

# MEC402 :: INDUSTRIAL AUTOMATION AND ROBOTICS

Max.Marks: 50

Time Allowed: 01:30 hrs

1. This paper contains 4 questions divided in two parts.
2. All questions are compulsory.
3. The marks assigned to each question are shown at the end of each question in square brackets.
4. Attempt either (a) OR (b) from each question of Part B.
5. Answer all questions in serial order.
6. Do not write anything on the question paper except your registration number at the designated space.

## PART A

- Q1 (a) Where are the ports of a pressure relief valve connected? [2.5 Marks]
- (b) How many positions does a spring centered valve have? [2.5 Marks]

## PART B

Q2 (a) Draw a circuit diagram for a special punching operation using double acting cylinder as ram, which starts punching operation when safety cover is secured and operator pushes the button. Cylinder extends fast and punch a hole and returns back slowly to its initial position. [15 Marks]

OR

- (b) What is a fail safe circuit? Explain with the help of circuit diagram. [15 Marks]

Q3 (a) Explain the basic hydraulic system with neat and clean diagram. [15 Marks]

OR

- (b) What are the advantages and disadvantages of hydraulic systems. [15 Marks]

Q4 (a) Explain how we designate a DC valve with a suitable example. Explain working of a 3/2 direction control valve in hydraulic system with the help of circuit. [15 Marks]

OR

- (b) What do you understand by pneumatic logic valves and check valves? Discuss in detail.

[15 Marks]

# Industrial Robotics Question Paper

**Wilfried Lepuschitz, Munir  
Merdan, Gottfried  
Koppensteiner, Richard Balogh, David  
Obdržálek**

## Industrial Robotics Question Paper:

**Advances in Service and Industrial Robotics** Carlo Ferraresi, Giuseppe Quaglia, 2017-07-24 This volume contains the proceedings of the 26th International Conference on Robotics in Alpe Adria Danube Region RAAD 2017 held at the Polytechnic University of Turin Italy from June 21 23 2017 The conference brought together academic and industrial researchers in robotics from 30 countries the majority of them affiliated to the Alpe Adria Danube Region and their worldwide partners RAAD 2017 covered all major areas of R D and innovation in robotics including the latest research trends The book provides an overview on the advances in service and industrial robotics The topics are presented in a sequence starting from the classical robotic subjects such as kinematics dynamics structures control and ending with the newest topics like human robot interaction and biomedical applications Researchers involved in the robotic field will find this an extraordinary and up to date perspective on the state of the art in this area *Advances in Service and Industrial Robotics*

Tadej Petrič, Aleš Ude, Leon Žlajpah, 2023-05-26 This book presents the proceedings of the 32nd International Conference on Robotics in Alpe Adria Danube Region RAAD held in Bled Slovenia June 14 16 2023 It gathers contributions by researchers from several countries on all major areas of robotic research development and innovation as well as new applications and current trends The topics covered include novel designs and applications of robotic systems intelligent cooperating and service robots advanced robot control human robot interfaces robot vision systems mobile robots humanoid and walking robots bio inspired and swarm robotic systems aerial underwater and spatial robots robots for ambient assisted living medical robots and bionic prostheses cognitive robots cloud robotics ethical and social issues in robotics etc Given its scope the book offers a source of information and inspiration for researchers seeking to improve their work and gather new ideas for future developments *Advances in Service and Industrial Robotics*

Karsten Berns, Daniel Gorges, 2019-05-07 This book presents the proceedings of the 28th International Conference on Robotics in Alpe Adria Danube Region RAAD 2019 held at the Fraunhofer Zentrum and the Technische Universität in Kaiserslautern Germany on 19 21 June 2019 The conference brought together academic researchers in robotics from 20 countries mainly affiliated to the Alpe Adria Danube Region and covered all major areas of robotic research development and innovation as well as new applications and current trends Offering a comprehensive overview of the ongoing research in the field of robotics the book is a source of information and inspiration for researchers wanting to improve their work and gather new ideas for future developments It also provides researchers with an innovative and up to date perspective on the state of the art in this area *Advances in Service and Industrial Robotics*

Nikos A. Aspragathos, Panagiotis N. Koustoumpardis, Vassilis C. Moulanianitis, 2018-09-28 This volume contains the proceedings of the RAAD 2018 conference covering major areas of research and development in robotics It provides an overview on the advances in robotics more specifically in novel design and applications of robotic systems dexterous grasping handling and intelligent manipulation intelligent cooperating and service robots advanced robot control

human robot interfaces robot vision systems and visual serving techniques mobile robots humanoid and walking robots field and agricultural robotics bio inspired and swarm robotic systems developments towards micro and nano scale robots aerial underwater and spatial robots robot integration in holonic manufacturing personal robots for ambient assisted living medical robots and bionic prostheses intelligent information technologies for cognitive robots etc The primary audience of the work are researchers as well as engineers in robotics and mechatronics      Oswaal CBSE Sample Question Papers Class 12

