

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT
(An Autonomous Institute U/s UGC Act 1956)

B.Tech. SEMESTER-I, SEMESTER END EXAMINATION – WINTER 2025

SUBJECT CODE: 2EL102

DATE: 24-12-2025

SUBJECT NAME: ELECTRICAL POWER GENERATION

TIME: 11:00 AM to 01:30 PM

TOTAL MARKS: 70

Instructions

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Write answers of **Section A** and **Section B** in **separate answer books**.
3. Attempt all questions from both **Section A** and **Section B**.
4. Each section carries **35 marks**, with a total of **70 marks** for the examination.
5. The figures to the right of each question indicate full marks, make suitable assumptions with justification.
6. BL - Cognitive Level (As per Revised Bloom's Taxonomy) (R-Remember, U-Understanding, A –Application, N –Analyze, E – Evaluate, C -Create), CO - Course Outcomes.

SECTION A

	Marks	BL	CO
Q.1 (a) What is a solar Power Plant? Explain with block diagram.	03	R	5
(b) Explain how wind energy is converted into electrical energy.	04	R	5
Q.2 (a) Selection of Site for a Diesel Power Station.	03	R	3
(b) Advantages, Disadvantages & Application of Diesel Power Plant.	04	R	3
(c) Schematic arrangement of Diesel-Electric Power Plant and explain in Details	07	U	3
OR			
Q.2 (a) What are the advantages and disadvantages of gas turbine power plant?	03	R	3
(b) What are the classifications of gas turbine power plant?	04	R	3
(c) Draw and explain a neat schematic of a gas turbine combined cycle power plant.	07	U	3
Q.3 (a) Define: (i) Load factor (ii) Maximum demand (iii) Plant capacity factor	03	R	6
(b) What is tariff? Define the types of tariff.	04	U	6
(c) The monthly consumption of energy of a consumer is 300 units. Tariff is as follows. For first 50 units 2.70 Rs per unit For the next 50 units 3.00 Rs per unit For the next 100 units 3.60 Rs per unit For the remaining units 4.10 Rs per unit. Calculate the monthly bill.	07	N	6

OR

Q.3	(a) What do you understand by base load plant and peak load plant?	03	R	6
	(b) What is load curve? Explain in detail.	04	U	6
	(c) The monthly reading of consumer meter are as follow: Maximum demand = 50KW Energy consumed = 36,000KWh Reactive energy = 23,400KVAR If the tariff is Rs.80per KW of maximum demand pulse 8 paise per unit pulse 0.5 paise per unit for each 1% of power factor below 86%, calculate the monthly bill of the consumer	07	N	6

SECTION B

		Marks	BL	CO
Q.4	(a) Explain the merits and demerits of a hydro-electric plant.	03	R	6
	(b) Draw a neat schematic diagram of a hydro-electric plant and explain the functions of any two components of a hydro-electric plant.	04	U	6
Q.5	(a) Why is the overall efficiency of a steam power station very low?	03	U	5
	(b) What factors affect the choice of site for a thermal power station?	04	U	5
	(c) In context with steam power plant, briefly explain the function of (i) Boiler (ii) Superheater (iii) Economiser (v) Air preheater	07	A	5
OR				
Q.5	(a) What is the function of a condenser in a steam power station?	03	U	5
	(b) Name any four auxiliaries used in a thermal power plant and state their purpose.	04	R	5
	(c) Draw and explain the schematic arrangement of a steam power station.	07	U	5
Q.6	(a) What is the function of the moderator in a nuclear reactor?	03	U	3
	(b) What is chain reaction? How it is controlled?	04	U	3
	(c) Draw a labeled diagram of Nuclear Reactor. Briefly discuss Pressurized Water and Boiling Water Reactors.	07	A	3
OR				
Q.6	(a) What are the advantages and disadvantages of nuclear power stations?	03	U	3
	(b) What are the safety precautions taken in nuclear power stations to prevent radiation hazards?	04	U	3
	(c) Draw the schematic diagram of a nuclear power station and explain its operation.	07	A	3
