



INFORMATION BROCHURE

**FOR ADMISSION TO THE PROGRAMMES:
BACHELOR OF ENGG. (CIVIL ENGG.), BACHELOR OF ENGG. (ELECTRICAL ENGG.) & BACHELOR OF
ENGG. (MECHANICAL ENGG.) FOR WORKING PROFESSIONALS**

**UNDER
FACULTY OF ENGINEERING & TECHNOLOGY (FET)**

FOR THE SESSION 2024-2025

**JADAVPUR UNIVERSITY
KOLKATA – 700 032**

1. GENERAL INFORMATION FOR APPLICANTS:

The Information Brochure is for admission to the Five Year's Programmes for Bachelor of Engg. (Civil Engg.), Bachelor of Engg. (Electrical Engg.) & Bachelor of Engg. (Mechanical Engg.) for working professionals under Faculty of Engineering & Technology (FET), Jadavpur University for the session 2024-2025. All the programmes are 10-semester programmes with the classes to be conducted from 6:00pm to 9:00pm from Monday to Friday and 2:00pm to 5:00pm on Saturday. Field works / Academic Tours of Civil Engineering to be conducted on Sundays as and when stipulated in the curriculum.

2. ELIGIBILITY CRITERIA:

A] The candidates must have Passed Diploma Examination from the UGC recognized Indian University or Government / Statutory Body in the same branch to which he/she opts for application with at least 60% marks or equivalent grade point in aggregate for general category and 45% for SC, ST, OBC-A, OBC-B, PwD candidates.

In case final result is published in the Grade Point system only, then the same must be converted to equivalent percentage marks. Conversion of Grade Point to Percentage of Marks, if required, should be done by the applicant during filling up of the form using, either –

- a) The conversion formula of the concerned board/university, if any such is available, OR
- b) By the AICTE advised formula, as $\text{Percentage marks} = (\text{Grade Point} - 0.75) \times 10$ when Grade Point is in a scale of 10.

In case, the Grade Point is not in a scale of 10, the obtained Grade Point is to be converted to Grade Point in a scale of 10 in a pro rata basis.

B] Minimum One Year Working Experience after completion of qualifying Diploma Examination, as on 27/08/24 (i.e., last dt. of application). The candidate must be currently engaged as working professional in Registered Industry / Organization (Central / State) / Private / Public Limited Company / MSMEs located within 75 KM radial distance from the university.

3. RESERVATION OF SEATS:

The reservation of seats for admission will follow the relevant guidelines of the Government of West Bengal and the Government of India, as applicable.

As per circular no. BC-16014/1/82-SC dated 06/08/1984 & BCD-I, D.O.12017/11/89-SCD (R.CELL) dated 08/01/1990 and letter no. 1510-SCW dated 31/05/2007 of the Government of West Bengal, **Candidates with reservation certificates (SC/ST/OBC-A/OBC-B/PwD/EWS) issued by any state other than West Bengal are not entitled to reservation in such seats in Higher Educational Institutions in West Bengal.**

3.1 SC / ST / OBC-A / OBC-B Reservation: Reservation of Seats for Scheduled Cast (SC), Scheduled Tribe (ST), Other Backward Class, Category A (OBC-A) and Other Backward Class, Category B (OBC-B) are as per Government of West Bengal Circular No. 267-Edn (U)/1U-89/13 dated 04.03.2014 read with the West Bengal State Higher Educational Institutions (Reservation in Admission) Act 2013 (West Bengal Act X of 2013) gazetted on 30th April 2013 and the West Bengal State Higher Educational Institutions (Reservation in Admission) Rules 2013 gazetted on 4th January 2014.

3.1.1 The concerned candidate shall have to furnish copies of valid SC/ST/OBC-A/OBC-B certificate in his/her name issued by the competent authority as per rule.

3.1.2 OBC Certificates must have Category A or B mentioned and should have proper validation of Non Creamy Layer criteria conforming to Government of West Bengal Memorandum No. 1204- SBCW/MR-67/10 dated 27-07- 2015. **OBC certificates issued before 01.08.2023 MUST be updated with latest (issued after 31.07.2023) Non Creamy Layer (NCL) certificate (as per standard government proforma given in Annexure – 2) and in that case both original OBC certificate and updated NCL certificate must be submitted together.**

The certificate must be issued by either of the following authorities.

