AICTE ID: 1-3548321

College Code: 231

R.D. ENGINEERING COLLEGE

Approved by AICTE New Delhi & Affiliated to Dr. APJ Abdul Kalam Technical University, Lucknow
under the aegis of IQAC

DEPARTMENT OF CIVIL ENGINEERING

NOTICE

Dear CE VI semester students,

We are pleased to announce the commencement of special classes to prepare you for the upcoming Graduate Aptitude Test in Engineering (GATE) examination. These classes are designed to provide you with comprehensive and effective guidance to excel in one of the most prestigious examinations in the field of engineering.

Class Details:
Commencement Date: 10 Feb 2023
Venue: C Block Room C 101

Sincerely,

Dr. Pankaj Kumar Singh
HOD -CE

R.D. Engineering College Head CE

Director
R.D. Engineering College
Duhai, Ghaziabad

CE	Civil Engineering

Section 1: Engineering Mathematics

Linear Algebra: Matrix algebra; Systems of linear equations; Eigen values and Eigen vectors.

Calculus: Functions of single variable; Limit, continuity and differentiability; Mean value theorems, local maxima and minima; Taylor series; Evaluation of definite and indefinite integrals, application of definite integral to obtain area and volume; Partial derivatives; Total derivative; Gradient, Divergence and Curl, Vector identities; Directional derivatives; Line, Surface and Volume integrals.

Ordinary Differential Equation (ODE): First order (linear and non-linear) equations; higher order linear equations with constant coefficients; Euler-Cauchy equations; initial and boundary value problems.

Partial Differential Equation (PDE): Fourier series; separation of variables; solutions of one-dimensional diffusion equation; first and second order one-dimensional wave equation and two-dimensional Laplace equation.

Probability and Statistics: Sampling theorems; Conditional probability; Descriptive statistics – Mean, median, mode and standard deviation; Random Variables – Discrete and Continuous, Poisson and Normal Distribution; Linear regression.

Numerical Methods: Error analysis. Numerical solutions of linear and non-linear algebraic equations; Newton's and Lagrange polynomials; numerical differentiation; Integration by trapezoidal and Simpson's rule; Single and multi-step methods for first order differential equations.

Section 2: Structural Engineering

Engineering Mechanics: System of forces, free-body diagrams, equilibrium equations; Internalforces in structures; Frictions and its applications; Centre of mass; Free Vibrations of undamped SDOF system.

Solid Mechanics: Bending moment and shear force in statically determinate beams; Simple stress and strain relationships; Simple bending theory, flexural and shear stresses, shear centre; Uniform torsion, Transformation of stress; buckling of column, combined and direct bending stresses.

Structural Analysis: Statically determinate and indeterminate structures by force/ energy methods; Method of superposition; Analysis of trusses, arches, beams, cables and frames; Displacement methods: Slope deflection and moment distribution methods; Influence lines; Stiffness and flexibility methods of structural analysis.

Construction Materials and Management: Construction Materials: Structural Steel – Composition, material properties and behaviour; Concrete - Constituents, mix design, short-term and long-term properties. Construction Management: Types of construction projects; Project planning and network analysis - PERT and CPM; Cost estimation.

Concrete Structures: Working stress and Limit state design concepts; Design of beams, slabs, columns; Bond and development length; Prestressed concrete beams.

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Steel Structures: Working stress and Limit state design concepts; Design of tension and compression members, beams and beam- columns, column bases; Connections - simple and eccentric, beam-column connections, plate girders and trusses; Concept of plastic analysis -beams and frames.

Section 3: Geotechnical Engineering

Soil Mechanics: Three-phase system and phase relationships, index properties; Unified and Indian standard soil classification system; Permeability - one dimensional flow, Seepage through soils – two - dimensional flow, flow nets, uplift pressure, piping, capillarity, seepage force; Principle of effective stress and quicksand condition; Compaction of soils; One- dimensional consolidation, time rate of consolidation; Shear Strength, Mohr's circle, effective and total shear strength parameters, Stress-Strain characteristics of clays and sand; Stress paths.

Foundation Engineering: Sub-surface investigations - Drilling bore holes, sampling, plate load test, standard penetration and cone penetration tests; Earth pressure theories - Rankine and Coulomb; Stability of slopes – Finite and infinite slopes, Bishop's method; Stress distribution in soils – Boussinesq's theory; Pressure bulbs, Shallow foundations – Terzaghi's and Meyerhoff's bearing capacity theories, effect of water table; Combined footing and raft foundation; Contact pressure; Settlement analysis in sands and clays; Deep foundations – dynamic and static formulae, Axial load capacity of piles in sands and clays, pile load test, pile under lateral loading, pile group efficiency, negative skin friction.

Section 4: Water Resources Engineering

Fluid Mechanics: Properties of fluids, fluid statics; Continuity, momentum and energy equations and their applications; Potential flow, Laminar and turbulent flow; Flow in pipes, pipe networks; Concept of boundary layer and its growth; Concept of lift and drag.

