Faculty of Science and Technology
R.T.M. Nagpur University, Nagpur
Syllabus for B.E. First Semester
Mathematics – I
Total Credits : 04 ; Subject Code : BES1-1

Teaching Scheme
Lectures : 3 Hours / Week
Tutorial : 1 Hour / Week

Examination Scheme
Theory T(U) : 70 Marks T(I) : 30 Marks
Duration Of University Exam : 03 Hours

Unit 1: Differential Calculus (8 Hours) **10 Marks**
Successive differentiation: Leibnitz's Rule,Taylor's and Maclaurin's series for function of one variable, Indeterminate forms and L'Hospital's Rule, Maxima and Minima for function of one variable.

Unit 2: Multivariable Calculus (Differentiation) (12 Hours) **18 Marks**
Functions of several variables, First and Higher order partial derivatives, Euler's theorem, Chain rule and Total differential coefficient, Jacobians, Taylor's and Maclaurin's series for function of two variables, Maxima and Minima for function of two variables, Lagrange's method of undetermined multipliers.

Unit 3: Matrices (8 Hours) **12 Marks**
Inverse of a matrix by Partitioning method, Rank of a matrix, Consistency of linear system of non-homogeneous equations, Homogeneous system of Linear equations, Symmetric, Skew-symmetric and Orthogonal matrices, Linear and Orthogonal transformations, Cayley-Hamilton theorem.

Unit 4: First Order Ordinary Differential Equations: (8 Hours) **12 Marks**
Exact differential equations (excluding the cases of integrating factors), Linear and Bernoulli's equation, Equations of first order and higher degree: Solvable for p, Solvable for y, Solvable for x and Clairaut's type, Application of first order differential equation to simple electrical circuits.

Unit 5: Higher Order Ordinary Differential Equations-I: (8 Hours) **12 Marks**
Higher order ordinary linear differential equations with constant coefficients, Method of variation of parameters, Cauchy's and Legendre's homogeneous differential equations.

Unit 6: Higher Order Ordinary Differential Equations-II: (4 Hours) **6 Marks**
Simultaneous differential equations, Equations of the type $d^2y/dx^2=f(x)$ and $d^2y/dx^2=f(y)$, Applications of higher order differential equations to simple electrical circuits.

Text/Reference Books:

(i) Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.

(ii) Ramana B.V., Higher Engineering Mathematics, Tata Mc-Graw Hill, New Delhi, 11th Reprint, 2010.

(iii) N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.

(iv) B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.

(v) P. N. Wartikar and J. N. Wartikar, Applied Mathematics, Volume I and II.

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B.E. Semester II
Advanced Engineering Materials (Total Credits 3)
Subject Code: BSE2 – 2T

Teaching Scheme

Lectures: 2 Hours/Week Theory,

Tutorial: 1 Hours/week

Activity: 1 Hours/ week

Examination Scheme

T(U): 70 Marks T(I): 30 Marks

Duration of University Exam: 3 Hours

Unit - 1: Band theory of solids (6 Hrs) 12 Marks

Basic idea of free electron theory of metals, expression of conductivity of a metal.

Formation of energy bands in Solids, Fermi energy and Fermi level.

Classification of solids on the basis of energy band diagram: Conductors, Semiconductors and Insulators, concept of Fermi energy.

Unit-2: Semiconductor Devices (6 Hrs) 12 Marks

Types of Semiconductor diode and their applications, P-N junction Diode: Characteristics of P-N junction Diode, Tunnel Diode, Zener Diode, LED, Photodiode.

Transistors (CB and CE mode) and its application as an amplifier. Hall effect, Hall voltage and Hall coefficient; its applications,

Unit 3: Magnetic Materials (6 Hrs) 11 Marks

Diamagnetic, Paramagnetic, Ferromagnetic, Ferri-magnetic and anti ferromagnetic materials: Explanation on the basis of domain.

Hysteresis curve, Characteristics of ferromagnetic, diamagnetic and paramagnetic materials and their applications.

Dr M. N. Giriya

(A. R. Bhardwaj) (Sajid Ansari) (B. R. Chide)

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Unit 4: Superconductors (6 Hrs) 12 Marks

Basics of superconductivity: Zero electrical resistance, Persistent current Effect of Temperature, Effect of Magnetic Field, Critical Current; The Meissner Effect.

Type-I and type-II superconductors, London Equation: The penetration depth, Bardeen-Cooper-Schrieffer (BCS) theory.

Unit 5: Lasers (6 Hrs) 12 Marks

Quantum Transitions: Absorption, Spontaneous emission & stimulated Emission, Metastable states, Principle of laser, Laser characteristics, Coherence length and coherence time, Pumping schemes: Three level and Four level.

Optical Resonator, Construction & working of Ruby laser and He-Ne laser, Applications of laser.

Unit 6: Nanoscience and Nanomaterials (6 Hrs) 11 Marks

Introduction to Nanoscience, Classification of nano materials, Types of Synthesis of Nanomaterials, Comparison of properties of nanomaterials with bulk materials,

Some special nanomaterials: 1) Zeolites, 2) Graphine, Application of nanomaterials in engineering.