- Sub Divisional Officer of a sub-division in a district area, OR
- District Welfare Officer, Kolkata and Ex-Officio Joint Director, BCW for KMC area.

3.1.3 The reservation certificate not fulfilling essential criteria or not issued by the competent authority will be rejected and the candidate will not be considered under reservation category.

3.2 Reservation of seats for PwD candidates:

- a) According to Section 2(r) of the RPWD Act, 2016, “persons with benchmark disabilities” means a person with not less than forty percent (40%) of a specified disability where specified disability has not been defined in measurable terms and includes a person with disability where specified disability has been defined in measurable terms, as certified by the certifying authority.
- b) Accordingly, reservation in PwD seats will be available for the following types of disabilities, percentage of disability being not less than 40%.
 - i. Locomotor disability as specified in the Schedule of RPWD Act, 2016.
 - ii. Visual impairment as specified in the Schedule of RPWD Act, 2016.
 - iii. Hearing impairment as specified in the Schedule of RPWD Act, 2016.
 - iv. Speech & language disability as specified in the Schedule of RPWD Act, 2016
 - v. Intellectual disabilities as specified in the Schedule of RPWD Act, 2016
 - vi. Mental illness.
 - vii. Disabilities caused due to chronic neurological conditions and blood disorder.
 - viii. Multiple disabilities including deaf blindness.
- c) The “specified disabilities” are included in the Schedule of the RPWD Act.
- d) PwD certificates are to be issued by any of the authorities as given in the Order No. 289-HF/O/PHP/IR-05/2017 dated 29.08.2018 by the Government of West Bengal, Health & Family Welfare Department (PHP Branch)

3.3 EWS Reservation: The EWS reservation can be availed upon production of a gross annual family income certificate and asset certificate as per the order no. 325-PAR(AR)/3P-1/2019 dated 09/07/2019 of the Government of West Bengal in the prescribed format as given in Annexure – 3 with issuing date not earlier than 01/04/2024 and issued by any of the following authorities.

- District Magistrate / Additional District Magistrate
- Sub-Divisional Officer
- DWO, Kolkata for Kolkata Municipal Corporation Area

Note: EWS certificate issued by any other person (including BDO/ Jt. BDO or any other state or central government official or elected persons like Municipality Chairman, Panchayat Pradhan, MP, MLA or Minister of State or Central Government) apart from listed above will not be entertained.

Important Note regarding Reservation: As per circular no. BC-16014/1/82-SC dt. 06/08/1984 & BCD-I, D.O.12017/11/89-SCD (R.CELL) dt. 08/01/1990 and letter no. 1510-SCW dt. 31/05/2007 of the Government of West Bengal, Candidates with reservation certificates (SC/ST/OBC-A/OBC-B/PwD) issued by any State other than West Bengal, are not entitled for reservation in such seats in Higher Educational Institutions in West Bengal.

4. ENTRANCE EXAMINATION AND PREPARATION OF MERIT LIST

Entrance Examination:

Entrance examination will be conducted in physical mode at **TEQIP Building (3rd Flr.), Jadavpur University (Main Campus), 188 Raja S C Mullick Road, Kolkata 700032, West Bengal, India.**

Exam method: MCQ based questions & OMR based evaluation.

Exam date and time: **5th September 2024, 12:00 noon to 1:30 p.m.**

Marking scheme: 50 MCQ questions (100 marks)- Each question will carry 2 marks. Negative marking for each question will be 0.5. Multiple answer for single question will be treated as ‘Not Answered’.

Calculator, Electronic gadgets, Mobile or, any Digital device will not be allowed in the examination hall. Syllabus for the entrance examination: the details are provided below. (Annexure- 4)

Merit List:

Merit List will be prepared on the basis of the performance in the Entrance Examination. The modalities of entrance examination will be published / informed in due time.

In case of any tie in the merit list prepared on the basis of the above criteria, the following parameter may be used in the given order to break such tie.

