

# **SAVITRIBAI PHULE PUNE UNIVERSITY**

**(Formerly University of Pune)**



**EXAMINATION CIRCULAR NO. 278 OF. 2023**

**BACHELOR OF ENGINEERING (2019 PATTERN)**

**Examination of INSEM AUG./SEPT. -2023**

**(Under Faculty of SCIENCE AND TECHNOLOGY: B)ENGINEERING)**

## **INSTRUCTIONS FOR CANDIDATES**

- Candidates are required to be present at the examination centre, THIRTY MINUTES before the stipulated time.
- Candidates are forbidden from taking any material into the examination hall that can be treated as a malpractice.
- Candidates are requested to see the Notice Board at their center of examination regularly for changes if any that may be notified later in the program.
- No request shall be granted for change in time or date for the University Examination on any ground.
- Candidates are requested to note the Day, Date and Time of Paper.
- Candidates are permitted to use stencils at the time of examination.
- The exchanges of side-rules, drawing instruments of other materials used in the examination hall is not permitted at the time of examination. Candidates must bring their own instruments and will not be allowed to borrow from each other under any circumstances.
- Use of non-programmable battery operated electronic pocket size Calculator is allowed. The exchange of Calculators is not allowed. Electronics Devices including mobile are not allowed at the time of examination.
- The written examination will be conducted in the following order.

## **B.E. (AUTOMOBILE ENGINEERING)**

### **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Automotive Testing and Certification	416481
<b>Tuesday, 05/09/2023</b>	Machine and Vehicle Dynamics	416482
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Artificial Intelligence and Machine Learning	416484 A
	(ELECTIVE - III) Automotive Control Systems	416484 B
	(ELECTIVE - III) Internet of Things**	402044 E
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Finite Elements Analysis	416485 A
	(ELECTIVE - IV) Computational Fluid Dynamics	416485 B

**NOTE: \*\*** COMMON WITH MECHANICAL ENGINEERING

## **B.E. (BIOTECHNOLOGY ENGINEERING)**

### **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Biochemical Engineering	415461
<b>Tuesday, 05/09/2023</b>	Bioinformatics	415462
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Bioprocess Equipment Design	415463 A
	(ELECTIVE - III) Environmental Biotechnology	415463 B
	(ELECTIVE - III) Genomics	415463 C
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Bioenergy and Renewable Resources	415464 A
	(ELECTIVE - IV) Nanotechnology	415464 B
	(ELECTIVE - IV) Stem Cell Biology and Regenerative Medicine	415464 C

# **B.E. (CHEMICAL ENGINEERING)**

## **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Process Dynamics and Control	409341
<b>Tuesday, 05/09/2023</b>	Chemical Reaction Engineering- II	409342
<b>Wednesday, 06/09/2023</b>	Chemical Engineering Design	409343
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Environmental Engineering	409344 A
	(ELECTIVE - III) Membrane Technology	409344 B
	(ELECTIVE - III) Industrial Piping	409344 C
	(ELECTIVE - III) Petroleum Refining	409344 D
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Chemical Process Synthesis	409345 A
	(ELECTIVE - IV) Industrial Management & Entrepreneurship	409345 B
	(ELECTIVE - IV) Green Technology	409345 C
	(ELECTIVE - IV) Advance Separation Processes	409345 D

## **B.E. (CIVIL)**

### **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Foundation Engineering	401001
<b>Tuesday, 05/09/2023</b>	Transportation Engineering	401002
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Coastal Engineering	401003 A
	(ELECTIVE - III) Advanced Design of Concrete Structures <b>(Time – 2.00 p.m to 3.15 p.m.)</b>	401003 B
	(ELECTIVE - III) Integrated Water Resources Planning & Management	401003 C
	(ELECTIVE - III) Finite Element Method	401003 D
	(ELECTIVE - III) Data Analytics	401003 E
	(ELECTIVE - III) Operation Research	401003 F
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Air Pollution and Control	401004 A
	(ELECTIVE - IV) Advanced Design of Steel Structures <b>(Time – 2.00 p.m to 3.15 p.m.)</b>	401004 B
	(ELECTIVE - IV) Statistical Analysis and Computational Method	401004 C
	(ELECTIVE - IV) Airport and Bridge Engineering	401004 D
	(ELECTIVE - IV) Design of Prestressed Concrete Structures <b>(Time – 2.00 p.m to 3.15 p.m.)</b>	401004 E
	(ELECTIVE - IV) Formwork and Plumbing Engineering	401004 F