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Course Outcomes

Students will be able to

CO1. Apply the basic concepts of electrical conductivity and band theory to classify solids into conductors, semiconductors and insulators

CO2. Recall the basic ideas of semiconductor physics and relate them to devices such as diodes and transistors and their applications in engineering

CO3. Recall the basic concepts in magnetism and make use of them to classify magnetic materials in different types and to relate to their engineering applications

CO4. Relate basic ideas of electrical conduction and magnetism to superconductors and apply them to classify superconductors in different types

CO5. Find how to extend the basic concepts of quantum transitions to explain the characteristics, working and applications of different lasers and to solve relevant numerical problems

CO6. Make us of quantum concepts to explain the properties and applications of different nanomaterials

List of Activities

Unit-1: Band Theory of Solids

1. Study of band gap of various semiconducting materials.
2. Variation of Fermi energy with respect to various parameters.
3. Identification of N-type & P-type semiconductor on virtual lab.

Unit-2: Semiconductor device

1. Testing of resistor, transistor, diode, capacitor with the help of multimeter / CRO.
2. Cut-in-voltages of various LEDs.

Unit-3: Magnetic Materials

1. Study of lines of force using bar magnet & iron fillings.
2. Maglev train.

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Unit-4: Superconductors

1. History of superconductivity.
2. Study of application of superconductor.

Unit-5: Lasers

1. Measure the divergence of various sources of light such as torch, laser, tubelight, etc.
2. Understanding the phenomenon of stimulated emission, absorption & stimulated emission.
3. Laser applications in day to day life.
4. Holography.

Unit-6: Nanoscience & Nano materials

1. Discovery of nano materials
2. Applications of nano materials.

Note : Performance of at least one activity from each unit is compulsory in a semester.

Modes of Conducting/ Performing the activities

1. Quiz
2. Demonstration
3. Seminar
4. Group discussion
5. Assignment
6. Study of business model
7. Case study
8. Model making
9. Industry/research lab visit
10. Technical or research paper writing (for conference)
11. PPT making (Power Point Presentation)
12. Mini project

Dr. M.V. Giriya

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Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

VI Semester B.E. (Mechanical Engineering)

Subject Code	Subject	Teaching Scheme				Examination Scheme								
		Hours per week				Theory					Practical			
		L	T	P	No. of Credits	Duration of Paper (Hrs.)	Max. Marks University Assessment	Max. Marks College Assessment	Total Marks	Min. Passing Marks	Max. Marks University Assessment	Max. Marks College Assesment	Total Marks	Min. Passing Marks
BEME601T	Energy Conversion- I	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME602T	Control Systems Engineering	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME603T	Operations Research	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME604T	Mechatronics	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME604P	Mechatronics	-	-	02	01	-	-	-	-	-	25	25	50	25
BEME605T	Dynamics of Machines	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME605P	Dynamics of Machines	-	-	02	01	-	-	-	-	-	25	25	50	25
BEME606T	Functional English	02	-	-	02	02	40	10	50	20	-	-	-	-
BEME607P	Computer Applications - II	-	02	02	04	-	-	-	-	-	50	50	100	50
BEME608P	Industrial Case Study	-	-	02	02	-	-	-	-	-	-	50	50	25
Total		**17**	**07**	**08**	-	-	**440**	**110**	**550**	-	**100**	**150**	**250**	-
Semester Total		**32**			**30**	**800 Marks**								

Functional English (BEME606T) subject pertains to Board of Studies in Applied Sciences & Humanities and all the remaining subjects pertain to the Board of Studies in Mechanical Engineering. Mechatronics (BEME604T/P) subject can also be taught by a teacher from Electronics/Instrumentation/Mechatronics/relevant disciplines.

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Annexure - B

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

VII Semester B.E. (Mechanical Engineering)

Subject Code	Subject	Teaching Scheme				Examination Scheme								
		Hours per week			No. of Credits	Theory					Practical			
		L	T	P		Duration of Paper (Hrs.)	Max. Marks University Assessment	Max. Marks College Assessment	Total Marks	Min. Passing Marks	Max. Marks University Assessment	Max. Marks College Assesment	Total Marks	Min. Passing Marks
BEME701T	Industrial Engineering	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME702T	Elective-I	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME703T	Computer Aided Design	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME703P	Computer Aided Design	-	-	02	01	-	-	-	-	-	25	25	50	25
BEME704T	Energy Conversion - II	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME704P	Energy Conversion - II	-	-	02	01	-	-	-	-	-	25	25	50	25
BEME705T	Design of Mechanical Drives	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME705P	Design of Mechanical Drives	-	-	02	01	-	-	-	-	-	25	25	50	25
BEME706P	Project Seminar	-	-	03	03	-	-	-	-	-	-	50	50	25
Total		**15**	**05**	**09**	-	-	**400**	**100**	**500**	-	**75**	**125**	**200**	-
Semester Total		**29**			**26**	**700 Marks**								

Elective – I (BEME702T):

BEME702T1: Industrial Robotics
BEME702T2: Tool Design
BEME702T3: Automobile Engineering
BEME702T4: Power Plant Engineering
BEME702T5: Synthesis of Mechanisms
BEME702T6: Material Handling System

All subjects pertains to Board of Studies in Mechanical Engineering.

