-09-21 The book is a collection of peer reviewed best selected research papers presented at the International Conference on Advances in IoT and Security with AI ICAISA 2023 organized by Deen Dayal Upadhyaya College University of Delhi New Delhi India in collaboration with University of Canberra Canberra Australia and NIT Arunachal Pradesh Itanagar AP India during March 24 25 2023 The book includes various applications and technologies in this specialized sector of Industry 4 0 The book is divided into two volumes It focuses on recent advances in Internet of Things and security with its applications using artificial intelligence

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