# **B.E. (COMPUTER ENGINEERING)**

## **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Design and Analysis of Algorithms	410241
<b>Tuesday, 05/09/2023</b>	Machine Learning	410242
<b>Wednesday, 06/09/2023</b>	Block chain Technology	410243
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Pervasive Computing	410244 A
	(ELECTIVE - III) Multimedia Techniques	410244 B
	(ELECTIVE - III) Cyber Security and Digital Forensics	410244 C
	(ELECTIVE - III) Object Oriented Modeling and Design	410244 D
	(ELECTIVE - III) Digital Signal Processing	410244 E
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Information Retrieval	410245 A
	(ELECTIVE - IV) GPU Programming and Architecture	410245 B
	(ELECTIVE - IV) Mobile Computing	410245 C
	(ELECTIVE - IV) Software Testing and Quality Assurance	410245 D
	(ELECTIVE - IV) Compilers	410245 E

# **B.E. (MECHANICAL)**

## **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Heating Ventilation Air-Conditioning and Refrigeration	402041
<b>Tuesday, 05/09/2023</b>	Dynamics of Machinery (Time – 2.00 p.m to 3.15 p.m.)	402042
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Automobile Design	402044 A
	(ELECTIVE - III) Design of Heat Transfer Equipments	402044 B
	(ELECTIVE - III) Modern Machining Processes	402044 C
	(ELECTIVE - III) Industrial Engineering	402044 D
	(ELECTIVE - III) Internet of Things	402044 E
	(ELECTIVE - III) Computational Fluid Dynamics	402044 F
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Product Design and Development	402045 A
	(ELECTIVE - IV) Experimental Methods in Thermal Engineering	402045 B
	(ELECTIVE - IV) Additive Manufacturing	402045 C
	(ELECTIVE - IV) Operations Research	402045 D
	(ELECTIVE - IV) Augmented Reality and Virtual Reality	402045 E

## **B.E. (ELECTRICAL)**

### **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Power System Operation & Control	403141
<b>Tuesday, 05/09/2023</b>	Advanced Control System	403142
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) PLC and SCADA	403143 A
	(ELECTIVE - III) Power Quality Management	403143 B
	(ELECTIVE - III) High Voltage Engineering	403143 C
	(ELECTIVE - III) Robotics and Automation	403143 D
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Alternate Energy System	403144 A
	(ELECTIVE - IV) Electrical & Hybrid Vehicle	403144 B
	(ELECTIVE - IV) Special-purpose Machines	403144 C
	(ELECTIVE - IV) HVDC & FACTS	403144 D



# **B.E. (ELECTRONICS)**

## **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	VLSI Design	404201
<b>Tuesday, 05/09/2023</b>	Advanced Power Electronics	404202
<b>Wednesday, 06/09/2023</b>	Electronic System Design	404203
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Speech Processing *	404184 A
	(ELECTIVE - III) Internet of Things	404204 A
	(ELECTIVE - III) Software Defined Radio	404204 B
	(ELECTIVE - III) Testing and Verification for SOC design	404204 C
	(ELECTIVE - III) Java Script*	404184 C
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Mobile Communication	404205 A
	(ELECTIVE - IV) Embedded Systems	404205 B
	(ELECTIVE - IV) Optimization Techniques	404205 C
	(ELECTIVE - IV) Low power CMOS*	404185 D
	(ELECTIVE - IV) Smart Antennas*	404185 E

**NOTE: \*** COMMON WITH E&TC.

# **B.E. (ELECTRONICS & TELECOMMUNICATIONS)**

## **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Radiation & Microwave Theory	404181
<b>Tuesday, 05/09/2023</b>	VLSI Design and Technology	404182
<b>Wednesday, 06/09/2023</b>	Cloud Computing	404183
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Speech Processing	404184 A
	(ELECTIVE - III) PLC SCADA & Automation	404184 B
	(ELECTIVE - III) JAVA Script	404184 C
	(ELECTIVE - III) Embedded & RTOS	404184 D
	(ELECTIVE - III) Modernized IoT	404184 E
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Data Mining	404185 A
	(ELECTIVE - IV) Electronic Product Development	404185 B
	(ELECTIVE - IV) Deep Learning	404185 C
	(ELECTIVE - IV) Low Power CMOS	404185 D
	(ELECTIVE - IV) Smart Antennas	404185 E

## **B.E. (INFORMATION TECHNOLOGY)**

### **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Information and Storage Retrieval	414441
<b>Tuesday, 05/09/2023</b>	Software Project Management	414442
<b>Wednesday, 06/09/2023</b>	Deep Learning	414443
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Mobile Computing	414444 A
	(ELECTIVE - III) High Performance Computing	414444 B
	(ELECTIVE - III) Multimedia Technology	414444 C
	(ELECTIVE - III) Smart Computing	414444 D
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Bioinformatics	414445 A
	(ELECTIVE - IV) Introduction to DevOps	414445 B
	(ELECTIVE - IV) Computer Vision	414445 C
	(ELECTIVE - IV) Wireless Communications	414445 D