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Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

VIII Semester B.E. (Mechanical Engineering)

Subject Code	Subject	Teaching Scheme				Examination Scheme								
		Hours per week			No. of Credits	Theory					Practical			
		L	T	P		Duration of Paper (Hrs.)	Max. Marks University Assessment	Max. Marks College Assessment	Total Marks	Min. Passing Marks	Max. Marks University Assessment	Max. Marks College Assesment	Total Marks	Min. Passing Marks
BEME801T	Industrial Management	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME802T	Elective – II	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME802P	Elective – II	-	-	02	01	-	-	-	-	-	25	25	50	25
BEME803T	Elective - III	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME804T	Automation in Production	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME804P	Automation in Production	-	-	02	01	-	-	-	-	-	25	25	50	25
BEME805T	Energy Conversion - III	03	01	-	04	03	80	20	100	40	-	-	-	-
BEME805P	Energy Conversion - III	-	-	02	01	-	-	-	-	-	25	25	50	25
BEME806P	Project	-	-	06	06	-	-	-	-	-	75	75	150	75
Total		**15**	**05**	**12**		**-**	**400**	**100**	**500**	**-**	**150**	**150**	**300**	-
Semester Total		**32**			**29**	**800 Marks**								

Elective – II (BEME802T, BEME802P):

BEME802T1/P1: Finite Element Method
BEME802T2/P2: Computer Integrated Manufacturing
BEME802T3/P3: Industrial Fluid Power
BEME802T4/P4: Management Information Systems
BEME802T5/P5: Refrigeration & Air-Conditioning
BEME802T6/P6: Stress Analysis

Elective – III (BEME803T):

BEME803T1: Advanced Manufacturing Techniques
BEME803T2: Machine Tool Design
BEME803T3: Renewable Energy Systems
BEME803T4: Mechanical Vibrations
BEME803T5: Advance I.C. Engine
BEME803T6: Tribology

All subjects pertains to Board of Studies in Mechanical Engineering.

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RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
B.E. (Electrical Engineering)
SCHEME OF EXAMINATION

SIXTH SEMESTER

S.N.	Sub Code	Subject	Board	Teaching Scheme				Credits	Examination Scheme			Min. Passing Marks	Paper Duration
				L	T	P	Total		College Assessment	Univ. Assessment	Total Marks		
1	BEELE601T	POWER STATION PRACTICE	EE	3	1	0	4	4	20	80	100	40	3 Hours
2	BEELE602T	ENGINEERING ECONOMICS & INDUSTRIAL MANAGEMENT	ASH	3	1	0	4	4	20	80	100	40	3 Hours
3	BEELE603T	ELECTRICAL DRIVES & THEIR CONTROL	EE	4	1	0	5	5	20	80	100	40	3 Hours
4	BEELE604T	POWER ELECTRONICS	EE	4	1	0	5	5	20	80	100	40	3 Hours
5	BEELE604P	POWER ELECTRONICS	EE	0	0	2	2	1	25	25	50	25	
6	BEELE605T	CONTROL SYSTEM-I	EE	4	1	0	5	5	20	80	100	40	3 Hours
7	BEELE605P	CONTROL SYSTEM-I	EE	0	0	2	2	1	25	25	50	25	
8	BEELE606P	INDUSTRIAL VISITS & REPORT WRITING	EE	0	0	2	2	2	50	0	50	25	
9	BEELE607T	FUNCTIONAL ENGLISH	ASH	2	0	0	2	2	10	40	50	20	2 Hours
		Total		20	5	6	31	29			700		

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B.E. (Electrical Engineering)
SCHEME OF EXAMINATION

SEVENTH SEMESTER

S.N.	Sub Code	Subject	Board	Teaching Scheme				Credits	Examination Scheme			Min. Passing Marks	Paper Duration
				L	T	P	Total		College Assessment	Univ. Assessment	Total Marks		
1	BEELE701T	CONTROL SYSTEM-II	EE	4	1	0	5	5	20	80	100	40	3 Hours
2	BEELE702T	ELECTRICAL POWER SYSTEM –II	EE	4	1	0	5	5	20	80	100	40	3 Hours
3	BEELE703T	ELECTIVE –I	EE	3	1	0	4	4	20	80	100	40	3 Hours
4	BEELE704T	HIGH VOLTAGE ENGINEERING	EE	4	1	0	5	5	20	80	100	40	3 Hours
5	BEELE704P	HIGH VOLTAGE ENGINEERING	EE	0	0	2	2	1	25	25	50	25	
6	BEELE705T	ELECTRICAL INSTALLATION DESIGN	EE	4	1	0	5	5	20	80	100	40	3 Hours
7	BEELE705P	ELECTRICAL INSTALLATION DESIGN	EE	0	0	2	2	2	25	25	50	25	
8	BEELE706P	PROJECT SEMINAR	EE	0	0	3	3	3	50	0	50	25	
		Total		19	5	7	31	30			650		

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B.E. (Electrical Engineering)
SCHEME OF EXAMINATION

EIGHTH SEMESTER

S.N.	Sub Code	Subject	Board	Teaching Scheme				Credits	Examination Scheme			Min. Passing Marks	Paper Duration
				L	T	P	Total		College	Univ.	Total		
1	BEELE801T	ELECTIVE- II	EE	3	1	0	4	4	20	80	100	40	3 Hours
2	BEELE802T	ELECTIVE- III	EE	3	1	0	4	4	20	80	100	40	3 Hours
3	BEELE803T	SWITCHGEAR & PROTECTION	EE	4	1	0	5	5	20	80	100	40	3 Hours
	BEELE803P	SWITCHGEAR & PROTECTION	EE	0	0	2	2	1	25	25	50	25	
4	BEELE804T	COMPUTER APPLICATIONS IN POWER SYSTEM	EE	4	1	0	5	5	20	80	100	40	3 Hours
	BEELE804P	COMPUTER APPLICATIONS IN POWER SYSTEM	EE	0	0	2	2	1	25	25	50	25	
5	BEELE805P	PROJECT	EE	0	0	6	6	6	75	75	150	75	
		Total		14	4	10	28	26			650		

