```
import pandas as pd
import numpy as np
from sklearn.preprocessing import StandardScaler

df = pd.read_csv('day.csv')

print("Original shape:", df.shape)
print("\nMissing values:\n", df.isnull().sum())
print("\nData types:\n", df.dtypes)
print("\nFirst 5 rows:\n", df.head())

df.drop(['instant', 'dteday', 'casual', 'registered'], axis=1, inplace=True)

categorical_cols = ['season', 'yr', 'mnth', 'holiday', 'weekday', 'workingday', 'weathersit']
for col in categorical_cols:
    df[col] = df[col].astype('category')

df_encoded = pd.get_dummies(df, drop_first=True)

scale_cols = ['temp', 'atemp', 'hum', 'windspeed']
scaler = StandardScaler()
df_encoded[scale_cols] = scaler.fit_transform(df_encoded[scale_cols])

X = df_encoded.drop('cnt', axis=1)
y = df_encoded['cnt']

print("\nProcessed shape of X:", X.shape)
print("Processed shape of y:", y.shape)
```

```
Original shape: (731, 16)

Missing values:
 instant       0
dteday         0
season         0
yr             0
mnth           0
holiday        0
weekday        0
workingday     0
weathersit     0
temp           0
atemp          0
hum            0
windspeed      0
casual         0
registered     0
cnt            0
dtype: int64

Data types:
 instant         int64
dteday         object
season          int64
yr              int64
mnth            int64
holiday         int64
weekday         int64
workingday      int64
weathersit      int64
temp          float64
atemp         float64
hum           float64
windspeed     float64
casual          int64
registered      int64
cnt             int64
dtype: object

First 5 rows:
    instant      dteday  season  yr  mnth  holiday  weekday  workingday  \
0        1  01-01-2011       1   0     1        0        6           0
1        2  02-01-2011       1   0     1        0        0           0
2        3  03-01-2011       1   0     1        0        1           1
3        4  04-01-2011       1   0     1        0        2           1
4        5  05-01-2011       1   0     1        0        3           1

   weathersit      temp     atemp       hum  windspeed  casual  registered  \
0           2  0.344167  0.363625  0.805833   0.160446     331         654
1           2  0.363478  0.353739  0.696087   0.248539     131         670
2           1  0.196364  0.189405  0.437273   0.248309     120        1229
3           1  0.200000  0.212122  0.590435   0.160296     108        1454
4           1  0.226957  0.229270  0.436957   0.186900      82        1518

    cnt
0   985
1   801
```