Proposal for announcing seat under the Institute Internship Program
(separate form to be filled for seat under Institute funding and project funding)

1. **Name of faculty member proposing:** Dr. Namita Mittal
2. **Department/Centre:** Department of Computer Science &Engineering
3. **Topic on which work is proposed:** Electricity Load Forecasting Using Deep Learning Techniques
4. **Preferred period of internship (after May 20th):** Between 20 May 2024 to 30 June 2024
5. **Qualification of student (branch /semester of study):** B.Tech (CSE/ AIDE) – 6th /8th semester

6. **Brief description of work (300-500 words):**
This project focuses on implementing machine learning and deep learning techniques to forecast peak electricity demand in smart grids. By analyzing electricity consumption patterns, including daily, weekly, monthly, and seasonal trends, and considering external factors such as meteorological and time series data, we aim to enhance the accuracy of load forecasting. The project will involve identifying the optimal metric for feature optimization in the load forecasting process. The project will test and select the most suitable activation function for load forecasting models, followed by the validation and comparison of modeling results to identify the best-performing model based on evaluation metrics.

7. **Expected learning of student (upto 100 words):**
Engaging in this project will provide the student with a holistic learning experience encompassing various facets: Delving into energy systems, the student will be gaining insight into electricity consumption patterns and factors influencing peak demand in smart grids, like meteorological conditions and time series data. Through data analysis, the features vital for accurate load forecasting will be extracted. Hands-on experience in machine learning and deep learning will be acquired, covering algorithm development, model architectures, and optimization techniques. Moreover, the utilization of practical data science skills throughout the project's lifecycle will refine problem-solving acumen, critical thinking prowess, and the capacity for interdisciplinary integration.

8. **Nature of work: (Experimental/simulation/mathematical modelling/data collection-analysis etc.): upto 50 words**
This project combines experimental design, data collection, analysis, and mathematical modeling to forecast peak electricity demand in smart grids. It involves feature engineering, model experimentation, and validation using machine learning and deep learning techniques. Simulation methods may also be employed to evaluate model performance under different scenarios.

9. If the seat is under project sponsored category: No
   a) If yes, number of seats announced: 1
   b) Name and ID no. of project from which stipend is chargeable: Demand Response Management Platform in Smart Grid for Effective Performance (ID No. - DSTTDP77579)
   c) 10 k per month

Dr. Namita Mittal
Department of CSE

Note:

a) Proposing faculty member needs to be available at the Institute during the period internship is offered
b) No extra space or funding than the stipend will be provided by the institute for this purpose