Hydraulics: Forces on immersed bodies; Flow measurement in channels and pipes; Dimensional analysis and hydraulic similitude; Channel Hydraulics - Energy-depth relationships, specific energy, critical flow, hydraulic jump, uniform flow, gradually varied flow and water surface profiles.

Hydrology: Hydrologic cycle, precipitation, evaporation, evapo-transpiration, watershed, infiltration, unit hydrographs, hydrograph analysis, reservoir capacity, flood estimation and routing, surface run-off models, ground water hydrology - steady state well hydraulics and aquifers; Application of Darcy's Law.

Irrigation: Types of irrigation systems and methods; Crop water requirements - Duty, delta, evapo-transpiration; Gravity Dams and Spillways; Lined and unlined canals, Design of weirs on permeable foundation; cross drainage structures.

Section 5: Environmental Engineering

Water and Waste Water Quality and Treatment: Basics of water quality standards – Physical, chemical and biological parameters; Water quality index; Unit processes and operations; Water requirement; Water distribution system; Drinking water treatment.

Sewerage system design, quantity of domestic wastewater, primary and secondary treatment. Effluent discharge standards; Sludge disposal; Reuse of treated sewage for different applications.

Air Pollution: Types of pollutants, their sources and impacts, air pollution control, air quality standards, Air quality Index and limits.

Municipal Solid Wastes: Characteristics, generation, collection and transportation of solid wastes, engineered systems for solid waste management (reuse/ recycle, energy recovery, treatment and disposal).

Section 6: Transportation Engineering

Transportation Infrastructure: Geometric design of highways - cross-sectional elements, sight distances, horizontal and vertical alignments.

Geometric design of railway Track – Speed and Cant.

Concept of airport runway length, calculations and corrections; taxiway and exit taxiway design.

Highway Pavements: Highway materials - desirable properties and tests; Desirable properties of bituminous paving mixes; Design factors for flexible and rigid pavements; Design of flexible and rigid pavement using IRC codes

Traffic Engineering: Traffic studies on flow and speed, peak hour factor, accident study, statistical analysis of traffic data; Microscopic and macroscopic parameters of traffic flow, fundamental relationships; Traffic signs; Signal design by Webster's method; Types of intersections; Highway capacity.

Section 7: Geomatics Engineering

Principles of surveying; Errors and their adjustment; Maps - scale, coordinate system; Distance and angle measurement - Levelling and trigonometric levelling; Traversing and triangulation survey; Total station; Horizontal and vertical curves.

Photogrammetry and Remote Sensing - Scale, flying height; Basics of remote sensing and GIS.

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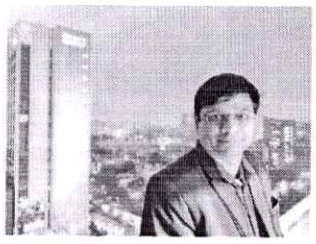

Dr Pankaj Kumar Singh is PhD in Civil Engineering and M.Tech in the Diversified Engg Stream, He also holds a MBA in Foreign Trade.

Dr Singh is Director Research in R D Engineering College, Ghaziabad.

He also serves as Guest Professor in several countries like Philippines, Qatar etc.

His research area of interest is Environmental Conservation & Sustainability, Biological Waste water treatment, Plant medicine, Crop recognition & monitoring, AI & Modelling and so on.

He wrote 5+ books and book chapter in diversified field.

His work is in the field of Patent and till now published more than 30+ national and International Patent and Granted 10+ National and International Patent along with Professors/Researcher of US, Canada, UK, Russia, Syria, Philippines etc as well as Published many Research Papers in reputed journals like MDPI(SCI), ESCI, ABDC Journal , Scopus , Springer, UGC -Care etc.

He also holds session Chair in many International Conferences in different countries like Las Vegas, New Jersey, Bali, Geneva, George Town (Australia).

After all these achievements, Dr Singh was awarded as ***Best Research Director in the field of Biological Waste water treatment & Plant Medicine*** and many more awards

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SANJAY PALIWAL is a Renowned Professor in the Mechanical Department at R D Engineering College, Ghaziabad, INDIA.

He has done B.E. & M.Tech. and Published Several Research Papers and National and International Patent to his Credit. He has Attended Several National & International Conferences. He has 5 year Industry & 22 year Teaching Experience.