BEELE606P	INDUSTRIAL VISITS & REPORT WRITING	L = 0	T = 0	P = 2	Credits = 2
Examination Scheme	College Assessment	University Examination		Total	Univ. Exam. Duration
	50	0		50	

Expected work from each student in this practical :-

1) Power point presentation on visited industry

2) Report must contain:-

Single line diagram of the establishment

Electrical Installations available in the establishment

List of Loads available with ratings of equipments

Types of load (continuous, intermittent etc.)

Analysis of Energy Bill

Any problems identified / discussed

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FOUR YEAR BACHELOR OF ENGINEERING (B.E.) DEGREE COURSE
SEMESTER: SIXTH (C.B.S.)
BRANCH: COMPUTER SCIENCE & ENGINEERING

Sr. No.	Subject	Workload				Credit				Marks				
										Theory		Practical		Total
		L	P	T	Total	L	P	T	Total	Sess.	Univ.	Sess.	Uni	Marks
1 BECSE306T	Artificial Intelligence	4	-	1	5	4	-	1	5	20	80	-	-	100
2 BECSE307T	Design Patterns	4	-	1	5	4	-	1	5	20	80	-	-	100
3 BECSE307P	Design Patterns lab	-	2	-	2	-	1	-	1	-	-	25	25	50
4 BECSE308T	Software Engineering & Project Management	4	-	1	5	4	-	1	5	20	80	-	-	100
5 BECSE309T	Computer Networks	4	-	1	5	4	-	1	5	20	80	-	-	100
6 BECSE309P	Computer Networks Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
7 BECSE310T	Functional English	2	-	1	3	2	-	1	3	10	40	-	-	50
8 BECSE311P	Mini Project	-	2	-	2	-	2	-	2	-	-	25	25	50
	Total	18	6	5	29	18	4	5	27	90	360	75	75	600

FOUR YEAR BACHELOR OF ENGINEERING (B.E.) DEGREE COURSE
SEMESTER: SEVENTH (C.B.S.)
BRANCH: COMPUTER SCIENCE & ENGINEERING

Sr. No.	Subject	Workload				Credit				Marks				
										Theory		Practical		Total
		L	P	T	Total	L	P	T	Total	Sess.	Univ.	Sess.	Uni.	Marks
1 BECSE401T	Data Warehousing & Mining	4	-	1	5	4	-	1	5	20	80	-	-	100
2 BECSE401P	Data Warehousing & Mining Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
3 BECSE402T	Language Processor	4	-	1	5	4	-	1	5	20	80	-	-	100
4 BECSE402P	Language Processor Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
5 BECSE403T	ELECTIVE-I	4	-	1	5	4	-	1	5	20	80	-	-	100
6 BECSE404T	ELECTIVE-II	4	-	1	5	4	-	1	5	20	80	-	-	100
7 BECSE405P	Project and Seminar	-	3	-	3	-	3	-	3	-	-	25	25	50
	Total	16	7	4	27	16	5	4	25	80	320	75	75	550

Elective I: TCP and IP, Advanced Computer Architecture, Big Data Analysis & Business Intelligence, Parallel and Network Algorithm.

Elective II: Computational Geometry, Mobile Computing, Real Time Operating System, Software Architecture, Mainframe Technologies.

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FOUR YEAR BACHELOR OF ENGINEERING (B.E.) DEGREE COURSE

SEMESTER: EIGHTH (C.B.S.)

BRANCH: COMPUTER SCIENCE & ENGINEERING

Sr. No.	Subject	Workload				Credit				Marks				
										Theory		Practical		Total
		L	P	T	Total	L	P	T	Total	Sess.	Univ.	Sess.	Uni.	Marks
1 BECSE406T	Distributed Operating system	4	-	1	5	4	-	1	5	20	80	-	-	100
2 BECSE406P	Distributed Operating system Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
3 BECSE407T	Information & Cyber Security	4	-	1	5	4	-	1	5	20	80	-	-	100
4 BECSE407P	Information & Cyber Security Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
5 BECSE408T	ELECTIVE-III	4	-	1	5	4	-	1	5	20	80	-	-	100
6 BECSE409T	ELECTIVE-IV	4	-	1	5	4	-	1	5	20	80	-	-	100
7 BECSE410P	Project & Seminar	-	5	-	5	-	5	-	5	-	-	75	75	150
	Total	**16**	**9**	**4**	**29**	**16**	**7**	**4**	**27**	**80**	**320**	**125**	**125**	**650**

Elective III: Pattern Recognition, Soft Computing Techniques, Optimization Techniques, Clustering & Cloud Computing.

Elective IV: Advance Wireless Sensor Network, Digital Image Processing, Natural Language Processing, Digital Forensic.