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Sandoval,2021-05-03 This book presents the proceedings of the 30th International Conference on Robotics in Alpe Adria Danube Region RAAD 2021 held in Poitiers France 21 23 June 2021 It gathers contributions by researchers from several countries on all major areas of robotic research development and innovation as well as new applications and current trends The topics covered include novel designs and applications of robotic systems intelligent cooperating and service robots advanced robot control human robot interfaces robot vision systems mobile robots humanoid and walking robots bio inspired and swarm robotic systems aerial underwater and spatial robots robots for ambient assisted living medical robots and bionic prostheses cognitive robots cloud robotics ethical and social issues in robotics etc Given its scope the book offers a source of information and inspiration for researchers seeking to improve their work and gather new ideas for future developments

**Robotics and Artificial Intelligence** Michael Brady,L.A. Gerhardt,H.F. Davidson,2012-12-06 Dr Lester A Gerhardt Professor and Chairman Electrical Computer and Systems Engineering Rensselaer Polytechnic Institute Troy New York 12180 This book is a collection of papers on the subject of Robotics and Artificial Intelligence Most of the papers contained herein were presented as part of the program of the NATO Advanced Study Institute held in June 1983 at Castel vecchio Pascoli Italy on the same subject Attendance at this two week Institute was by invitation only drawing people internationally representing industry government and the academic community worldwide Many of the people in attendance as well as those presenting papers are recognized leaders in the field In addition to the formal paper presentations there were several informal work shops These included a workshop on sensing a workshop on educational methodology in the subject area as examples This book is an outgrowth and direct result of that Institute and includes the papers presented as well as a few others which were stimulated by that meeting A special note is the paper entitled State of the Art and Predictions for Artificial Intelligence and Robotics by Dr R Nagel which appears in the Introduction and Overview chapter of this book This paper was originally developed as part of a study for the United States Army performed by the National Research Council of the National Academy of Science and published as part of a report entitled Applications of Robotics and Artificial Intelligence

to Reduce Risk and Improve Effectiveness by National Academy Press in 1983      Robotics, CAD/CAM Market Place, 1985, 1985      *Advances in Service and Industrial Robotics* Doina Pislă, Giuseppe Carbone, Daniel Condurache, Calin Vaida, 2024-05-10 This book presents the Proceedings of the 33rd International Conference on Robotics in Alpe Adria Danube Region RAAD held in Cluj Napoca Romania June 5 7 2024 It gathers contributions by researchers from multiple countries on all major areas of robotic research development and innovation as well as new applications and current trends The topics include perception and learning medical robotics and biomechanics industrial robots and education kinematics and dynamics motion planning and control service robotics and applications mobile robots and innovative robot design etc Given its scope the book offers a source of information and inspiration for researchers seeking to improve their work and gather new ideas for future developments      *Annals of Scientific Society for Assembly, Handling and Industrial Robotics* Thorsten Schüppstuhl, Kirsten Tracht, Dominik Henrich, 2020-08-21 This Open Access proceedings present a good overview of the current research landscape of industrial robots The objective of MHI Colloquium is a successful networking at academic and management level Thereby the colloquium is focussing on a high level academic exchange to distribute the obtained research results determine synergetic effects and trends connect the actors personally and in conclusion strengthen the research field as well as the MHI community Additionally there is the possibility to become acquainted with the organizing institute Primary audience are members of the scientific association for assembly handling and industrial robots WG MHI      Startups and Robots Cséfalvay Zoltán, 2024-08-16 MCC Centre for Next Technological Futures Studies on Innovation Technologies and Regions Volume 1 As cyberpunk writer William Gibson famously said The future is already here it s just not evenly distributed This ironic statement is particularly relevant when we look at the map of innovation and entrepreneurial ecosystems in Europe where we can easily see deep regional imbalances But while the future of technology is nearly impossible to predict it could be discovered by those companies the startups whose basic working method is trial and error In addition the current deafening hype around artificial intelligence is also reigniting the debate about robots and their impact on our economy and society And these are the main reasons this book is about startups and robots The studies conducted at the Centre for Next Technological Futures Mathias Corvinus Collegium Budapest raise questions such as How does geographic proximity to venture capital affect startups at different stages of development While startups in Europe are concentrated in a handful of large cities what opportunities do smaller cities have that specialise in Industry 4 0 What factors influence the use of industrial robots in different European countries and how does the story of industrial robots differ from the emerging new story of robots in the service sector Incubators and accelerators can increase the chances of survival of startups but are those institutions that only chase a quick return on investment really the most successful CONTRIBUTORS Borb la Brosig Zolt n Cs falvay Csaba Krist f Johany k Viktor L z r Csik B lint P lfai Orsolya Sz kely Zolt n Szombathy M t Ujv rosi      *Modern Problems of Robotics* Arkady Yuschenko, 2021-10-08 This book constitutes the post conference proceedings

of the 2nd International Conference on Modern Problems of Robotics MPoR 2020 held in Moscow Russia in March 2020 The 16 revised full papers were carefully reviewed and selected from 21 submissions The volume includes the following topical sections Collaborative Robotic Systems Robotic Systems Design and Simulation and Robots Control The papers are devoted to the most interesting today s investigations in Robotics such as the problems of the human robot interaction the problems of robot design and simulation and the problems of robot and robotic complexes control