- Percentage of marks (for CGPA/Grade Point conversion rule as mentioned in Point No 2 will be followed) in qualifying Diploma examination.
- Percentage aggregate marks of secondary or equivalent examination (in case of the mark sheet

having the marks in grade system, it MUST be converted to equivalent percentage marks by using the formula of the respective board)

- Date of Birth (Person born earlier will get higher preference)

5. **DOCUMENT VERIFICATION AND ADMISSION:**

Scanned copies of the following documents (150 dpi colour in pdf format) are to be mandatorily uploaded along with the application. The maximum size of the uploaded file should not exceed 500KB. In case any such is of multiple pages the same should be scanned as a single pdf. All scanned documents should be properly legible. Illegible supporting document may lead to cancellation of the candidature without any further communication.

- Valid Photo ID card issued by the Government or ID card of last attending College.
- Admit-card / Certificate of Secondary (or equivalent) Examination for Date of Birth Proof, Mark sheet of Secondary (Class-X) or equivalent Examination.
- Mark-sheet of Higher Secondary or equivalent (Class-XII) Examination, if applicable
- Final Mark-sheet or, Mark sheets of all semesters of Diploma in Engineering Examination.
- Valid SC / ST / OBC(A) / OBC (B) Certificate issued by the Government of West Bengal in case 'candidate category' is SC / ST / OBC(A) / OBC (B) respectively. All OBC Certificates should have proper validation of Non- Creamy Layer criteria conforming to Government of West Bengal Memorandum No. 1204-SBCW/MR-67/10 dated 27- 07- 2015. OBC Certificates must have Category A or B mentioned and should have proper validation of Non Creamy Layer criteria conforming to Government of West Bengal Memorandum No. 1204- SBCW/MR-67/10 dated 27-07- 2015. **OBC certificates issued before 01.08.2023 MUST be updated with latest (issued after 31.07.2023) Non Creamy Layer (NCL) certificate (as per standard government proforma) and in that case both original OBC certificate and updated NCL certificate must be submitted together.** The certificate must be issued by either of the following authorities.
 - Sub Divisional Officer of a sub-division in a district area, OR
 - District Welfare Officer, Kolkata and Ex-Officio Joint Director, BCW for KMC area.
- Valid PwD (Person with Disability) Certificate issued by the competent authority in case 'PwD category' is 'Yes'
- Recent Passport Photograph of the candidate (same as used for online application)
- Signature of the candidate
- Employment cum No Objection Certificate from the present employer.
 - 1)Authenticity proof from the present employer in the form of either –
 - Form-16 or any other IT document of the applicant containing the name of the employer
 - Certified copy of the Registration / Trade license / GST certificate / PAN / TAN document of the employer
 - 2) All previous experience certificate(s) or joining and release letter(s) clearly indicating the date of joining and leaving to the organization(s).

a) Provisional merit list will be published on the basis of marks obtained in the entrance test following tie-breaking rules and candidates will be invited for participating in admission procedure (off line) according to provisional merit list.

b) Provisional admission will be offered after verification of relevant original documents only in the admission procedure (offline). During the admission procedure the original of the following documents will be checked for verification of relevant verified.

- Family Income Certificate from the competent authority
- 5 (five) copies of passport size photograph with full frontal view (same as used for online application)

And

self-attested copies of –

- Admit-card / Certificate of Secondary (or equivalent) Examination for Date of Birth Proof
- Mark sheet of Secondary or equivalent (Class-X) Examination
- Mark-sheet and Certificate of Higher Secondary or equivalent (Class-XII) Examination, if applicable
- Final Mark-sheet and Certificate of Diploma in Engineering Examination
- Valid SC / ST / OBC(A) / OBC (B) Certificate issued by the Government of West Bengal in case 'candidate category' is SC / ST / OBC(A) / OBC (B)
- Valid PwD (Person with Disability) Certificate issued by the competent authority in case 'PwD category' is 'Yes'
- Admit card of Entrance Examination duly signed by the Invigilator.
- Employment cum No Objection Certificate from the present employer.

