

Annexure-II

The minimum essential qualifications with relevant fields and desirable areas of specialization in the departments which have vacancies for the post of Associate Professor (Level-13A2)

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Sr. No.	Name of Department	Minimum Essential Qualifications	Desirable areas of Specializations
1.	Computer Science & Engineering	B.E./B.Tech. or equivalent in Computer Science & Engineering / Computer Engineering/Information Technology/Computer Technology/Information and Communications Technology/ Artificial Intelligence/ Data Science or any relevant discipline	1. Computer Systems, Architecture & High-Performance Computing: Computer Architecture, Digital Logic, OS, Compiler Design, Algorithms & Complexity, HPC, Parallel/Concurrent Computing, Embedded Systems, Quantum Computing, Theoretical Computer Science
2	Artificial Intelligence (AI)	M.E./M. Tech./MS in Computer Science & Engineering/ Computer Engineering/Information Technology/Computer Technology/Information and Communications Technology/ Artificial Intelligence/ Data Science or any relevant discipline. Ph.D. in any of the areas of specialization or any relevant specialization	2. Computer Networks, Cloud & Distributed Systems: Computer Networks, Distributed Systems, Cloud Computing, DevOps, Edge/Fog Computing, IoT, Cyber-Physical Systems, Drones and related systems, Blockchain and Distributed Ledger Technology 3. Cybersecurity, Software Security & Digital Forensics: System Security, Software Security, ML for Security, Hardware Security, Digital Forensics, IoT Security, Vulnerability Management & Mitigation 4. Software Engineering, Formal Methods & Program Analysis: Software Engineering, Formal Methods, Software Verification, Software Testing, Program Analysis 5. Artificial Intelligence, Machine Learning & Data Science: AI, Applied ML, Data Science, Deep Learning, Intelligent Systems, Robotics, Agent AI, Generative

			AI, Explainable AI, Big Data Analytics, Game Theory, Edge AI, AI for Sustainable Development 6. Computer Vision, Image Processing & Natural Language Processing: Computer Vision, Image Processing, NLP, Multimodal AI, Language Intelligence 7. Human-Computer Interaction & Game Design: HCI, Game Design, Interactive Computing, Cognitive Computing, UI/UX Design, Extended Reality, Smart Systems
3	Electrical Engineering	B.E./B. Tech. or equivalent in Electrical Engineering /Electrical and Electronics Engineering/ Instrumentation and Control Engineering / Power Systems Engineering /Electrical Power Engineering/ Electrical and Instrumentation Engineering/Power Electronics/Electrical Engineering and Industrial Control/Power Electronics and Instrumentation Engineering/ Applied Electronics and Instrumentation M.E./M. Tech. or equivalent in Electrical Engineering/ Power System/Power Electronics and Drives/ Control Systems/ Electric Drives and Control/ Instrumentation and Control/ Electrical- Control and Automation/ Machines and Electrical Drives/ Energy Systems/ Signal Processing and Control/Microprocessor System Applications/Computer Controlled Industrial Power/Systems Engineering or relevant discipline Ph.D. in relevant discipline	• Power Systems • Instrumentation and Control Renewable Energy/Energy Systems Engineering • High Voltage Engineering • Power Electronics • Electrical Control and Automation

4	Electronics Engineering	B.E./B.Tech. or equivalent in Electronics Engineering, Electronics & Communication Engineering M.E./M.Tech. or equivalent in Electronics Engineering/ Electronics & Communication/VLSI & Embedded System Ph.D. in relevant discipline	• RF and VLSI Design • Analog and Digital Mixed-Signal Design • Neuromorphic Computing • Biomedical Image Processing • Embedded Systems and Processor Architecture • Quantum Sensing and Quantum Communication • Unmanned Aerial Systems and Robotics
5	Chemical Engineering	B.E. / B.Tech. in Chemical Engineering / Chemical Technology M.E. / M.Tech. in Chemical Engineering/ Allied Branches Ph. D. in relevant discipline.	• Biochemical Engineering • Chemical System Modelling • Colloids and Interface Science • Computational Modelling • Electrochemical Engineering • Energy Storage • Environmental Engineering • Fluid and Granular Mechanics • Machine Learning and Artificial Intelligence in Chemical Engineering • Nanotechnology • Pharmaceutical Technology • Reaction Engineering • Separation Techniques • Sustainability
6	Civil Engineering	B.E./B.Tech./B.S./B.Plan. /B. Arch. or equivalent in Civil Engineering M.E./M.Tech./M.Plan./M.S. or equivalent in Master of Town and Regional Planning (MTRP) / Planning / Urban Planning / Urban & Rural Planning / Town & Country Planning / Urban and Regional Planning / Regional Planning / Town Planning / City Planning / Construction & Project Management / Construction	• Sustainable Planning • Smart City Planning • Sustainable Infrastructure Planning • Housing • Livable City Planning • Walkable City Planning • Heritage Conservation and Planning • Application of AI – ML in Planning • Application of Geo-informatics in Planning