Director
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GATE CLASSES(2022-23), 6TH SEM STUDENTS ATTENDANCE
CIVIL DEPARTMENT, RDEC GHAZIABAD

DATE: 10/02/2023

Sr.No.	Student Name	Roll No.	Signature
1	AAKASH KUMAR	2102310000001	Aakash
2	AAKASH KUMAR	2102310000002	Aakash
3	AJEET SINGH	2102310000003	A.Jeet
4	BAIBHAV KR BHAGAT	2102310000004	Baibhav
5	HARSH SHARMA	2102310000005	AB
6	MD HOOD	2102310000007	Md. Hood
7	MOHD ARISH	2102310000008	AB
8	SUNIL CHAUHAN	2102310000010	Sunil Ghauhan
9	SURAJ KUMAR SINGH	2102310000011	Suraj kr. Singh
10	VISHAL KUMAR	2102310000013	AB
11	AASTHA KUMARI	PREERN220037787	Aastha
12	ABDUL KADIR RAZA	PREERN220038385	Abdul
13	ABHINAV TITORIA	Preern220086918	AB
14	AMIT KUMAR	PREERN220075014	Amit
15	DEEPAK DIXIT	PREERN220050333	AB
16	DISHA MITTAL	PREERN220037987	Disha
17	JAI DEEPANKAR	PREERN220081997	AB
18	NITIN KUMAR	PREERN220072087	NITIN
19	PRIYANSHU DESAI	PREERN220076010	AB
20	SAGAR	PREERN220080906	Sagar
21	SHIV KUMAR	PREERN220076323	Shiv Kumar
22	VIKAS KUMAR	Preern220074836	Vikash

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Head CE

GATE CLASSES(2022-23), 6TH SEM STUDENTS ATTENDANCE
CIVIL DEPARTMENT, RDEC GHAZIABAD

DATE: 17/02/2023

Sr.No.	Student Name	Roll No.	Signature
1	AAKASH KUMAR	2102310000001	Aakash
2	AAKASH KUMAR	2102310000002	Aakash
3	AJEET SINGH	2102310000003	
4	BAIBHAV KR BHAGAT	2102310000004	
5	HARSH SHARMA	2102310000005	HARSH
6	MD HOOD	2102310000007	MD HooD
7	MOHD ARISH	2102310000008	MD. Arish
8	SUNIL CHAUHAN	2102310000010	Sunil Chauhan
9	SURAJ KUMAR SINGH	2102310000011	Suraj Kr. Singh.
10	VISHAL KUMAR	2102310000013	Vishal
11	AASTHA KUMARI	PREERN220037787	Aastha
12	ABDUL KADIR RAZA	PREERN220038385	Abdul Razak AB
13	ABHINAV TITORIA	Preern220086918	
14	AMIT KUMAR	PREERN220075014	Amit Kumar
15	DEEPAK DIXIT	PREERN220050333	Deepak AB
16	DISHA MITTAL	PREERN220037987	Disha Mittal
17	JAI DEEPANKAR	PREERN220081997	
18	NITIN KUMAR	PREERN220072087	Nitin AB
19	PRIYANSHU DESAI	PREERN220076010	
20	SAGAR	PREERN220080906	Sagar AB
21	SHIV KUMAR	PREERN220076323	
22	VIKAS KUMAR	Preern220074836	Vikas

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GATE CLASSES(2022-23), 6TH SEM STUDENTS ATTENDANCE
CIVIL DEPARTMENT, RDEC GHAZIABAD

DATE: 24/02/2023

Sr.No.	Student Name	Roll No.	Signature
1	AAKASH KUMAR	2102310000001	Aakash
2	AAKASH KUMAR	2102310000002	Aakash
3	AJEET SINGH	2102310000003	A
4	BAIBHAV KR BHAGAT	2102310000004	BAIBHAV
5	HARSH SHARMA	2102310000005	HARSH
6	MD HOOD	2102310000007	MD. Hood
7	MOHD ARISH	2102310000008	MD. Arish
8	SUNIL CHAUHAN	2102310000010	Sunil Chauhan
9	SURAJ KUMAR SINGH	2102310000011	Suraj Kr. Singh
10	VISHAL KUMAR	2102310000013	Vishal
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22	VIKAS KUMAR	Preern220074836	AB

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GATE CLASSES(2022-23), 6TH SEM STUDENTS ATTENDANCE
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DATE: 3/03/2023

Sr.No.	Student Name	Roll No.	Signature
1	AAKASH KUMAR	2102310000001	Aakash
2	AAKASH KUMAR	2102310000002	Aakash
3	AJEET SINGH	2102310000003	Ajeet
4	BAIBHAV KR BHAGAT	2102310000004	BAIBHAV
5	HARSH SHARMA	2102310000005	Harsh
6	MD HOOD	2102310000007	MD. Hood
7	MOHD ARISH	2102310000008	AB
8	SUNIL CHAUHAN	2102310000010	Sunil Chauhan
9	SURAJ KUMAR SINGH	2102310000011	Suraj kr. Singh
10	VISHAL KUMAR	2102310000013	Vishal
11	AASTHA KUMARI	PREERN220037787	AB
12	ABDUL KADIR RAZA	PREERN220038385	Abdul Razu
13	ABHINAV TITORIA	Preern220086918	Abhinav
14	AMIT KUMAR	PREERN220075014	Amit
15	DEEPAK DIXIT	PREERN220050333	Deepak
16	DISHA MITTAL	PREERN220037987	AB
17	JAI DEEPANKAR	PREERN220081997	Jai Deepankar
18	NITIN KUMAR	PREERN220072087	Nitin
19	PRIYANSHU DESAI	PREERN220076010	Priyanshu
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DATE: 10/03/2023