FACULTY OF ENGINEERING & TECHNOLOGY

- t) Authenticity proof from the present employer in the form of either –
 - Form-16 or any other IT document of the applicant containing the name of the employer
 - Certified copy of the Registration / Trade license / GST certificate / PAN / TAN document of the employer
 - u) All previous experience certificate(s) or joining and release letter(s) clearly indicating the date of joining and leaving to the organization(s).
- c) If at any point of time it is found that the candidate has not fulfilled any of the required criteria or have suppressed any information/document or have submitted wrong information/document, his/her admission as well as studentship may be cancelled without any communication.
- d) After successful submission of the application, the applicant must take a printout of the form and this has to be provided as documentary evidence for all subsequent communication, if any.

6. **FEES:**

An application fee of **Rs. 500/- (Five hundreds only)** has to be paid at the time of application for admission to UG (Evening) Engg. programmes of Jadavpur University through SBI i-collect portal only.

For payment link, click on:

<https://www.onlinesbi.sbi/sbicollect/icollecthome.htm?corpID=643164>

The candidates found eligible for admission need to pay **Rs. 3860.00 (Rupees Three Thousand Eight Hundred and Sixty only)** as Admission Fee and charges for the First Year of study.

7. **IMPORTANT INFORMATION:**

- All information regarding the admission will be notified online and through the designated admission portal which may be accessed by the following link (<https://jucem.formflix.com/>), which is also provided in the university website.
- Individual communication with the candidates, if required, will be made through their e-mail id registered during application.
- The admission schedule will follow the chart as given in the Brochure. In case of any unavoidable change, the same will be notified on admission portal only.
- An incomplete application may be rejected without any communication.
- Any wrong information furnished or suppression of information, if detected at any point of time, may lead to cancellation of the application or admission without any correspondence.
- Submission of application or fulfillment of eligibility criteria or rank in the merit list to be published does not confer any right of the applicant to be considered for admission.
- The Admission Committee reserves the right of not selecting any candidate who is found ineligible after verification of original document or physically unfit or otherwise unsuitable. The decision of the competent authority of the university in the matter of admission is final and binding. For any query and/or grievances mails may be sent to the following helpdesk email id with the subject matter “Query regarding Admission to 5-Year UG Degree Programme”. Communication of any other form including telephone or mails sent to any other address or with different subject heading will not be entertained.

Helpdesk email: dpsnrb@gmail.com

8. **Anti-Ragging:**

It is being brought to the notice of all concerned that Ragging is not only a social evil but also a penal offence. Any student/s indulging in ragging of any student/s including freshers during admission / interview and / or subsequently at the hostel or in the class or in the corridors or anywhere inside and outside of the campus, shall be severely dealt with on pain of punishment ranging from loss of academic year / loss of hostel boardership to expulsion from the university itself. Reporting to the Police Station may also be made in addition to the above punishment. The University is to follow all the directives of the “UGC REGULATION ON CURBING THE MENACE OF RAGGING IN HIGHER EDUCATIONAL INSTITUTIONS, 2009 under the direction of the Hon’ble Supreme Court of India. The “UGC REGULATION ON CURBING THE MENACE OF RAGGING IN HIGHER EDUCATIONAL INSTITUTIONS,2009” as well as the names and phone numbers of the members of the Anti-Ragging Committee and Anti-Ragging Squad are available in the following link. https://admission.jdvu.ac.in/UGC_JU_Anti-ragging.pdf

INFORMATION BROCHURE FOR ADMISSION TO UG EVENING DEGREE PROGRAMMES

FACULTY OF ENGINEERING & TECHNOLOGY

The student and his/her guardian have to produce anti ragging declaration after admission as per existing rules and regulations after filling up the anti-ragging declaration form in the following url: https://antiragging.in/affidavit_university_form.php

After filling-up the form online successfully, a student will receive an E-MAIL with his / her registration number and a web link from UGC Anti-Ragging Cell. The student will forward the link to the following e-mail address of Jadavpur University: antiragging@jadavpuruniversity.in

Please note that the hard copy of the Anti-Ragging affidavit needs to be submitted to the University manually at the time of admission. Follow University website for notification in this regard, from time to time.

9. Withdrawal & Refund:

Refund of admission fee will be made to the eligible candidate as per latest UGC norms after successful application for studentship withdrawal in the prescribed format available in the University website.