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PROPOSED SCHEME OF EXAMINATION FOR

SIXTH SEMESTER BACHELOR OF ENGINEERING

(ELECTRONICS & COMMUNICATION/ELECTRONICS & TELECOMMUNICATION ENGINEERING)

Sub Code	Board	SUBJECT	Work Load				Credit				Marks				
											Theory		Practical		
			L	P	T	Total	L	P	T	Total	Internal	University	Internal	University	Total Marks
BEECE601T/ BEETE601T	Electronics	Telecommunication Switching Systems	4	0	1	5	4	0	1	5	20	80	0	0	100
BEECE602T/ BEETE602T	Electronics	Digital Signal processing	4	0	1	5	4	0	1	5	20	80	0	0	100
BEECE602P/ BEETE602P	Electronics	Digital Signal processing	0	2	0	2	0	1	0	1	0	0	25	25	50
BEECE603T/ BEETE603T	Electrical	Control System Engg.	4	0	1	5	4	0	1	5	20	80	0	0	100
BEECE604T/ BEETE604T	Electronics	Digital Communication	4	0	1	5	4	0	1	5	20	80	0	0	100
BEECE604P/ BEETE604P	Electronics	Digital Communication	0	2	0	2	0	2	0	2	0	0	25	25	50
BEECE605T/ BEETE605T	Applied Science & Humanities	Functional English	2	0	1	3	2	0	1	3	10	40	0	0	50
BEECE606P/ BEETE606P	Electronics	Electronics Workshop Practice	0	2	0	2	0	2	0	2	0	0	25	25	50
BEECE607P/ BEETE607P	Electronics	Industrial Visit	0	2	0	2	Audit Course			0	0	0	G	0	0
Total			**18**	**8**	**5**	**31**	**18**	**5**	**5**	**28**	**90**	**360**	**75**	**75**	**600**

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SCHEME OF EXAMINATION FOR

B.E. SEVENTH SEMESTER (ELECTRONICS & COMMUNICATION / ELECTRONICS & TELECOMMUNICATION ENGINEERING)

Sub Code	Board	SUBJECT	Work Load				Credit				Marks				
											Theory		Practical		Total Marks
			L	P	T	Total	L	P	T	Total	Internal	University	Internal	University	
BEECE701T/ BEETE701T	Electronics	DSP Processor & Architecture	4	0	1	5	4	0	1	5	20	80	0	0	100
BEECE701P/ BEETE701P	Electronics	DSP Processor & Architecture	0	2	0	2	0	1	0	1	0	0	25	25	50
BEECE702T/ BEETE702T	Electronics	Television & Video Engineering	4	0	1	5	4	0	1	5	20	80	0	0	100
BEECE702P/ BEETE702P	Electronics	Television & Video Engineering	0	2	0	2	0	1	0	1	0	0	25	25	50
BEECE703T/ BEETE703T	Electronics	Optical Communication	4	0	0	4	4	0	0	4	20	80	0	0	100
BEECE704T/ BEETE704T	Electronics	Advanced Digital System Design	4	0	1	5	4	0	1	5	20	80	0	0	100
BEECE704P/ BEETE704P	Electronics	Advanced Digital System Design	0	2	0	2	0	1	0	1	0	0	25	25	50
BEECE705T/ BEETE705T	Electronics	Elective-I	3	0	1	4	3	0	1	4	20	80	0	0	100
BEECE706P/ BEETE706P	Electronics	Project Seminar	0	2	0	2	0	2	0	2	0	0	50	0	50
Total			**19**	**8**	**4**	**31**	**19**	**5**	**4**	**28**	**100**	**400**	**125**	**75**	**700**

Elective-I – 1. Fuzzy Logic & Neural Network 2. Microelectromechanical Systems and System On Chip 3. Data Compression & Encryption 4. VLSI Signnal Processing

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SCHEME OF EXAMINATION FOR

B.E. EIGHTH SEMESTER (ELECTRONICS & COMMUNICATION / ELECTRONICS & TELECOMMUNICATION ENGINEERING)

Sub Code	Board	SUBJECT	Work Load				Credit				Marks				
											Theory		Practical		Total Marks
			L	P	T	Total	L	P	T	Total	Internal	University	Internal	University	
BEECE801T/ BEETE801T	Electronics	Microwave & Radar Engineering	4	0	0	4	4	0	0	4	20	80	0	0	100
BEECE801P/ BEETE801P	Electronics	Microwave & Radar Engineering	0	2	0	2	0	1	0	1	0	0	25	25	50
BEECE802T/ BEETE802T	Electronics	Computer Communication Network	4	0	1	5	4	0	1	5	20	80	0	0	100
BEECE802P/ BEETE802P	Electronics	Computer Communication Network	0	2	0	2	0	1	0	1	0	0	25	25	50
BEECE803T/ BEETE803T	Electronics	Wireless & Mobile Communication	4	0	0	4	4	0	0	4	20	80	0	0	100
BEECE804T/ BEETE804T	Electronics	Elective-II	3	0	1	4	3	0	1	4	20	80	0	0	100
BEECE805T/ BEETE805T	Electronics	Elective-III	3	0	1	4	3	0	1	4	20	80	0	0	100
BEECE806P/ BEETE806P	Electronics	Project	0	6	0	6	0	6	0	6	0	0	75	75	150
Total			**18**	**10**	**3**	**31**	**18**	**8**	**3**	**29**	**100**	**400**	**125**	**125**	**750**

Elective-II – 1. Wireless Sensor Network 2. Embedded System 3.Digital Image Processing 4. Artificial Intelligence