Sr.No.	Student Name	Roll No.	Signature
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10	VISHAL KUMAR	2102310000013	
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DATE: 17/03/2023

Sr.No.	Student Name	Roll No.	Signature
1	AAKASH KUMAR	2102310000001	Aakash
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3	AJEET SINGH	2102310000003	Ajeet
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CIVIL DEPARTMENT, RDEC GHAZIABAD

DATE: 24/03/2023

Sr.No.	Student Name	Roll No.	Signature
1	AAKASH KUMAR	2102310000001	Aakash
2	AAKASH KUMAR	2102310000002	Aakash
3	AJEET SINGH	2102310000003	Ajeet
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9	SURAJ KUMAR SINGH	2102310000011	Suraj
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DATE: 31/03/2023

Sr.No.	Student Name	Roll No.	Signature
1	AAKASH KUMAR	2102310000001	Aakash
2	AAKASH KUMAR	2102310000002	Aakash
3	AJEET SINGH	2102310000003	Ajeet
4	BAIBHAV KR BHAGAT	2102310000004	Baibhav AB
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GATE CLASSES(2022-23), 6TH SEM STUDENTS ATTENDANCE
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DATE: 21/04/2023

Sr.No.	Student Name	Roll No.	Signature
1	AAKASH KUMAR	2102310000001	Aakash
2	AAKASH KUMAR	2102310000002	Aakash
3	AJEET SINGH	2102310000003	Ajeet
4	BAIBHAV KR BHAGAT	2102310000004	Baibhav
5	HARSH SHARMA	2102310000005	Harsh
6	MD HOOD	2102310000007	AB
7	MOHD ARISH	2102310000008	Md. Arish
8	SUNIL CHAUHAN	2102310000010	Sunil Chauhan
9	SURAJ KUMAR SINGH	2102310000011	Suraj kr. Singh
10	VISHAL KUMAR	2102310000013	AB
11	AASTHA KUMARI	PREERN220037787	Aastha
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14	AMIT KUMAR	PREERN220075014	Amit
15	DEEPAK DIXIT	PREERN220050333	AB
16	DISHA MITTAL	PREERN220037987	Disha
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19	PRIYANSHU DESAI	PREERN220076010	Priyanshu
20	SAGAR	PREERN220080906	Sagar
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GATE CLASSES(2022-23), 6TH SEM STUDENTS ATTENDANCE
CIVIL DEPARTMENT, RDEC GHAZIABAD

DATE: 28/04/2023

Sr.No.	Student Name	Roll No.	Signature
1	AAKASH KUMAR	2102310000001	Aakash
2	AAKASH KUMAR	2102310000002	Aakash
3	AJEET SINGH	2102310000003	AJeet
4	BAIBHAV KR BHAGAT	2102310000004	BAIBHAV
5	HARSH SHARMA	2102310000005	AB
6	MD HOOD	2102310000007	MD Hood
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13	ABHINAV TITORIA	Preern220086918	AB
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19	PRIYANSHU DESAI	PREERN220076010	Priyanshu
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22	VIKAS KUMAR	Preern220074836	Vikash

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Head
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GATE CLASSES(2022-23), 6TH SEM STUDENTS ATTENDANCE
CIVIL DEPARTMENT, RDEC GHAZIABAD

DATE: 5/05/2023

Sr.No.	Student Name	Roll No.	Signature
1	AAKASH KUMAR	2102310000001	Aakash
2	AAKASH KUMAR	2102310000002	Aakash
3	AJEET SINGH	2102310000003	Ajeet
4	BAIBHAV KR BHAGAT	2102310000004	Baibhav
5	HARSH SHARMA	2102310000005	Absent
6	MD HOOD	2102310000007	Hood. MD. Aarsh
7	MOHD ARISH	2102310000008	
8	SUNIL CHAUHAN	2102310000010	Sunil Chauhan
9	SURAJ KUMAR SINGH	2102310000011	Suraj kr. Singh
10	VISHAL KUMAR	2102310000013	Vishal
11	AASTHA KUMARI	PREERN220037787	Absent
12	ABDUL KADIR RAZA	PREERN220038385	Abdul Qadir Raza
13	ABHINAV TITORIA	Preern220086918	Abhinav
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16	DISHA MITTAL	PREERN220037987	Absent
17	JAI DEEPANKAR	PREERN220081997	Jai Deepankar
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21	SHIV KUMAR	PREERN220076323	Shiv Kumar
22	VIKAS KUMAR	Preern220074836	Vikash

Director
R.D. Engineering College
Duhai, Ghaziabad

Engineering College Head CE

AICTE ID: 1-3548321 College Code: 231

R. D. ENGINEERING COLLEGE

Approved by AICTE New Delhi & Affiliated to Dr. APJ Abdul Kalam Technical University, Lucknow under the aegis of IQAC

Department of Electronics and Communication Engineering

Date:02.09.2022

Notice

Dear ECE V semester students,

We are excited to announce the commencement of special classes for the preparation of the Graduate Aptitude Test in Engineering (GATE). The GATE exam is a gateway to some of the most prestigious postgraduate programs and job opportunities in the field of engineering.

