Name: **Enrolment No:**	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2023

Course: Energy Power Trading and Network Administration **Semester: 2nd**
Program: MBA Power Management **Time : 03 hrs.**
Course Code: PIPM7004 **Max. Marks: 100**

Instructions:

SECTION A
10Qx2M=20Marks

S. No.		Marks	CO
Q1.	What is the purpose of a Contract Performance Guarantee in a power purchase process?	**2**	**CO1**
Q2.	Which of the following options is correct for Day Ahead Market of the Power Exchange: a) Power can be purchased for upto 1 week in advance b) Is a double sided auction c) Once scheduled it cannot be cancelled or surrendered d) Falls under bilateral procedure	**2**	**CO2**
Q3.	With reference to the power exchange membership, what is the difference between Proprietary Member and Professional Member?	**2**	**CO2**
Q4.	As of 2023, how much trading margin is a trader authorized to charge?	**2**	**CO1**
Q5.	If a discom agrees to return 70% of the banked power, how much energy is being returned? Power banked is 250MW power for 15 days during the night hours from 00:00 to 05:00.	**2**	**CO2**
Q6.	Excessive under-drawl of power leads to an unwanted increase in grid frequency. (True/False)	**2**	**CO2**
Q7.	In accordance with the Electricity Act, 2003 define “Trading”.	**2**	**CO1**
Q8.	Briefly discuss the Contingency Application for Open Access transactions.	**2**	**CO1**
Q9.	Why is the difference between Collective and Bilateral Transactions?	**2**	**CO1**
Q10.	In accordance with the Trading License Regulations, what are the net worth requirements and trading volume restrictions for a Category III Trading Licensee?	**2**	**CO1**
	SECTION B **4Qx5M= 20 Marks**		
Q11.	Discuss the advantages of Reverse Auction Bidding over the conventional Bidding process.	**5**	**CO2**
Q12.	A Trader does not have a role in the Case II bidding process. Validate the statement by highlighting the characteristics of Case II bidding.	**5**	**CO2**

<table>
<tr><td>Q13</td><td>In the context of Power Trading, briefly discuss the responsibilities of a Central Electricity Regulatory Commission.</td><td>5</td><td>CO3</td></tr>
<tr><td>Q14</td><td>The Deviation Settlement Mechanism applicable for Unscheduled Interchange is also an effective grid management technique. Comment.</td><td>5</td><td>CO3</td></tr>
<tr><td colspan="4">SECTION-C
3Qx10M=30 Marks</td></tr>
<tr><td>Q15.</td><td>Utility A and Utility B entered into a banking agreement. Utility A agreed to bank the power as per the following details:
<table>
<tr><td>Period of Banking</td><td>Duration of Banking (Hrs)</td><td>Quantum (MW)</td></tr>
<tr><td>01.06.23 to 30.06.23</td><td>00.00 to 08.00, 10.00 to 14.00 and 22.00 to 24.00</td><td>110</td></tr>
<tr><td>01.07.23 to 31.07.23</td><td>00.00 to 09.00, 11.00 to 13.00 and 21.00 to 24.00</td><td>120</td></tr>
<tr><td>01.08.23 to 31.08.23</td><td>00.00 to 06.00, 10.00 to 13.00 and 21.00 to 24.00</td><td>150</td></tr>
<tr><td>01.09.23 to 30.09.23</td><td>00.00 to 24.00</td><td>160</td></tr>
</table>
The details for return are as under:
Period of Return: 01.04.24 to 31.07.24
Duration of Return: 00.00 to 12.00 and 22:00 to 24:00
Utility A has expressed its inability to offtake more than 90 MW power during the return period and has agreed to accept only 105% of the returnable power. It has further agreed that 120MW RTC Power will be offtaken during October 2024. Any short supply or extra supply will be settled at Rs. 2.10/kWh.

