Data Science Task: Customer Churn Prediction

You are a data scientist at a telecom company. You are provided with a dataset (customer_churn.xlsx) containing customer details such as tenure, monthly charges, contract type, gender, payment method, and whether the customer has churned (Churn column). Your task is to predict which customers are likely to churn.

Dataset Details:

- customerID (irrelevant for prediction)
- gender, Partner, Dependents, PhoneService, MultipleLines, InternetService, OnlineSecurity, OnlineBackup, DeviceProtection, TechSupport, StreamingTV, StreamingMovies, Contract, PaperlessBilling, PaymentMethod (categorical columns)
- tenure, MonthlyCharges, TotalCharges (numeric columns)
- Churn (target column: Yes/No)

Tasks:

1. Load the dataset and handle missing values appropriately.
2. Convert categorical features into numeric features using one-hot encoding.
3. Drop irrelevant columns if necessary.
4. Split the data into training and testing sets.
5. Train a Random Forest Classifier to predict churn.
6. Evaluate your model using accuracy, confusion matrix, and classification report.