Classes Details:
Commencement Date: 16 Sep 2022
Venue: C Block Room No. C 201

R.D. Engineering College Head ECE Dr. Vishal Upmanu

Dr. Vishal Upmanu
(HOD-ECE)

Director
R.D. Engineering College
Duhai, Ghaziabad

CC to:

- Director, RDEC
- Coordinator, IQAC
- Dean Academics
- Departmental Notice Board

AICTE ID: 1-3548321 College Code: 231

R. D. ENGINEERING COLLEGE

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Department of Electronics and Communication Engineering

Faculty Profile

Dr. Vishal Upmanu is a Renowned Professor in the field of Electronics and Communication Engineering department at RD engineering college Ghaziabad.

He has done B.Tech, M.Tech & Phd. He has published several research papers in national and international journals and he has several patents. He has more than 20 years of teaching experience.

Director
R.D. Engineering College
Duhai, Ghaziabad

R D Engineering College, Ghaziabad

GATE CLASSES B. Tech (ECE- V Sem) Session 2022-23

Attendance Sheet

SN	Roll No.	Student's Name	16-09-2022	23-09-2022	30-09-2022	07-10-2022	14-10-2022	21-10-2022	28-10-2022	04-11-2022	11-11-2022	18-11-2022
1	2002310310002	ADITYA	P	A	P	P	P	P	P	P	A	P
2	2002310310003	AKASH CHOURASIA	Akash	Akash	Akash	A	Akash	Akash	A	Akash	Akash	Akash
3	2002310310004	AMAYRA SIDDIQUI	A	Azid	A	Azid	Azid	Azid	Azid	A	Azid	Azid
4	2002310310006	BHUNESH	Bhunesh	Bhunesh	A	Bhunesh	Bhunesh	A	Bhuna	Bhunta	Bhun	Bhuna
5	2002310310007	CHETAN BHARDWAJ	A	Ches-	Ches-	Ches-	Ches-	Ches-	Ches-	A	Ches-	Ches-
6	2002310310008	GOURAV KUMAR	Gkuma	A	Gkuma	Gkuma	Gkuma	Gkuma	Gkuma	Gkuma	Gkuma	A
7	2002310310009	GUNJAN KATARIYA	A	Katariya	A	A	Katary	A	Katar	Katary	Katr	Katary
8	2002310310011	KUNDAN KUMAR	P	P	P	P	A	P	A	A	A	P
9	2002310310012	LAKSHAY	P	A	P	P	P	P	P	A	P	P
10	2002310310013	MANISH TYAGI	Manish	Manish	A	Manish	Manish	Manish	Manish	Manish	Manish	A
11	2002310310015	MEENAKSHI	A	A	A	A	A	A	A	A	A	A
12	2002310310016	NIVESH UPADHYAY	N	N	N	N	N	A	N	N	N	N
13	2002310310018	RITESH KUMAR	R	R	R	R	A	R	R	R	R	A
14	2002310310019	SHAHWEZ	A	Shah	Shah	Shah	Shah	Shah	A	Shah	Shah	Shah
15	2002310310020	SHAKEEL AHMAD	A	A	A	A	A	A	A	A	A	A
16	2002310310021	SHIVAM	Sh	Sh	Sh	Sh	Sh	Sh	Sh	Sh	Sh	Sh
17	2002310310022	SHIVANK CHAUDHARY	Ch	Ch	A	Ch	Ch	Ch	Ch	A	Ch	Ch
18	2002310310023	SUMIT TOMAR	Sumit	Sumit	Sumit	Sumit	Sumit	Sumit	Sumit	Sumit	Sumit	Sumit
19	2002310310024	SUNNY KUMAR	A	Sunny	Sunny	A	Sunny	Sunny	Sunny	Sunny	Sunny	Sunny
20	2002310310025	SURAJ ARYA	Arya	Arya	A	Arya	Arya	A	Arya	Arya	Arya	Arya
21	2002310310026	VIPIN	V	A	A	V	V	V	A	A	A	V
22	1902310310038	Nadeem	A	A	A	A	A	A	A	A	A	A
23	2102310319001	Abu Bakar	A	A	A	A	A	A	A	A	A	A
24	2102310319002	David	A	D	D	A	D	D	D	D	A	D
25	2102310319003	Laxna Bhiwania	Laxa	A	Laxa	Laxa	Laxa	A	Laxa	Laxa	Laxa	Laxa
26	1902310310051	Sachin	S	A	S	S	A	S	A	S	S	A

Dr. Vishal Upmanu
Program Coordinator

Director
R.D. Engineering College
Duhai, Ghaziabad

EC	Electronics and Communications

Section 1: Engineering Mathematics

Linear Algebra: Vector space, basis, linear dependence and independence, matrix algebra, eigen values and eigen vectors, rank, solution of linear equations – existence and uniqueness.