## **B.E. INSTRUMENTATION & CONTROL**

### **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Process Control Techniques	406261
<b>Tuesday, 05/09/2023</b>	Project Engineering and Management	406262
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Digital Image Processing	406263 A
	(ELECTIVE - III) Data Analytics	406263 B
	(ELECTIVE - III) Wireless Sensor Networks	406263 C
	(ELECTIVE - III) Process Modelling and Optimization	406263 D
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Cloud Computing	406264 A
	(ELECTIVE - IV) Soft Computing	406264 B
	(ELECTIVE - IV) Automotive Instrumentation	406264 C
	(ELECTIVE - IV) Advanced Control System	406264 D

## **B.E. PRINTING TECHNOLOGY**

### **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Gravure Printing Techniques	408283
<b>Tuesday, 05/09/2023</b>	Digital Printing Techniques	408284
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Paper Board and Corrugation Package Technology	408281 A
	(ELECTIVE - III) Polymer Science	408281 B
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Multimedia Advertising	408282 A
	(ELECTIVE - IV) Process Optimization and Total Quality Management in Printing	408282 B

## **B.E. PRODUCTION ENGINEERING**

### **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Automation and Control Engineering	411081
<b>Tuesday, 05/09/2023</b>	Operations Research	411082
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Simulation, Modeling and Digital Twin	411083 A
	(ELECTIVE - III) Total Quality management	411083 B
	(ELECTIVE - III) Artificial Intelligence in Manufacturing	411083 C
	(ELECTIVE - III) World Class Manufacturing	411083 D
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Plant Maintenance and industrial safety	411084 A
	(ELECTIVE - IV) Surface Engineering	411084 B
	(ELECTIVE - IV) Reverse Engineering	411084 C
	(ELECTIVE - IV) Entrepreneurship and Innovations	411084 D

## **B.E. PRODUCTION SANDWICH ENGINEERING**

### **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Manufacturing Automation	411121
<b>Tuesday, 05/09/2023</b>	Operations Research	411122
<b>Thursday, 07/09/2023</b>	(ELECTIVE - III) Additive Manufacturing	411123 A
	(ELECTIVE - III) Industrial Robotics	411123 B
	(ELECTIVE - III) Reliability Engineering	411123 C
	(ELECTIVE - III) Micro-Electro mechanical systems	411123 D
<b>Friday, 08/09/2023</b>	(ELECTIVE - IV) Creative Product Design	411124 A
	(ELECTIVE - IV) Mechatronics	411124 B
	(ELECTIVE - IV) CAD/CAM	411124 C
	(ELECTIVE - IV) Data analytics	411124 D

## **B.E. ROBOTICS & AUTOMATION**

### **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Machine Vision System	411501
<b>Tuesday, 05/09/2023</b>	Robot System Reliability and Safety	411502
<b>Thursday, 07/09/2023</b>	(Elective -III) Advanced Computational Techniques	411503 A
	(Elective -III) Wireless sensor network	411503 B
	(Elective -III) Microprocessor and microcontroller	411503 C
	(Elective -III) Ergonomics and work management	411503 D
<b>Friday, 08/09/2023</b>	(Elective -IV) Computational Fluid Dynamics	411504 A
	(Elective -IV) Internet of Things and Machine Learning	411504 B
	(Elective -IV) Artificial Neural Networks and fuzzy systems	411504 C
	(Elective -IV) Power Electronics and Drives	411504 D



# B.E. ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

## SEMESTER-VII

Time – 2.00 p.m to 3.00 p.m.

Day & Date	SUBJECT (2019 Course)	SUBJECT CODE
Monday, 04/09/2023	Information Retrieval in AI	418541
Tuesday, 05/09/2023	Cloud Computing	418542
Wednesday, 06/09/2023	Deep Learning for AI	418543
Thursday, 07/09/2023	(Elective -III) Quantum Computing	418544 A
	(Elective -III) Block Chain	418544 B
	(Elective -III) AI in Drones	418544 C
Friday, 08/09/2023	(Elective -IV) Ethical Hacking and cyber forensics	418545 A
	(Elective -IV) Augmented Reality and Virtual Reality	418545 B
	(Elective -IV) DevOps in Machine Learning	418545 C