10. Seat Matrix for 5-Year UG Degree Programmes for Working Professionals:

Course	General	OBC- A	OBC- B	SC	S T	EWS	Total	Central Govt. (Other)
Civil Engg.	28+1(PWD)	5	4	11+1(PWD)	3	5	58	1
Electrical Engg.	28+1(PWD)	5	4	11+1(PWD)	3	5	58	1
Mechanical Engg.	28+1(PWD)	5	4	11+1(PWD)	3	5	58	1

11. Tentative schedule of the Admission Process

[The schedule may be changed under unavoidable circumstances and will be notified online]

Sl. No.	Activity	Date
01	Opening of online Application form on Admission Portal	16/08/2024
02	Last date of online submission of Application Form	27/08/2024
03	Publication of the list of applicants submitting the application form	29/08/2024
04	Grievances, if any, regarding missing of application, with documentary evidence of submission	30/08/2024
05	Issuance of Admit Card for Entrance examination	03/09/2024
06	Date of Entrance examination	05/09/2024 (12:00 noon to 1:30 p.m.)
07	Uploading the answer keys	05/09/2024 (After examination by 4:00 p.m.)
08	Challenging the answer keys by the candidates	06/09/2024 (till 5:00 p.m.)
09	Uploading the final answer keys	09/09/2024 (by 7:00 p.m.)
10	Publication of Provisional Merit List and notification for Physical verification–cum- Provisional Admission	12/09/2024
11	Physical verification–cum- Provisional Admission for selected candidates	17/09/2024 (11:00 a.m. to 4:00 p.m.)
12	Declaration of vacancies	18/09/2024
13	Physical verification–cum- Provisional Admission for waitlist candidates (if any)	20/09/2024 (waitlisted candidates must report by 11 a.m.)
14	Date of Commencement of classes	23/09/2024

Candidates selected for provisional admission and waitlisted candidates must report on notified date & time. Otherwise candidature will be cancelled.

List of competent authorities to issue SC / ST / OBC-A / OBC-B certificates

SC/ST Certificates are to be issued by any of the following authorities:

- I. Sub-Divisional Officers for all districts except Kolkata
- II. District Welfare Officer, Kolkata & Ex-Officio Joint Director, B.C.W. in case of Kolkata Municipal Area (as defined in clause (9) of Section 2 of K.M.C Act, 1980

OBC-A / OBC-B Certificate issuing authority for candidates claiming under such reserve category of seats are as per Notification vide No. 374(71)-TW/EC/MR-103/94 dated 27/7/1994, read with Memorandum No. 1204-SBCW/MR-67/10 dated 27/7/2015 issued by Backward Classes Welfare Department. Govt. of W.B., the Sub Divisional Officer of a Sub- Division in a District is the certificate issuing authority. In Kolkata such certificate is issued by such an officer as the State Government by modification authorizes. Accordingly, the District Welfare Officer, Kolkata, and Ex-Officio Joint Director, BCW has been notified to act as the certificate issuing authority in respect of Kolkata covering the jurisdiction of the Kolkata Municipal Corporation.

Annexure 2

FORMAT OF CERTIFICATE TO BE PRODUCED BY NON CREAMY LAYER (NCL) OTHER
BACKWARD CLASSES

GOVERNMENT OF WEST BENGAL
OFFICE OF THE SUB-DIVISIONAL OFFICER
SUB-DIVISION

DIST. - _____

CERTIFICATE FOR OTHER BACKWARD CLASSES

Certificate No. - _____

Date : _____

This is to certify that _____ son/daughter of

_____ of village _____

P.O. _____ P.S. _____

in the district _____ of the state of _____ belongs to the

community which is recognised as a Backward Class (Other Backward Class - Category A/B) by the Government of West Bengal, Under:-

and as a Backward Class by the Government of India for the State of West Bengal, under:-

_____ and his/her family ordinarily reside(s) in the

District of _____ of the state _____

This is also to certify that he does not belong to the category of persons/section (Creamy Layer) to whom reservation shall not apply as provided in Schedule II under Section 4 of the West Bengal Backward Classes (other than Scheduled Castes and Scheduled Tribes) (Reservation of Vacancies in Services and Posts) Act, 2012 or in Column No. 3 of the Schedule to the Govt. of India, Department of personnel & Training O.M. No. 36012/22/93-Estt (SCT) Dated 8-9-93, last revised vide O.M. No. 36033/1/2013 dated the 27th May, 2013.