Elective-III – 1.Random Signal Theory 2.Robotics & Automation 3. Satellite Communication 4.CMOS VLSI Design

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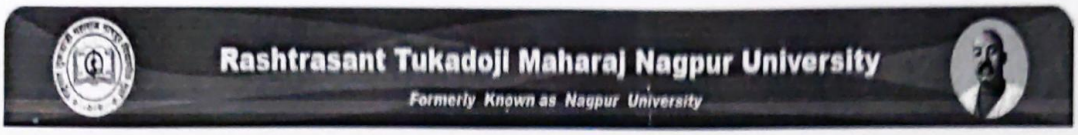

SCHEME OF EXAMINATION FOR
SIXTH SEMESTER BACHELOR OF ENGINEERING.
(ELECTRONICS ENGINEERING)

Sub Code	Board	SUBJECT	Work Load				Credit				Marks				
											Theory		Practical		Total
			L	P	T	Total	L	P	T	Total	Internal	University	Internal	University	Marks
BEENE601T	Electronics	Microwave Engineering	4	0	1	5	4	0	1	5	20	80	0	0	100
BEENE601P	Electronics	Microwave Engineering	0	2	0	2	0	1	0	1	0	0	25	25	50
BEENE602T	Electronics	Digital Signal processing	4	0	1	5	4	0	1	5	20	80	0	0	100
BEENE602P	Electronics	Digital Signal processing	0	2	0	2	0	1	0	1	0	0	25	25	50
BEENE603T	Electrical	Control System Engg.	4	0	1	5	4	0	1	5	20	80	0	0	100
BEENE604T	Electronics	Digital Communication	4	0	1	5	4	0	1	5	20	80	0	0	100
BEENE605T	Applied Science & Humanities	Functional English	2	0	1	3	2	0	1	3	10	40	0	0	50
BEENE606P	Electronics	Electronics Workshop Practice	0	2	0	2	0	2	0	2	0	0	25	25	50
BEENE607P	Electronics	Industrial Visit	0	2	0	2	Audit Course			0	0	0	G	0	0
Total			**18**	**8**	**5**	**31**	**18**	**4**	**5**	**27**	**90**	**360**	**75**	**75**	**600**

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SCHEME OF EXAMINATION FOR

B.E. SEVENTH SEMESTER (ELECTRONICS ENGINEERING)

Sub. Code	Board	SUBJECT	Work Load				Credit				Marks				
											Theory		Practical		Total Marks
			L	P	T	Total	L	P	T	Total	Internal	University	Internal	University	
BEENE701T	Electronics	DSP Processor & Architecture	4	0	1	5	4	0	1	5	20	80	0	0	100
BEENE701P	Electronics	DSP Processor & Architecture	0	2	0	2	0	1	0	1	0	0	25	25	50
BEENE702T	Electronics	Embedded system	4	0	1	5	4	0	1	5	20	80	0	0	100
BEENE702P	Electronics	Embedded system	0	2	0	2	0	1	0	1	0	0	25	25	50
BEENE703T	Electronics	Optical Communication	4	0	0	4	4	0	0	4	20	80	0	0	100
BEENE704T	Electronics	Advanced Digital System Design	4	0	1	5	4	0	1	5	20	80	0	0	100
BEENE704P	Electronics	Advanced Digital System Design	0	2	0	2	0	1	0	1	0	0	25	25	50
BEENE705T	Electronics	Elective-I	3	0	1	4	3	0	1	4	20	80	0	0	100
BEENE706P	Electronics	Project Seminar	0	2	0	2	0	2	0	2	0	0	50	0	50
Total			**19**	**8**	**4**	**31**	**19**	**5**	**4**	**28**	**100**	**400**	**125**	**75**	**700**

Elective-I – 1. Digital Image Processing 2. Mobile Communication 3. Biomedical Instrumentation 4.Random Signal Theory

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SCHEME OF EXAMINATION FOR

B.E. EIGHTH SEMESTER (ELECTRONICS ENGINEERING)

Sub. Code	Board	SUBJECT	Work Load				Credit				Marks				
											Theory		Practical		Total Marks
			L	P	T	Total	L	P	T	Total	Internal	University	Internal	University	
BEENE801T	Electronics	Microelectromechanical System & System on Chip	4	0	0	4	4	0	0	4	20	80	0	0	100
BEENE802T	Electronics	Computer Communication Network	4	0	1	5	4	0	1	5	20	80	0	0	100
BEENE802P	Electronics	Computer communication Network	0	2	0	2	0	1	0	1	0	0	25	25	50
BEENE803T	Electronics	CMOS VLSI Design	4	0	0	4	4	0	0	4	20	80	0	0	100
BEENE803P	Electronics	CMOS VLSI Design	0	2	0	2	0	1	0	1	0	0	25	25	50
BEENE804T	Electronics	Elective-II	3	0	1	4	3	0	1	4	20	80	0	0	100
BEENE805T	Electronics	Elective-III	3	0	1	4	3	0	1	4	20	80	0	0	100
BEENE806P	Electronics	Project	0	6	0	6	0	6	0	6	0	0	75	75	150
Total			**18**	**10**	**3**	**31**	**18**	**8**	**3**	**29**	**100**	**400**	**125**	**125**	**750**

Elective-II – 1. Wireless Sensor Network 2. Nanotechnology 3. Fuzzy Logic and Neural Networks 4. Satellite Communication