## **B.E. AUTOMATION & ROBOTICS**

### **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Industrial Automation & Control Systems	402541
<b>Tuesday, 05/09/2023</b>	Robotic Process Automation & Development	402542
<b>Wednesday, 06/09/2023</b>	Artificial Neural Networks and Deep Learning	402543
<b>Thursday, 07/09/2023</b>	(Elective -III) Robotics: Cognitive & Medical	402544 A
	(Elective -III) Microprocessors and Microcontrollers	402544 B
	(Elective -III) Modern Machining Processes	402544 C
	(Elective -III) Industrial Engineering	402544 D
	(Elective -III) Computational Fluid Dynamics	402544 E
<b>Friday, 08/09/2023</b>	(Elective -IV) Lean Manufacturing	402545 A
	(Elective -IV) Project Management	402545 B
	(Elective -IV) Additive Manufacturing	402545 C
	(Elective -IV) Operations Research	402545 D
	(Elective -IV) Augmented Reality and Virtual Reality	402545 E

# **B.E. ELECTRONICS AND COMPUTER ENGINEERING**

## **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Data Science and Visualization	410341
<b>Tuesday, 05/09/2023</b>	Web Technology	410342
<b>Wednesday, 06/09/2023</b>	Internet of Things	410343
<b>Thursday, 07/09/2023</b>	(Elective -III) Big Data & Analytics	410344 A
	(Elective -III) Mobile Application Development	410344 B
	(Elective -III) Information and Cyber Security	410344 C
	(Elective -III) Digital Image Processing	410344 D
<b>Friday, 08/09/2023</b>	(Elective -IV) Robotics & Automation	410345 A
	(Elective -IV) Human Computer Interface	410345 B
	(Elective -IV) Digital System Design	410345 C
	(Elective -IV) Augmented and Virtual Reality	410345 D

# B.E. B.E. ARTIFICIAL INTELLIGENCE & DATA SCIENCE

## SEMESTER-VII

Time – 2.00 p.m to 3.00 p.m.

Day & Date	SUBJECT (2019 Course)	SUBJECT CODE
Monday, 04/09/2023	Machine Learning	417521
Tuesday, 05/09/2023	Data Modeling & Visualization	417522
Thursday, 07/09/2023	(Elective -III) Quantum Artificial Intelligence	417523 A
	(Elective -III) Industrial Internet of Things	417523 B
	(Elective -III) Enterprise Architecture and Components	417523 C
	(Elective -III) Bioinformatics	417523 D
Friday, 08/09/2023	(Elective -IV) GPU Programming and Architecture	417524 A
	(Elective -IV) Information Retrieval	417524 B
	(Elective -IV) UI/UX Design	417524 C
	(Elective -IV) Optimization Algorithms	417524 D

# **B.E. MECHATRONICS**

## **SEMESTER-VII**

**Time – 2.00 p.m to 3.00 p.m.**

<b>Day &amp; Date</b>	<b>SUBJECT (2019 Course)</b>	<b>SUBJECT CODE</b>
<b>Monday, 04/09/2023</b>	Robot Operating System	417541
<b>Tuesday, 05/09/2023</b>	Data Communication	417542
<b>Wednesday, 06/09/2023</b>	Micro Electro Mechanical Systems	417543
<b>Thursday, 07/09/2023</b>	(Elective -III) Image Processing and Computer Vision	417544- A
	(Elective -III) Medical Mechatronics	417544- B
	(Elective -III) Virtual Instrumentation	417544- C
<b>Friday, 08/09/2023</b>	(Elective -IV) Product Design and Development	417545- A
	(Elective -IV) Operation Research	417545- B
	(Elective -IV) Industry 4.0	417545- C

## B.E. HONORS / MINORS

### SEMESTER-VII

Time – 2.00 p.m to 3.00 p.m.

Day & Date	SUBJECT (2019 Course)	SUBJECT CODE
<b>Saturday, 09/09/2023</b>	Traffic and Transportation Planning	401401
	Work Method Statement Making	401301
	Sustainable Packaging	408214
	Smart Contracts & Cryptocurrency	404181
	Industrial Robotics & Automation	404181
	Additive Manufacturing System Design	402014
	Modelling and Simulation of EHV	402034
	Electrical Energy Systems	402024
	System modelling and simulation	402044
	Machine Learning	410301
	Internet of Things and Embedded Security	410401
	Machine Learning and Data Science	410501
	Machine Learning for Internet of Things	410601
	Virtual Reality in Game Development	410701

Ganeshkhind, Pune-411007  
Ref. / XCT / 880  
Date: 22/08/2023

Director  
Board of Examinations & Evaluation