

Bachelor of Power Engineering Final Year 1st Semester Examination 2024

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

Time 3 Hour

Full Marks 100

1. CO1 (Answer any Seven)

7x2 = 14

1. How Energy Pricing at the Distribution Level is made
2. What is Frequency Based Mechanism for Energy Pricing
3. What are SDG7 and SDG13
4. What is Grid Code Technical Requirement for Reactive Power Supply
5. How Grid Code Compliance Management is made for Renewable Integrated Grid
6. What is a Prosumer
7. What is Grid Code Technical Requirement for 'Ride Through' during Short Interruptions
8. What is DSM
9. What is OTC in Power Trading
10. What is Non Cooperative Energy Bidding

2. CO2 (Answer Any Seven)

7x3 = 21

1. What are the Statements of IEA 2006
2. What is the PAT Scheme in India
3. How Trading of REC is done
4. How Green Energy Open Access is made
5. What is ESCOs
6. What is Section 27 of EC Act
7. What are the Penalties for Violation of Energy Conservation Act 2001
8. How Assessment of Specific Power Requirement for a Pump is made
9. How Energy Balance of a Typical FBC Boiler is made
11. Why Application of Variable Speed Drives are important for energy efficiency
12. Name two Different Software for Assessment of T and D Losses
13. How Star Labelling of Energy Efficient Motors are done
14. What is ECBC
15. What is Trigenation

3. CO3 (Answer Any Seven)

7x2 = 14

1. What are the Three main parts of Energy Management
2. What are the Components of Energy Management Plan
3. What are the Limitations of Payback Period

[Turn over

4. What are the Limitations of IRR
5. What is Time Value of Money
6. What is Salvage Values for Machines
7. Why Sensitivity and Risk Analysis is done for Power Project
8. How Long-term Climate Change and Energy Systems are connected
9. How Near-term Changes of Radiative Forcing is ascertained
10. What is Eutrophication
11. What is "The Conference of the Parties (COP)"
12. Define Kyoto Protocol
13. What is SME in Business
14. What is SDA in Energy

4. CO4 (Answer Any Seven)

7x3 = 21

1. What is FIP for Business? What are their Functions
2. What is Standard Order Book? How do they work
3. What is Capacity Management Module (CMM)? How do they work
4. What are the Components of ABT
5. What is Unscheduled Power Interchange (UI) Incentive/Penalty
6. How ABT in Renewable Source based generation is accomplished
7. What are the Penalties for Grid Indiscipline in ABT Regime
8. What are the Pre-Audit Phase Activities for Energy Audit
9. What are the Types of Cogeneration on the basis of Technology
10. What is Energy Performance Contracting for Energy
11. What are the Steps to Develop a Typical ESCO Contract
12. How Long Term Energy Scenario for a Developing Economy is ascertained
13. State about Specific State Wise Energy Scenario for Two States of India
14. State about Energy Pricing Reforms in India

5. CO5 (Answer Any Three)

3x10 = 30

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

1. Net Profit after Provision for Tax and Proposed Dividend	1,50,000/-
2. Provision for Tax	75000/=
3. Proposed Dividend	40, 000/"
4. Depreciation	60, 000/-
5. Goodwill written Off	10, 000/-
6. Loss on Sale of Plant	5,000/-
7. Gain on Sale of Land	15.000/-
8. Income Tax Paid	60, 000/-
9. Income Tax Refund	10, 000/-
10. Dividend Paid	35,000/-
11. Interest on Bank Overdraft	10, 000/-
12. Interest on Term Deposit for Capital Expenditure	25, 000/-

2. Calculate Cash Flow from Operation Before Tax from the Information Given Below for Small Energy Business

	Amount in Rs	Amount in Rs
Sales		80000/-
Less: Cost of Goods Sold	30000/-	
Cash Operating Expenses	14000/-	
Depreciation	10000/-	
		54000/-
Profit before Tax		26000/-
Balance relating to Current Items are:	Opening Rs	Closing Rs
Debtors	12000/-	10000/-
Inventory	11000/-	14000/-
Creditors	9000/-	7000/-

3. Calculate the Pay Back Period from the Following of the Two Machines A and B

Year	Annual CFAT		Cumulative CFAT	
	A	B	A	B
1	24000	32000	24000	32000
2	26000	30000	50000	62000
3	28000	28000	78000	90000
4	30000	26000	108000	116000
5	35000	27000	143000	143000

4. If two Machines details are given, which one would you choose on the basis of Average Rate of Return. Estimated life for both the machines is five years. Estimated Salvage Value for both the Machines are Rs 13000 each. Depreciation has been charged on straight line basis.

Capital Outlay	A	B
	1,56,125	1,56,125

Annual estimated Income After depreciation & Income-tax

	Machine A	Machine B
Year	PAT	PAT
1	13,375	21,375
2	15,375	19,375
3	17,375	17,375
4	19,375	15,375
5	21,375	13,375
Total	86,875	86,875

5. A Company is considering the purchase of one of the following machines for Power Business, whose relevant data are given below:

	Machine A	Machine B
Original Cost	Rs 100000/-	Rs 100000/-
Estimated Life	3 Years	3 Years
Earnings (After Tax)		
Year 1	30000/-	20000/-
Year 2	50000/-	80000/-
Year 3	40000/-	40000/-
The Company follows the Straight Line Method of Depreciation. The estimated Salvage Value of both the Machines is Zero. Determine the Average Rate of Return of both the Machines		

6. A purchase of an Item connected to Power Business requires an initial investment of Rs 2000 and it is expected to generate a cash flow of Rs 100 for 3 years plus Rs 12500 in the third year. The target rate of return is 10% per annum. Calculate the Net Present Value of the Item. Avoid depreciation.