# UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
## End Semester Examination, May 2024

**Course: Energy Trade & Risk Management**       **Semester: 6th**
**Program: BBA Oil & Gas Marketing**      **Time: 03 hrs.**
**Course Code: OGET3003**      **Max. Marks: 100**

**Instructions:**

## SECTION A
### 10Qx2M=20Marks

| S. No. | | Marks | CO |
|---|---|---|---|
| Q1. | Which of the following is not a financial derivative? <br>   a) Swap <br>   b) Option <br>   c) Forward <br>   d) Contango | 2 | CO1 |
| Q2. | Power Exchanges in India are a Spot Trading Platform. (True/False) | 2 | CO2 |
| Q3. | Power Trading was declared a legal activity in the year <br>   a) 2001 <br>   b) 2008 <br>   c) 2003 <br>   d) 2005 | 2 | CO2 |
| Q4. | An American option can be executed at any time during the validity of the option. (True/False) | 2 | CO1 |
| Q5. | Discuss DAM as a product traded on the Power Exchange. | 2 | CO2 |
| Q6. | Which of the following factors affect the price of the commodity <br>   a) Demand & Supply <br>   b) Location of the Commodity <br>   c) Weather <br>   d) All of these | 2 | CO2 |
| Q7. | Power Exchanges and Power Traders are two different business models operating in the Indian Power Market. Comment. | 2 | CO1 |
| Q8. | Natural gas is the cleanest burning Fossil Fuel. (True/False) | 2 | CO1 |
| Q9. | A trader enters into a long position in the Put Option. What is his current position in the market? | 2 | CO1 |
| Q10. | The level of India's crude oil import dependency is over 70% (True/False) | 2 | CO1 |

| | **SECTION B**<br>**4Qx5M= 20 Marks** | | |
|---|---|---|---|
| Q11. | Differentiate between American and European Options. | **5** | **CO2** |
| Q12. | Discuss the advantages of trading forwards. | **5** | **CO3** |
| Q13 | Discuss the various risk types faced by a coal based thermal power plant operator. | **5** | **CO3** |
| Q14 | Discuss the Monte Carlo method of calculating VaR. | **5** | **CO2** |
| | **SECTION-C**<br>**3Qx10M=30 Marks** | | |
| Q15. | A, a seller of power and B, a buyer enter into a contract to buy and sell power. The corridor has been booked as per regulations. However, 5 days prior to the supply, A encountered a problem in the power plant and had to request an immediate revision of the schedule.<br><br>Discuss the procedure and the details of retained transmission charges. | **10** | **CO3** |
| Q16. | Value of the portfolio: INR 200,000<br>Duration of the Investment: 1 month<br>Standard Variation: 10%<br>Calculate the Value at Risk at a 5% level of significance.<br>    a) In terms of value<br>    b) In terms of the percentage of the portfolio | **10** | **CO4** |
| Q17 | Discuss the importance of Trading Options. | **10** | **CO3** |
| | **SECTION-D**<br>**2Qx15M= 30 Marks** | | |
| Q18 | Two utilities, A and B engage in Banking of power. Calculate the volume (in units) and Quantum of Power (MW) returnable under the following condition:<br><br>Period of supply: 1st October 2024 to 31st December 2024<br><br>Quantum Banked:<br><br>| 01.10.2024 to 15.10.2024 | 00.00 to 05.00 & 23.00 to 24.00 | 70 |<br>|---|---|---|<br>| 16.10.2024 to 31.10.2024 | 00.00 to 24.00 | 60 |<br>| 01.11.2024 to 12.11.2024 | 00.00 to 05.00 & 23.00 to 24.00 | 30 |<br>| 13.11.2024 to 30.11.2024 | 00.00 to 24.00 | 70 | | **15** | **CO4** |

| 01.12.2024 to 31.12.2024 | 00.00 to 24.00 | 60 | | |
|---|---|---|---|---|

The return of power is required during 00.00 to 24.00 hrs.

   i.   Calculate the quantum of power returned if the return has to be 110% of the energy banked

   ii.   Calculate the number of days required for return if the return has to be 90% of the energy banked and the banking entity cannot offtake more than 90MW.

| Q19 | A & Co Limited, a 60 MW coal-based generator located in the Western Region connected to a 132kV substation has a total generation cost of Rs. 3.15/kWh. B & Co Limited, an industry located in Assam is willing to buy the power provided A & Co Ltd accepts to bear all the transmission charges and losses. Using the following variables, calculate the tariff at which the power could be offered. | | |
|---|---|---|---|

Quantum of Power: 30 MW

Period of Power Supply: 1st August 2024 to 31st October 2024

Duration of Power Supply: 00.00 to 24.00 hrs

The generator has fixed its profit margin at Rs. 0.15/kWh

Following is the schedule for Transmission Charges and Losses:

| State/Region | Transmission/Distribution Charges | Transmission/Distribution Losses |
|---|---|---|
| Maharashtra Transmission | Rs. 100/MWh | 7.08% |
| Central System | Rs. 213.40/MWh | 2.46% |
| Assam | Rs. 240/MWh | 10.57% |

*Other charges applicable as per procedure*

(Q19: Marks **15**, **CO4**)