Calculus: Mean value theorems, theorems of integral calculus, evaluation of definite and improper integrals, partial derivatives, maxima and minima, multiple integrals, line, surface and volume integrals, Taylor series.

Differential Equations: First order equations (linear and nonlinear), higher order linear differential equations, Cauchy's and Euler's equations, methods of solution using variation of parameters, complementary function and particular integral, partial differential equations, variable separable method, initial and boundary value problems.

Vector Analysis: Vectors in plane and space, vector operations, gradient, divergence and curl, Gauss's, Green's and Stoke's theorems.

Complex Analysis: Analytic functions, Cauchy's integral theorem, Cauchy's integral formula; Taylor's and Laurent's series, residue theorem.

Numerical Methods: Solution of nonlinear equations, single and multi-step methods for differential equations, convergence criteria.

Probability and Statistics: Mean, median, mode and standard deviation; combinatorial probability, probability distribution functions - binomial, Poisson, exponential and normal; Joint and conditional probability; Correlation and regression analysis.

Section 2: Networks, Signals and Systems

Network solution methods: nodal and mesh analysis; Network theorems: superposition, Thevenin and Norton's, maximum power transfer; Wye-Delta transformation; Steady state sinusoidal analysis using phasors; Time domain analysis of simple linear circuits; Solution of network equations using Laplace transform; Frequency domain analysis of RLC circuits; Linear 2-port network parameters: driving point and transfer functions; State equations for networks.

Continuous-time signals: Fourier series and Fourier transform representations, sampling theorem and applications; Discrete-time signals: discrete-time Fourier transform (DTFT), DFT, FFT, Z-transform, interpolation of discrete-time signals; LTI systems: definition and properties, causality, stability, impulse response, convolution, poles and zeros, parallel and cascade structure, frequency response, group delay, phase delay, digital filter design techniques.

Section 3: Electronic Devices

Energy bands in intrinsic and extrinsic silicon; Carrier transport: diffusion current, drift current, mobility and resistivity; Generation and recombination of carriers; Poisson and continuity equations; P-N junction, Zener diode, BJT, MOS capacitor, MOSFET, LED, photo diode and solar cell; Integrated circuit fabrication process: oxidation, diffusion, ion implantation, photolithography and twin-tub CMOS process.

Section 4: Analog Circuits

Small signal equivalent circuits of diodes, BJTs and MOSFETs; Simple diode circuits: clipping, clamping and rectifiers; Single-stage BJT and MOSFET amplifiers: biasing, bias stability, mid-frequency small signal analysis and frequency response; BJT and MOSFET amplifiers: multi-stage, differential, feedback, power and operational; Simple op-amp circuits; Active filters; Sinusoidal oscillators: criterion for oscillation, single-transistor and op-amp configurations; Function generators, wave-shaping circuits and 555 timers; Voltage reference circuits; Power supplies: ripple removal and regulation.

Section 5: Digital Circuits

Number systems; Combinatorial circuits: Boolean algebra, minimization of functions using Boolean identities and Karnaugh map, logic gates and their static CMOS implementations, arithmetic circuits, code converters, multiplexers, decoders and PLAs; Sequential circuits: latches and flip-flops, counters, shift-registers and finite state machines; Data converters: sample and hold circuits, ADCs and DACs; Semiconductor memories: ROM, SRAM, DRAM; 8-bit microprocessor (8085): architecture, programming, memory and I/O interfacing.

Section 6: Control Systems

Basic control system components; Feedback principle; Transfer function; Block diagram representation; Signal flow graph; Transient and steady-state analysis of LTI systems; Frequency response; Routh-Hurwitz and Nyquist stability criteria; Bode and root-locus plots; Lag, lead and lag-lead compensation; State variable model and solution of state equation of LTI systems.

Section 7: Communications

Random processes: autocorrelation and power spectral density, properties of white noise, filtering of random signals through LTI systems; Analog communications: amplitude modulation and demodulation, angle modulation and demodulation, spectra of AM and FM, superheterodyne receivers, circuits for analog communications; Information theory: entropy, mutual information and channel capacity theorem; Digital communications: PCM, DPCM, digital modulation schemes, amplitude, phase and frequency shift keying (ASK, PSK, FSK), QAM, MAP and ML decoding, matched filter receiver, calculation of bandwidth, SNR and BER for digital modulation; Fundamentals of error correction, Hamming codes; Timing and frequency synchronization, inter-symbol interference and its mitigation; Basics of TDMA, FDMA and CDMA.

