```python
import streamlit as st
import pickle
import numpy as np

# Set the page
configuration
st.set_page_config(page_title="Air Quality Forecast Machine Learning
Model", layout="centered")

# Cache the model using the new caching
mechanism
@st.cache_resource
def load_model():
    with open('model.pkl',
'rb') as file:
        return pickle.load(file)

# Load the model
model =
load_model()

# Sidebar for inputs
st.sidebar.title("Enter Pollutant
Levels")
st.sidebar.write("Adjust the sliders or enter values manually.")

#
Input fields for pollutants in the sidebar
PM2_5 = st.sidebar.slider("PM2.5
(µg/m³)", 0.0, 500.0, step=0.1, value=50.0)
PM10 = st.sidebar.slider("PM10
(µg/m³)", 0.0, 500.0, step=0.1, value=50.0)
NO = st.sidebar.slider("NO
(µg/m³)", 0.0, 500.0, step=0.1, value=20.0)
NO2 = st.sidebar.slider("NO2
(µg/m³)", 0.0, 500.0, step=0.1, value=20.0)
NOx = st.sidebar.slider("NOx
(µg/m³)", 0.0, 500.0, step=0.1, value=20.0)
NH3 = st.sidebar.slider("NH3
(µg/m³)", 0.0, 500.0, step=0.1, value=20.0)
CO = st.sidebar.slider("CO
(mg/m³)", 0.0, 10.0, step=0.01, value=0.5)
SO2 = st.sidebar.slider("SO2
(µg/m³)", 0.0, 500.0, step=0.1, value=20.0)
O3 = st.sidebar.slider("O3
(µg/m³)", 0.0, 500.0, step=0.1, value=50.0)
Benzene = st.sidebar.slider("Benzene
(µg/m³)", 0.0, 500.0, step=0.1, value=1.0)
Toluene = st.sidebar.slider("Toluene
(µg/m³)", 0.0, 500.0, step=0.1, value=1.0)
Xylene = st.sidebar.slider("Xylene
(µg/m³)", 0.0, 500.0, step=0.1, value=1.0)

# Title and description in the main
area
st.title("Air Quality Forecast: Machine Learning
Model")
st.write("""
Enter the pollutant levels using the sliders in the
sidebar.
Click the "Predict AQI" button to calculate the Air Quality Index
(AQI).
""")

# Predict button and output
if st.button("Predict
AQI"):
    try:
        # Prepare input
        input_features = np.array([[PM2_5,
PM10, NO, NO2, NOx, NH3, CO, SO2, O3, Benzene, Toluene, Xylene]])

        # Make
prediction
```

```python
        prediction = model.predict(input_features)[0]

        # Display
result
        st.success(f"Predicted AQI: {prediction:.2f}")

st.write("""
        The Air Quality Index (AQI) is a measure used to
communicate how polluted the air currently is or how polluted it is forecasted to become.

    """)
    except Exception as e:
        st.error(f"Error:
{str(e)}")

# Footer
st.write("---")
st.caption("Ashish Mishra
???")
```