		Technology and Management / Construction Engineering and Management / Infrastructure Engineering and Management Ph.D. in a relevant discipline of Urban Planning [A specialization in Urban Planning shall only be recognized where the candidate demonstrates documented completion of coursework from recognized universities (earned credits) and peer-reviewed publication(s) in the domain of Urban Planning], or in a relevant discipline of Construction & Project Management or Construction Technology and Management or Construction Engineering and Management or Infrastructure Engineering and Management [A specialization in Construction Technology and Management shall only be recognized where the candidate demonstrates documented completion of coursework from recognized universities (earned credits) and peer-reviewed publication(s) in the domain of Construction Management].	• Climate Resilience Planning • Water Sensitive Planning • Nature-based Planning • Tourism Planning • Eco-sensitive Planning • Construction Technology & Management • Construction Project Management • Project Planning and Control • Construction Economics and Finance • Construction Automation • Construction Quality and Safety Management • Building Information Modelling • Digital Technology • Internet of Things • Robotics • 3D Printing • Equipment management • Resilient and sustainable infrastructure
7	Mechanical Engineering	B.E./B.Tech. or equivalent in Mechanical Engineering/ Production Engineering/ Mechanical & Production Engineering/ Design Engineering/ Industrial Engineering/ Thermal Engineering/ Production & Industrial Engineering/ / Manufacturing Processes and Automation Engineering/ Manufacturing Engineering / Automobile Engineering M.E./M.Tech. or equivalent in Mechanical Engineering /Design/Industrial/Production/	Robotics and Dynamical Systems - Mechatronics - Soft Robotics - Design of Robotic Systems - Nonlinear Dynamics - Autonomous Systems - AI in Robotics Solid Mechanics and Design - Machine Design - Design and Dynamics - CAD/CAM - Vibrations - Fracture Mechanics - Constitutive Modeling of Materials - Contact Mechanics

		Thermal or any other relevant Specialization of Mechanical Engineering / CAD-CAM / Thermal System Design / Manufacturing Engineering / Turbomachines & Propulsion Ph.D. in relevant discipline.	- Damage Mechanics - Advanced Materials and Composites Micro/Nano Mechanics - Micro/Nanoscale Mechanics and Materials - Non-local Elastodynamics - Micro/Nano-Electromechanical Systems (MEMS/NEMS) - Microfluidics - Nano Tribology - Nanotechnology Manufacturing and Industrial Engineering - Advanced Manufacturing Methods - Micro-manufacturing - Additive Manufacturing - Digital Manufacturing / Industry 4.0 - Metal Forming - Laser Surface Engineering - Production Engineering - Manufacturing in Microgravity Thermal and Fluid Engineering - Computational Fluid Dynamics (CFD) - High-Speed Flow - Turbomachines and Jet Propulsion - Bio-heat Transfer - Biofluidics - Geo-physical Fluid Dynamics - Cryogenics - Non-intrusive Experimental Techniques Energy and Combustion - Energy Harvesting and Conversion - Combustion - Sustainable Energy Systems - Hydrogen Economy and Fuel Cells Biomechanics and Bioengineering - Biomechanics - Biomaterials and Tissue
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			Engineering - Bio-inspired Design - Biologically Inspired Materials AI and Optimization - AI Applications in Mechanical Engineering - Machine Learning - Optimization - Operations Research Emerging Areas - Digital Twin Technology - Cyber-Physical Systems - Wearable Technology and Smart Fabrics - Advanced Aerodynamics and Flow Control - Tissue Engineering and Regenerative Medicine - Space Exploration Technologies Other Relevant Areas - Automobile Engineering - Maintenance and Safety Engineering - Welding
8	Physics	Bachelor Degree in Physics or Engineering Physics Master Degree in Physics or equivalent Ph.D. in relevant discipline.	• Quantum Computing/Quantum Communications/ Quantum Sensing/ Quantum Materials • Optics and Photonics • Plasma Physics • Semiconductor Physics and Devices • Electronics • Cosmology, Astrophysics, and Space Science • Condensed Matter Physics • Materials Sciences • Computational Nanoscience

9	Chemistry	B.Sc. (Chemistry as one of the subjects) M.Sc. in Chemistry/Organic / Inorganic / Analytical / Physical Chemistry Ph.D. in the area of chemistry	Chemistry/Organic / Inorganic / Analytical / Physical Chemistry
10	Humanities and Social Sciences	B.A./B.Sc. or equivalent in Psychology/English M.A./M. Sc. or equivalent in Counselling Psychology/English Ph.D.in Counselling Psychology/English	World literature/ Linguistics/ English Language Teaching/ American Literature/ Translation Studies/ Critical Theory/ Counselling Psychology/ Gender Studies/ Indian English Fiction/ Postcolonial Fiction/ Communication Skills / Employability Skills/ Film Studies/