Place :

Date :

Attach applicant's
recent passport size
photograph duly
attested

Office
Seal

Sub-Divisional Officer

DIST. - _____

STATE - _____

Annexure 3

FORMAT OF CERTIFICATE TO BE PRODUCED BY ECONOMICALLY WEAKER SECTION (EWS)

**Government of West Bengal
(Name & Address of the issuing the certificate)**

INCOME & ASSET CERTIFICATE TO BE PRODUCED BY ECONOMICALLY WEAKER SECTIONS

Certificate No. _____

Date _____

VALID FOR THE YEAR _____

Recent Passport
size attested
photograph of
the applicant

This is to certify that Shri/Smt./Kumari _____ son/ daughter/ wife of _____, a permanent resident of _____ village/Street _____ Post Office _____ District _____ Pin Code _____ in the state of West Bengal whose photograph is attested below belongs to economically Weaker Sections, since the gross annual income* of his/her family ** is below Rs 8 lakh (Rupees Eight Lakh only) for the financial year _____. His/her family does not own or possess any of the following assets ***:

- I. 5 acres agricultural land and above
- II. Residential flat of 1000 sq. ft and above
- III. Residential plot of 100 sq. yards and above in notified municipalities
- IV. Residential plot of 200 sq. yards and above in notified municipalities

2. Shri/Smt./Kumari _____ belongs to the _____ caste which is not recognized as a scheduled Tribe and other Backward Classes (Central List)

Signature with seal of Office _____

Name _____

Designation _____

Note 1 : Income covered all sources i.e. salary, agriculture, business, profession, etc

Note 2 : The term "Family" for this purpose include the person, who seeks benefit of reservation, his/her parents and siblings below the age of 18 years as also his/her spouse and children below the age of 18 years

Note 3 : The property held by a "Family" in different locations or different places/cities have been clubbed while applying the land or property holding test or determine EWS status.

Annexure 4**Syllabus**

- The syllabus is different for different branches of engineering.
- The detailed syllabus of different branches are given below:

A]**Electrical Engineering**

Electrical Circuit & Network: Basic Concepts, Series and Parallel AC circuits, Series and Parallel resonance, AC and DC circuits analysis, Network Theorems, Transient in DC Circuit, Laplace Transform, Two port network

Electrical Machines: Mechanism of Electro-Mechanical energy conversion, DC Generator and Motor, Single phase Transformer, Three phase Transformer, Auto transformer, Scott Connection,

Open Delta Connection, Three-Phase Induction Motor, Alternator, Synchronous Motor, Single phase motors, Special Motor.

Transmission and Distribution of Power: Basics of Power Transmission, Layout, Transmission Line Components, Transmission Line Parameters, Underground Cables, Performance of Transmission Line, Extra High Voltage Transmission, Components of Distribution System, Substations.

Switchgear and Protection: Necessity & functions, Circuit interrupting devices, Circuit breakers, Auto-reclosing, Protective Relaying, Over current relay, Directional Relay, Distance Protection Scheme, Differential Relay, Static over current relays, Generator protection, Transformer protection, Protection of Busbar & transmission line, Over voltage Protection.

Electrical Measuring Instruments: Fundamentals and Basic Requirements, Measurement of single phase and three phase Current, Voltage, Power and Energy, Measurement of Resistance, Single phase and three phase Power Factor Meter, Digital Multimeter, Synchronoscope. Instrument Transformer: CT and PT.

Electrical Measurement & Control: Transducers: Types, Classification, Transducer for measurement of Temperature, Pressure, Velocity, Speed, displacement; Capacitive and Piezoelectric transducer, load cell, Tachometer, Electromagnetic and turbine flow meter; Signal conditioning: Concept, AC and DC signal conditioning,

Instrumentation Amplifier, Filters, Digital instruments and Display Devices; Pilot Devices: Push Button, Limit Switch,

Float Switch, Electromagnetic Relay, Pressure switch, Thermostats plugging switch, Proximity switch; Control System: Classification, Feedback control system, idea on stability, Control system components, Concept of transfer function, poles and zeroes, transfer function of first & second order system, time response characteristics of first and second order system to unit step excitation, Block diagram representation of control system, Stability concept, ON/OFF, P, PI, PD, PID controller.