**UPSC 10 YEAR'S MAINS PREVIOUS YEAR QUESTION PAPER** Lovkesh Kumar,2022-09-01 UPSC 10 YEAR S MAINS PREVIOUS YEAR QUESTION PAPER General Studies *Robotics in Education* Wilfried Lepuschitz,Munir Merdan,Gottfried Koppensteiner,Richard Balogh,David Obdržálek,2018-09-01 This proceedings volume comprises the latest achievements in research and development in educational robotics presented at the 9th International Conference on Robotics in Education RiE held in Qawra St Paul s Bay Malta during April 18 20 2018 Researchers and educators will find valuable methodologies and tools for robotics in education that encourage learning in the fields of science technology engineering arts and mathematics STEAM through the design creation and programming of tangible artifacts for creating personally meaningful objects and addressing real world societal needs This also involves the introduction of technologies ranging from robotics platforms to programming environments and languages Extensive evaluation results are presented that highlight the impact of robotics on the students interests and competence development The presented approaches cover the whole educative range from elementary school to the university level in both formal as well as informal settings

**UPSC 10 YEAR'S MAINS TOPIC WISE PREVIOUS YEAR QUESTION PAPER** Lovkesh Kumar,2022-08-08 UPSC 10 YEAR S MAINS TOPIC WISE PREVIOUS YEAR QUESTION PAPER **Social Robots in Social Institutions** R. Hakli,P. Mäkelä,J. Seibt,2023-01-24 Social institutions emerge from social practices which coordinate activities by the explicit statement of rules goals and values When artificial social actors are introduced into the physical and symbolic space of institutions will this affect or transform institutional structures and practices and how can social robotics as an interdisciplinary endeavor contribute to the ability of our institutions to perform their functions in society This book presents the proceedings of Robophilosophy 2022 the 5th in the biennial Robophilosophy conference series held in Helsinki Finland from 16 to 19 August 2022 The theme of this edition of the conference was Social Robots in Social Institutions and it featured international multidisciplinary research from the humanities and social sciences concerning social robotics The 63 papers 41 workshop papers and 5 posters included in this book are divided into 4 sections plenaries sessions workshops and posters with the 41 papers in the Sessions section grouped into 13 subdivisions including elderly care healthcare law education and art as well as ethics and religion These papers explore the anticipated conceptual and practical changes which will come about from the introduction of social robotics into public and private institutions such as public services legal systems social and healthcare services or educational institutions Offering an exploration of the societal significance of social robots for the future of social institutions the book will be of interest to both researchers in

robotics and to those working in social institutions and enterprises      Tax and Robotics Álvaro Falcón Pulido,2023-12-18 We are standing on the threshold of the robotic era the fourth industrial revolution The undeniable impact and consequences of robotics are already raising economic concerns such as the loss of income tax revenue as robots gradually replace human workers as well as legal doubts regarding the possible taxation of robots or their owners Financial law must adapt to this new reality by answering several crucial questions Should robots pay taxes Can they Do they have the ability to pay Can they be considered entrepreneurs for VAT purposes These are just some of the many issues that Dr lvaro Falc n Pulido lucidly and insightfully addresses in this fascinating new monographic work which includes an exhaustive bibliography on the subject

**ASME Technical Papers** ,1985      **Robotics and Well-Being** Maria Isabel Aldinhas Ferreira,João Silva Sequeira,Gurvinder Singh Virk,Mohammad Osman Tokhi,Endre E. Kadar,2019-04-16 This book highlights some of the most pressing safety ethical legal and societal issues related to the diverse contexts in which robotic technologies apply Focusing on the essential concept of well being it addresses topics that are fundamental not only for research but also for industry and end users discussing the challenges in a wide variety of applications including domestic robots autonomous manufacturing personal care robots and drones      Machine Ethics and Robot Ethics Wendell Wallach,Peter Asaro,2020-09-10 Once the stuff of science fiction recent progress in artificial intelligence robotics and machine learning means that these rapidly advancing technologies are finally coming into widespread use within everyday life Such rapid development in these areas also brings with it a host of social political and legal issues as well as a rise in public concern and academic interest in the ethical challenges these new technologies pose This volume is a collection of scholarly work from leading figures in the development of both robot ethics and machine ethics it includes essays of historical significance which have become foundational for research in these two new areas of study as well as important recent articles The research articles selected focus on the control and governance of computational systems the exploration of ethical and moral theories using software and robots as laboratories or simulations inquiry into the necessary requirements for moral agency and the basis and boundaries of rights and questions of how best to design systems that are both useful and morally sound Collectively the articles ask what the practical ethical and legal issues arising from the development of robots will be over the next twenty years and how best to address these future considerations

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