Section 8: Electromagnetics

Electrostatics; Maxwell's equations: differential and integral forms and their interpretation, boundary conditions, wave equation, Poynting vector; Plane waves and properties: reflection and refraction, polarization, phase and group velocity, propagation through various media, skin depth; Transmission lines: equations, characteristic impedance, impedance matching, impedance transformation, S-parameters, Smith chart; Waveguides: modes, boundary conditions, cut-off frequencies, dispersion relations; Antennas: antenna types, radiation pattern, gain and directivity, return loss, antenna arrays; Basics of radar; Light propagation in optical fibers.

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R.D. ENGINEERING COLLEGE

Approved by AICTE New Delhi & Affiliated to Dr. APJ Abdul Kalam Technical University, Lucknow under the aegis of IQAC

Date: 10/09/2022

DEPARTMENT OF MECHANICAL ENGINEERING

NOTICE

Dear ME V semester students,

We are excited to announce the commencement of special classes for the preparation of the Graduate Aptitude Test in Engineering (GATE). The GATE exam is a gateway to some of the most prestigious postgraduate programs and job opportunities in the field of engineering.

Class Details:
Commencement Date: 17 Sep 2022
Venue: C Block Room No. C 205

Sincerely,

Prof. Sanjay Paliwal
(HOD, ME

R.D. Engineering College Head ME

CC:
Director
IQAC
Dean Academics
Departmental Notice Board

Director
R.D. Engineering College
Duhai, Ghaziabad

SANJAY PALIWAL is a Renowned Professor in the Mechanical Department at R D Engineering College, Ghaziabad, INDIA.

He has done B.E. & M.Tech. and Published Several Research Papers and National and International Patent to his Credit. He has Attended Several National & International Conferences. He has 5 year Industry & 22 year Teaching Experience.

R.D. Engineering College
Head
ME

Director
R.D. Engineering College
Duhai, Ghaziabad

ME Mechanical Engineering

Section 1: Engineering Mathematics

Linear Algebra: Matrix algebra, systems of linear equations, eigenvalues and eigenvectors.

Calculus: Functions of single variable, limit, continuity and differentiability, mean value theorems, indeterminate forms; evaluation of definite and improper integrals; double and triple integrals; partial derivatives, total derivative, Taylor series (in one and two variables), maxima and minima, Fourier series; gradient, divergence and curl, vector identities, directional derivatives, line, surface and volume integrals, applications of Gauss, Stokes and Green's theorems.

Differential Equations: First order equations (linear and nonlinear); higher order linear differential equations with constant coefficients; Euler-Cauchy equation; initial and boundary value problems; Laplace transforms; solutions of heat, wave and Laplace's equations.

Complex Variables: Analytic functions; Cauchy-Riemann equations; Cauchy's integral theorem and integral formula; Taylor and Laurent series.

Probability and Statistics: Definitions of probability, sampling theorems, conditional probability; mean, median, mode and standard deviation; random variables, binomial, Poisson and normal distributions.

Numerical Methods: Numerical solutions of linear and non-linear algebraic equations; integration by trapezoidal and Simpson's rules; single and multi-step methods for differential equations.

Section 2: Applied Mechanics and Design

Engineering Mechanics: Free-body diagrams and equilibrium; friction and its applications including rolling friction, belt-pulley, brakes, clutches, screw jack, wedge, vehicles, etc.; trusses and frames; virtual work; kinematics and dynamics of rigid bodies in plane motion; impulse and momentum (linear and angular) and energy formulations; Lagrange's equation.

Mechanics of Materials: Stress and strain, elastic constants, Poisson's ratio; Mohr's circle for plane stress and plane strain; thin cylinders; shear force and bending moment diagrams; bending and shear stresses; concept of shear centre; deflection of beams; torsion of circular shafts; Euler's theory of columns; energy methods; thermal stresses; strain gauges and rosettes; testing of materials with universal testing machine; testing of hardness and impact strength.

Theory of Machines: Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of linkages; cams; gears and gear trains; flywheels and governors; balancing of reciprocating and rotating masses; gyroscope.

Vibrations: Free and forced vibration of single degree of freedom systems, effect of damping; vibration isolation; resonance; critical speeds of shafts.

Machine Design: Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; principles of the design of machine elements such as bolted, riveted and welded joints; shafts, gears, rolling and sliding contact bearings, brakes and clutches, springs.

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Section 3: Fluid Mechanics and Thermal Sciences

Fluid Mechanics: Fluid properties; fluid statics, forces on submerged bodies, stability of floating bodies; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation; dimensional analysis; viscous flow of incompressible fluids, boundary layer, elementary turbulent flow, flow through pipes, head losses in pipes, bends and fittings; basics of compressible fluid flow.