Utilization, Traction, Heating and Drives: Illumination: Terms Used in Illumination, Laws of Illumination, Different types of lamps, Electric Heating, Resistance Heating, Arc Heating, Induction Heating, Dielectric Heating, Electric Welding, Electric Drives, Electric Traction, Traction Mechanics, Traction Motors, Economic Aspects of Utilising Electrical Energy

Power Plant Engineering: Basics of Power Generation, Thermal Power Stations, Nuclear Power Stations, Hydro Power Stations, Diesel Electric Power Stations, Gas Turbine Power Plants, Non-Conventional Energy Sources, Solar Energy, Wind Energy, Economics of Power Generation, Interconnected Power Systems.

Basic Electronics: Semiconductor Diode, Zener Diode, Rectifiers & Filters, Bipolar Junction Transistor (BJT), Field effect transistor (JFET), Unijunction transistor (UJT), Biasing of BJT, Regulated Power Supply, Small Signal Amplifiers.

Power Electronics & Drives: Thyristor (SCR), Switching & Timer Circuits, AC to DC Converter, Inverter, DC Chopper, DC & AC Drives, Uninterrupted power supply.

Applied and Digital Electronics: Power Amplifiers, FET Amplifier, Operational Amplifier, Feedback Amplifiers & Oscillators, Boolean Algebra & Combinational Logic Circuits, Sequential Logic Circuits, Data Converters & Memory Devices.

Microprocessor and microcontroller: Microprocessor Basics, Microprocessor Programming, Application of microprocessor, Microcontroller Basics, 8051 addressing modes and instructions, 8051 interrupts, Application.

B] CIVIL ENGINEERING

Part A: Strength of Materials and Engineering Mechanics- 20 marks (10 questions)

Part B: Civil Engineering Subjects (80 Marks, 40 questions) comprising of:

Syllabus:

Part – A: Applied Mechanics:

Friction between solid bodies; equilibrium of rigid bodies; centre of mass and centre of gravity; work, power and energy; principle of virtual work. Direct and shear stresses, strain elasticity, Hooke's law, Poisson's ratio, Young's modulus, modulus of rigidity and bulk modulus, working stress, factor of safety.

Structural elements, BM and SF diagrams theory of simple bending. distribution of bending stresses and shear stresses, Principal stresses and principal planes, Mohr's circle, Moment of internal section modulus, radius of gyration, torsion of circular shafts.

Use of simple column formula.

Solution of determinate trusses.

Fluid Mechanics - pressure at a point, Pascal's law of pressure within a static fluid, buoyancy, stability of submerged and floating bodies; Steady and unsteady flow, uniform and nonuniform flow, laminar and turbulent flow. Reynolds number.

Part – B: General Civil Engineering:

Surveying:

Surveying Correction for measured length by chain and tape. Field problems and their solutions, Compass Traversing. Closing error in compass traverse and its correction, Levelling. Cross - section Long section, measurement of areas, plane table surveying, Contouring.

Planning and Construction:

Brick bonding, types of ordinary foundations, shoring and timbering. D.P.C. Flooring. Plastering, White washing. Skirting, Dado, Layout of water and sanitary lines in residential building. Water closets, intercepting chambers.

Connection of house drains to streets sewers.

Irrigation:

Methods of Irrigation, water requirement of crops, ground water – well hydraulics, Design of Irrigation canal systems.

Sanitary Engineering:

Sewers, sewer appurtenances, different system of sewerage, sewage BOD of sewage, Aerobic and Anaerobic process fundamentals of septic tanks, activated sludge and trickling filter. Demand of water, potable water, source of water. development of ground water sources, impurities in natural waters. water works Intake, slow sand filter, rapid sand filters. disinfection of public water supplies, causes and removal of hardness.

Soil Mechanics:

Formation, identification and classification of soils. Three phase system Water content, void ratio, degree of saturation, Bulk density etc. Limits of consistency. Total and effective stress.