Calculate:
a) Volume of Power to be returned by Utility B at the start of the return period.
b) Settlement amount (if any)</td><td>10</td><td>CO3</td></tr>
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<td>Q16.</td>
<td>M/s ABC Ltd, located in Karnataka and connected at 132kV has the following power demand on a typical day:

00.00 to 08.00 Hrs: 16MW
08.00 to 18.00 Hrs: 32MW
18.00 to 24.00 Hrs: 24MW
The CPP Installed within the premises has a capacity of 30 MW and a generation cost of Rs. 3.25/kWh.

MCP of Exchange is Rs. 3.00/kWh

The prevailing tariff in the bilateral market is Rs. 4.50/kWh

Assuming that ABC Ltd. sells the CPP power on the exchange when the power is not being internally utilized or the bilateral tariff is relatively high.

Calculate

a) The Net Cash Inflow/Outflow towards ensuring power availability
b) The net income/expenditure from exchange transactions.

Applicable transmission charges and losses:

<table>
<tr><td>Region/State</td><td>Losses</td><td>Charges</td></tr>
<tr><td>Central Transmission System</td><td>1.30%</td><td>Rs. 0.10/kWh</td></tr>
<tr><td>Karnataka State</td><td>2.30%</td><td>Rs. 0.22/kWh</td></tr>
<tr><td>Karnataka Distribution</td><td>10%</td><td>Rs. 0.35/kWh</td></tr>
</table>
</td>
<td>10</td>
<td>CO4</td>
</tr>
<tr>
<td>Q17.</td>
<td>Discuss in detail the advantages of the Reverse Auction Bidding Process over the bidding process for power purchase followed earlier.</td>
<td>10</td>
<td>CO3</td>
</tr>
<tr>
<td colspan="4">SECTION-D
1Qx30M= 30 Marks</td>
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<td>Q18.</td>
<td>M/s Round the Clock Power Limited, a private distribution company operating in Tamil Nadu has floated a tender for the purchase of 300 MW RTC Power for a period of 3 months starting 1st June 2023. The quantum is on the seller’s bus bar. The net requirement of M/s Round the Clock Power Limited is approximately 280MW at their plant bus connected to the 132kV TN STU System.

The bidding process is complete, and the purchase order has been placed in favour of M/s Goodwill Thermal Power Station connected to 132kV Karnataka State Transmission System at Rs. 4.65/kWh at the seller’s bus bar.
During the month of May 2023, the tariff on the exchange has gone down and reached Rs. 3.60/kWh and is expected to continue at the same constant level. M/s Round the Clock Power Limited feels that purchasing power on the exchange would be beneficial and is contemplating a breach of the purchase contract.</td>
<td>30</td>
<td>CO4</td>
</tr>
</table>

According to the PPA executed between M/s Round the Clock Power Limited and M/s Goodwill Thermal Power Station, the compensation clause is as under:

a. Without prejudice to provisions of the Agreement relating to Force Majeure, both the Parties would ensure that actual supply/off take does not deviate by more than 20% of the contracted energy on a monthly basis

b. If the seller's default in the supply of energy exceeds 20% of the contracted quantum of energy on monthly basis, the seller shall pay compensation @ 150 Paise (One Hundred and Fifty Paise) per kWh for default in excess of permitted deviation of 20% of the contracted quantum of energy on monthly basis.

c. In case the buyer's default in offtake of energy exceeds 20% of the contracted quantum of energy on monthly basis, the buyer shall pay compensation to the seller @ 150 Paise (One Hundred and Fifty Paise) per kWh, for the quantum of shortfall in excess of permitted deviation of 20% of the contracted quantum of energy on monthly basis.

In the capacity of the Trading Advisor to M/s Round the Clock Power Limited, suggest if M/s Round the Clock Power Limited should go ahead with their plan.

Support your answer with relevant calculations.

State/Utility	Transmission Charges (Rs/MWh)	Transmission Losses (%)
Karnataka STU	35	2.30
Central System	43	1.75
Tamil Nadu STU	42	2.50

All other charges applicable as per regulations