Elective-III – 1.Artificial Intelligence 2. Robotics & Automation 3.Speech Processing 4.Data Compression & Encryption

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I Semester M. Tech. (CSE)

Subject Code	Subject	Teaching Scheme			Examination Scheme								
					Theory					Practical			
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment			University Assessment	College Assessment		
PGCSE101T	High Performance Computer Architecture	4	-	4	3	70	30	100	50	-	-	-	-
PGCSE102T	Advances in Operating System Design	4	-	4	3	70	30	100	50	-	-	-	-
PGCSE103T	Data Science	4	-	4	3	70	30	100	50	-	-	-	-
PGCSE104T	Elective –I (Discipline Specific)	4	-	4	3	70	30	100	50	-	-	-	-
PGOPEN105T	Elective –II (Open)	4	-	4	3	70	30	100	50	-	-	-	-
PGCSE106P	Laboratory –I (HPCA)	-	2	1	-	-	-	-	-	50	50	100	50
PGCSE107P	Laboratory –II (AOSD)	-	2	1	-	-	-	-	-	50	50	100	50
Total		20	4		-	350	150	500	-	100	100	200	-
Semester Total		24		22	700 Marks								

Elective –I (Discipline Specific) PGCSE104/1T-Software Architecture, PGCSE104/2T-AI and Expert System Design
Elective –II (Open) PGOPEN105/1T-Advance Data Mining and Big Data Analytics, PGOPEN105/2T-Cyber Forensic and Computer Crimes

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II Semester M. Tech. (CSE)

Subject Code	Subject	Teaching Scheme			Examination Scheme								
					Theory					Practical			
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks University Assessment	Max. Marks College Assessment	Total Marks	Min. Passing Marks	Max. Marks University Assessment	Max. Marks College Assessment	Total Marks	Min. Passing Marks
		L	P										
PGCSE201T	Advances in Algorithms	4	-	4	3	70	30	100	50	-	-	-	-
PGCSE202T	Advance Computer Network and Security	4	-	4	3	70	30	100	50	-	-	-	-
PGCSE203T	Advance Digital Image Processing	4	-	4	3	70	30	100	50	-	-	-	-
PGCSE204T	Elective –III (Discipline)	4	-	4	3	70	30	100	50	-	-	-	-
PGFD205T	Foundation Course -I	4	-	4	3	70	30	100	50	-	-	-	-
PGCSE206P	Laboratory –III (AA)	-	2	1	-	-	-	-	-	50	50	100	50
PGCSE207P	Laboratory –IV (ADIP)	-	2	1	-	-	-	-	-	50	50	100	50
Total		20	4		-	350	150	500	-	100	100	200	-
Semester Total		24		22	700 Marks								

Elective –III (Discipline Specific) PGCSE204/1T-Advance Multimedia System, PGCSE204/2T-Internet of Things
Foundation Course –I PGFD205T -Research Methodology

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IV Semester M. Tech. (CSE)

Subject Code	Subject	Teaching Scheme			Examination Scheme								
		Hours per week		No. of Credits	Theory					Practical			
		L	P		Duration of Paper (Hrs.)	Max. Marks University Assessment	Max. Marks College Assessment	Total Marks	Min. Passing Marks	Max. Marks University Assessment	Max. Marks College Assessment	Total Marks	Min. Passing Marks
PGCSE401P	Project	-	-	16	-	-	-	-	-	400	-	400	200
Total		-	-		-	-	-	-	-	400	-	400	-
Semester Total		-		16	400 Marks								

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III Semester M. Tech. (CSE)

Subject Code	Subject	Teaching Scheme			Examination Scheme								
					Theory					Practical			
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks University Assessment	Max. Marks College Assessment	Total Marks	Min. Passing Marks	Max. Marks University Assessment	Max. Marks College Assessment	Total Marks	Min. Passing Marks
		L	P										
PGOPEN301T	Elective–IV (Open)	4	-	4	3	70	30	100	50	-	-	-	-
PGFD302T	Foundation Course -II	4	-	4	3	70	30	100	50	-	-	-	-
PGCSE303P	Project Seminar	-	-	8	-	-	-	-	-	-	200	200	100
Total		8	-	-		140	60	200	-	-	200	200	-
Semester Total		8		16	400 Marks								

Elective –IV (Open) PGOPEN301/1T- Security Analysis of Software, PGOPEN301/2T- Advance Databases /
Foundation Course –II PGFD302T -Project planning and Management

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III Semester M. Tech. (VLSI)

Subject Code	Subject	Teaching Scheme			Examination Scheme								
					Theory					Practical			
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment			University Assessment	College Assessment		
PGOPEN301T	Elective-IV (Open)	4	-	4	3	70	30	100	50	-	-	-	-
PGFD302T	Foundation II	4	-	4	3	70	30	100	50	-	-	-	-
PGVLS303P	Project Seminar	-	8	8	-	-	-	-	-	-	200	200	100
Total		8	8		-	140	60	200	-	-	200	200	-
Semester Total		-		16	400 Marks								

Elective-IV (Open): List of Open Elective-IV [PGOPEN301T] is enclosed.
Foundation II: Project Planning and Management

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IV Semester M. Tech. (VLSI)

Subject Code	Subject	Teaching Scheme			Examination Scheme								
					Theory					Practical			
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment			University Assessment	College Assessment		
PGVLS401P	Project	-	16	16	-	-	-	-	-	400	-	400	200
Total		-	16		-	-	-	-	-	400	-	400	-
Semester Total		-		16	400 Marks								

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RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY

DIRECTION NO. 37 OF 2019

"ADMISSIONS AND EXAMINATIONS LEADING TO THE AWARD OF DEGREE OF MASTER OF BUSINESS ADMINISTRATION (OUTCOME BASED – CBCS), IN THE FACULTY OF COMMERCE & MANAGEMENT, DIRECTION, 2019".