Roads and Railways:

Roads and Railways Survey. Construction and maintenance, Road permanent way structures with formation, Road and Railway crossings road Intersections and Railway Track connections of various types road signs, Railway signals, Railway yards, road metals and their specifications, parts of Culverts.

I. Applied Mechanics and Machine Design:

Sl.No.	Subject	Course Content
1.	Engineering Mechanics	Basic engineering mechanics, statics, vectors, kinematics and kinetics, work-power-energy.
2.	Strength of Materials	Stress-Strain relations, bending & shear stress, deflection of beam, torsion, column & struts, Spring.
3.	Theory of Machines	Kinematic pair, links, mechanisms, inversions, velocity and acceleration analysis, Cam follower, Power Transmission: Belt, Gear, Flywheel, Governor, Brakes, Dynamometers, Clutch, Balancing and Vibration.
4.	Design of Machines Elements	Introduction, Static & Dynamic loads, Theories of Failure, Cotter Joint, Knuckle Joint, Shafts, Keys and Couplings, Spur Gears, Pulley, Fasteners, Bearings.
5.	Mechanical Engineering Drawing	Projection, orthographic views, Development of Surfaces, Intersection of Solids, Drawing conventions, Limit-Fit-Tolerances-Surface Roughness, Sectional views, Assembly drawing, Part Drawing and detailing. AutoCAD basics.

II. Fluid Mechanics-Hydraulics and Heat Power:

Sl.No.	Subject	Course Content
1.	Fluid Mechanics	Properties of Fluid, Fluid pressure and pressure Measurement, Types of Fluid Flow, Flow Through Pipes.
2.	Hydraulic Machines	Impact of Jets, Turbines, Centrifugal pumps, Reciprocating Pumps.
3.	Hydraulic System	Components of Fluid Power Systems (pump/compressor, pipe fittings, etc.
4.	Thermodynamics	Laws of Thermodynamics, Properties of Perfect Gas, Properties of Steam, Carnot Gas Power Cycle and Carnot Vapour Power Cycle, Rankine Cycle.
5.	Boilers & Steam Condenser	Boiler types, accessories & mountings, Performance, Draught, feed water treatment, high pressure boiler. Condenser Type, Working Principle, Efficiency, Leakage, Draught and Cooling Towers.
6.	Refrigeration	Measurements of refrigeration, Refrigerant, Air Refrigeration cycles, Vapour Compression Refrigeration, Applications.
7.	IC Engine	Air-standard cycles, 2-stroke & 4-stroke engines, Valve Timing Diagram, Scavenging, Preignition, Detonation, Supercharging, Turbo-charging, Simple Carburettor, M.P.F.I. and Fuel Injection.
8.	Gas Turbine	Gas Turbine Cycle & Processes, Thermal Efficiency, Classification and Applications, Closed Cycle & Open Cycle Gas
9.	Hydraulic Turbines:	Water Turbines, Velocity Diagrams, Work done, Power and Efficiency of turbine.
10.	Power Plant Engineering	Steam, Nuclear, Gas turbine - power plant, non-conventional power.

IV. Production:

Sl.No.	Subject	Course Content
1.	Manufacturing Processes	Classification of manufacturing processes - Shaping process, Joining & Finishing process, Casting, Forging, Rolling & Extrusion, Machine Tools – Lathe, Drilling, Milling, Welding, Shaping.
2.	Mechanical Engineering Materials	Engineering Materials, Crystal Structures, Phase Transformation & Heat treatment, Surface hardening, Alloys, Polymers and Composites.
3.	Jigs Fixtures, CNC	Jig and fixture, principle of location. Concept of NC & CNC, Advantages & Disadvantages.
4.	Metal Cutting	Metal cutting, Tool wear, Machinability, Tool materials, Cutting Tool Geometry.
5.	Industrial Management	Types of Business, Management Principles, Organizational Structure, Human Resource, Materials Management, Safety Engineering
6.	Material Handling	Material handling Systems & Selection, Hoisting & Conveying Machinery, Surface Transportation Equipment.
7.	Production Management	Production System, Plant location, Plant layout, Process Planning, Production Planning and Control, Work Study, Maintenance of machine Tools, Quality Control.