Heat-Transfer: Modes of heat transfer; one dimensional heat conduction, resistance concept and electrical analogy, heat transfer through fins; unsteady heat conduction, lumped parameter system, Heisler's charts; thermal boundary layer, dimensionless parameters in free and forced convective heat transfer, heat transfer correlations for flow over flat plates and through pipes, effect of turbulence; heat exchanger performance, LMTD and NTU methods; radiative heat transfer, Stefan-Boltzmann law, Wien's displacement law, black and grey surfaces, view factors, radiation network analysis

Thermodynamics: Thermodynamic systems and processes; properties of pure substances, behavior of ideal and real gases; zeroth and first laws of thermodynamics, calculation of work and heat in various processes; second law of thermodynamics; thermodynamic property charts and tables, availability and irreversibility; thermodynamic relations.

Applications: *Power Engineering*: Air and gas compressors; vapour and gas power cycles, concepts of regeneration and reheat. *I.C. Engines*: Air-standard Otto, Diesel and dual cycles. *Refrigeration and air-conditioning*: Vapour and gas refrigeration and heat pump cycles; properties of moist air, psychrometric chart, basic psychrometric processes. *Turbomachinery*: Impulse and reaction principles, velocity diagrams, Pelton-wheel, Francis and Kaplan turbines; steam and gas turbines.

Section 4: Materials, Manufacturing and Industrial Engineering

Engineering Materials: Structure and properties of engineering materials, phase diagrams, heat treatment, stress-strain diagrams for engineering materials.

Casting, Forming and Joining Processes: Different types of castings, design of patterns, moulds and cores; solidification and cooling; riser and gating design. Plastic deformation and yield criteria; fundamentals of hot and cold working processes; load estimation for bulk (forging, rolling, extrusion, drawing) and sheet (shearing, deep drawing, bending) metal forming processes; principles of powder metallurgy. Principles of welding, brazing, soldering and adhesive bonding.

Machining and Machine Tool Operations: Mechanics of machining; basic machine tools; single and multi-point cutting tools, tool geometry and materials, tool life and wear; economics of machining; principles of non-traditional machining processes; principles of work holding, jigs and fixtures; abrasive machining processes; NC/CNC machines and CNC programming.

Metrology and Inspection: Limits, fits and tolerances; linear and angular measurements; comparators; interferometry; form and finish measurement; alignment and testing methods; tolerance analysis in manufacturing and assembly; concepts of coordinate-measuring machine (CMM).

Computer Integrated Manufacturing: Basic concepts of CAD/CAM and their integration tools; additive manufacturing.

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Production Planning and Control: Forecasting models, aggregate production planning, scheduling, materials requirement planning; lean manufacturing.

Inventory Control: Deterministic models; safety stock inventory control systems.

Operations Research: Linear programming, simplex method, transportation, assignment, network flow models, simple queuing models, PERT and CPM.

R D Engineering College, Ghaziabad
Department of Mechanical Engineering
GATE CLASSES(2022-23)

S.N.	Roll No.	Name	17-09-2022	24-09-2022	01-10-2022	08-10-2022	15-10-2022	22-10-2022	29-10-2022	05-11-2022	12-11-2022	19-11-2022	26-11-2022
1	2002310400001	AASHISH											
2	2002310400002	ANKUR KUMAR											
3	2002310400003	ARPAN TYAGI											
4	2002310400005	DEVENDER											
5	2002310400006	HARSH											
6	2002310400007	HARSH SINGHAL											
7	2002310400008	MAMIK SAGAR											
8	2002310400010	MOHD AMIRULLAH											
9	2002310400011	NAMAN											
10	2002310400012	NAVNEET KUMAR											
11	2002310400013	NITISH KUMAR SINGH											
12	2002310400014	ROHIT KUMAR											
13	2002310400015	SHARMA ANUBHAV DHARMENDRA											
14	2002310400016	SURAJ CHAURASIA											
15	2002310400017	TANISHK KUMAR											
16	2002310400018	VISHESH											
17	2102310409001	ABHISHEK UPADHYAY											
18	2102310409002	ADARSH PATEL											
19	2102310409003	AKHILESH KUMAR											
20	2102310409004	AMARNATH MAURYA											
21	2102310409005	ANKIT SINGH											
22	2102310409006	ATUL SHARMA											
23	2102310409007	CHAKSHU TYAGI											
24	2102310409011	MOHD ANAS											
25	2102310409012	NISHANT KUMAR											
26	2102310409013	NITIN SHARMA											
27	2102310409015	RAHUL											
28	2102310409017	RAWAT AKHIL KESHARSINGH											
29	2102310409018	ROHAN KAUSHIK											
30	2102310409020	SAURAV DILWAL											
31	2102310409021	SUNNY RAJ											
32	2102310409022	VIKAS TYAGI											
33	2102310409023	VISHAL KUMAR											
34	2102310409024	ZEESHAN											

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