(Issued by the Vice-Chancellor under section 12(8) of the Maharashtra Public Universities. Act, 2016)(Mah. Act No. VI of 2017)

WHEREAS, the Maharashtra Public Universities Act, 2016 (No. VI of 2017) (hereinafter the "Act") has come into force with effect from 1st March, 2017 and the same has been made applicable to Rashtrasant Tukdoji Maharaj Nagpur University ;

AND

WHEREAS, the Direction No. 22 of 2017 entitled "DIRECTION REGARDING CHOICE BASED CREDIT SYSTEM AND EXAMINATIONS LEADING TO THE MASTERS DEGREE OF BUSINESS ADMINISTRATION IN THE FACULTY OF COMMERCE AND MANAGEMENT, RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR", was issued under Section 12(8) of the Act;

AND

WHEREAS, the Board of Studies in Business Administration and Business Management (hereinafter the "Board of Studies") in its meeting held on 30th October 2018 decided to revise the curriculum for MBA course in accordance with the model curriculum prescribed by the Apex Body, AICTE and for that purpose constituted a Sub-Committee to prepare the draft of the new syllabus;

AND

WHEREAS, the Board of Studies in its meeting held on 9th May 2019 approved the revised scheme of examination and syllabus submitted by the Sub-Committee constituted for the said purpose;

AND

WHEREAS, the Faculty of Commerce and Management in its meeting held on 30th May 2019 approved the revised scheme of examination and syllabus suggested by the Board of Studies and the same was subsequently approved by the Academic Council of the university in its meeting held on 10th June 2019;

AND

WHEREAS, as per the provisions of sub section 1 of Section 73 of the act an ordinance is required to be made for regulating admission of the students to a course

2T6	CSR and Sustainability	Uni.	25	05	30	80	20	100	3
2T7	Cost Accounting	Uni.	20	10	30	80	20	100	3
2T8	Management Case Analysis	Inter nal	20	20	40	00	100	100	4
Total			**180**	**70**	**25**	**560**	**240**	**800**	**25**

Semester-III

Course Code	Course Name	Internal / University Examination	Instruction Hours	Tutorial Hours	Total Hours	Marks			Credits
						Semester End Exam.	Internal Assessment	Total	
3P1	Summer Internship Project Assessment	Intern al	15	45	60	00	100	100	6
3T2	Elective I – Paper 1	Uni.	30	10	40	80	20	100	4
3T3	Elective I – Paper 2	Uni.	30	10	40	80	20	100	4
3T4	Elective I – Paper 3	Uni.	30	10	40	80	20	100	4
3T5	Elective II –Paper 1	Uni.	30	10	40	80	20	100	4
3T6	Elective II–Paper 2	Uni.	30	10	40	80	20	100	4
3T7	Elective II– Paper 3	Uni.	30	10	40	80	20	100	4
3T8	Strategic Management	Uni.	25	05	30	80	20	100	3
Total			**220**	**110**	**330**	**560**	**240**	**800**	**33**

Semester-IV

Course Code	Course Name	Internal / University Examinatio	Instruction Hours	Tutorial Hours	Total Hours	Marks			Credits
						Semester End Exam	Internal Assessm ent	Total	
4T1	Elective I – Paper 4	Uni.	30	10	40	80	20	100	4
4T2	Elective II – Paper 4	Uni.	30	10	40	80	20	100	4
4M3	MOOC 1	MOOC Assess ment	20	20	40	00	100	100	4

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4M4	MOOC 2	MOOC Assessment	20	20	40	00	100	100	4
4P5	Project Work and Viva Voce	Uni.	10	30	40	50	50	100	4
4S6	Exit Seminar and Open Defense	Uni.	10	30	40	100	00	100	4
Total			120	120	240	310	290	600	24

Summary of the Total Marks and Credits

Sr. No.		Instruction Hours	Tutorial Hours	Total Hours	Marks			Credits
					Semester End	Internal Assessment	Total	
1	Semester – I	150	90	240	560	240	800	24
2	Semester – II	180	70	250	560	240	800	25
3	Semester – III	220	110	330	560	240	800	33
4	Semester – IV	120	120	240	310	290	600	24
Total		670	390	1060	199	101	3000	106

a. The End Semester written examination of all the courses shall be conducted by the University.

b. The performance of the learners will be evaluated in two Components, one component will be the continuous assessment by the Institute/College/Department (Internal Assessment) carrying 20% marks and the second component will be the End Semester Examination (conducted by the University) carrying 80% marks.

The allocation of Internal Assessment Marks

1a	Attendance of the student during a particular semester	05 marks
1b	An assignment based on curriculum to be assessed by the teacher concerned	05 marks
1c	Subject wise class test conducted by the teacher concerned	05 marks
1d	Subject presentation/viva-voce seminar conducted during the	05

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