Ref. No. Ex/PE/HC/B/T/411/2025

Bachelor of Power Engineering Final Year 1st Semester Examination 2025

Subject: **Energy Planning, Management, Audit and Acts**

Time 3 Hour **Full Marks 100**

Q1. CO1 (Answer any Seven) 7x2 = 14

A). What is Reactive Power Tariff?
B). What is Frequency based Mechanism for Energy Pricing?
C)What are the components of energy mix?
D). What are SDG6 and SDG12?
E). What is Grid Code Technical Requirement for Active Power Supply?
F). How Grid Code Compliance Management is made for Renewable Integrated Grid?
G). What are Energy intensity Indicators?
H). What is Demand Side Management?
I). What are the different Types of Prosumers?
J). What is OTC in Energy Trading?
K). What is Energy Purchase Agreements?
L). What is Non Cooperative Energy Bidding?
M) How Energy Pricing at the Transmission Level is made?

Q2. CO2 (Answer Any Seven) 7x3 = 21

1. What is PAT cycle?
2. What is Lean Load Period?
3. What are the Statements of IEA 2006?
4. What is pumped hydro storage?
5. How Trading of REC is done?
6. How Green Energy Open Access is made?
7. What is Tri-generation cycle?
8. What is ESCOs?
9. What is SECF?
10. What is Section 18 of EC Act 2001?
11. How Energy Efficiency and Performance Assessment for Boilers are done?
12. What are different forms of Hydrogen Energy?
13. What is week ahead energy Bidding?
14. How Star Labelling of Energy Efficient Appliances are done?
15. What is a Smart Meter?

Q3. CO3 (Answer Any Seven) 7x2 =14

i). What are the CDM?
ii). What is GEF??

iii). What are the Four Components of Energy Management Plan?

iv). What is Eutrophication?

v). What is Green Fuel?

vi). Define Carbon Footprint?

vii). What is the Importance of BEE Star Ratings?

viii). What is a Renewable mix?

ix). What is CFB Boiler?

x). What is Energy Efficiency Ratio?

xi). What are the Three parts of Energy Management?

xii). How Near-term Changes of Radiative Forcing is ascertained?

Q4. CO4 (Answer any Seven) 7x3 =21

1. What is wheeling of Power?
2. What is Unscheduled Power Interchange (UI)?
3. How Grid Code Compliance is done in ABT Mechanism?
4. Why is RPO important for Discom?
5. What are the different Energy Audit Instruments?
6. What is Grid Code Testing?
8. How ABT in Renewable Source based generation is accomplished?
10. What is Transmission Reliability Margin?
11. What are the Pre Energy Audit Phase Activities?
12. What are ECBCs?

Q5. CO5 (Answer any Three) 10x3 = 30

1. Compute Cash Flow from Operating Activities from the following information of a Energy Business:

i).	Net Profit after Provision for Tax and Proposed Dividend	1,90000/-
ii)	Provision for Tax	65000/
iii)	Proposed Dividend	30, 000/’
iv)	Depreciation	70, 000/-
v)	Goodwill written Off	15, 000/-
vi)	Loss on Sale of Plant	5,000/-
vii)	Gain on Sale of Land	35.000/-
viii)	Income Tax Paid	50, 000/-

ix)	Income Tax Refund	10, 000/-
x)	Dividend Paid	50,000/-
xi)	Interest on Bank Overdraft	8, 000/-
xii)	Interest on Term Deposit for Capital Expenditure	25, 000/-

2. An investment of Rs 150000 in an Induction Motor is expected to produce CFAT of Rs 30000 for 10 years.Calculate the payback period.

3. Calculate the Average Rate of Return From the Following:

Year	Investment	PAT
1	190000	120000
2	180000	122000
3	170000	124000
4	160000	126000
5	150000	128000

4. A purchase of an Electrical Item requires an initial investment of Rs 5000 and it is expected to generate a cash flow of Rs 800 for 3 years plus Rs 25500 in the third year. The target rate of return of the project is 12% per annum. Calculate the Net Present Value of the Item.

Or

A renewable based home project with a 3 year life and a cost of Rs. 100,000 generates revenue of Rs. 20,000 in year 1, Rs. 35,000 in year 2, and Rs. 60, 000 in year 3. If the discount rate is 8%, what is the NPV of the project?

5. Find the IRR of an investment in a renewable based business having initial cash outflow of Rs. 250,000. The cash inflows during the first, second, third and fourth years are expected to be Rs. 66,000, Rs. 78,000, Rs. 92,000 and Rs. 105,000 respectively.