```python
import pandas as pd
import matplotlib.pyplot as plt

# a. Create the DataFrame
COVID_TESTS = pd.DataFrame({
    'Number': [1, 2, 3, 4, 5, 6],
    'State': ['Maharashtra', 'Karnataka', 'Gujarat', 'Delhi', 'Madhya
Pradesh', 'Kerala'],
    'Active_Cases': [2000, 1278, 694, 235, 548, 1836],
    'Positive': [36, 45, 100, 150, 65, 87]
})

print("a. COVID_TESTS DataFrame:")
print(COVID_TESTS)
```

```
a. COVID_TESTS DataFrame:
   Number           State  Active_Cases  Positive
0       1     Maharashtra          2000        36
1       2       Karnataka          1278        45
2       3         Gujarat           694       100
3       4           Delhi           235       150
4       5  Madhya Pradesh           548        65
5       6          Kerala          1836        87
```

```python
# b. Show the last 2 records
print("\nb. Last 2 records:")
print(COVID_TESTS.tail(2))
```

```
b. Last 2 records:
   Number           State  Active_Cases  Positive
4       5  Madhya Pradesh           548        65
5       6          Kerala          1836        87
```

```python
# c. Sort by positive cases in descending order
print("\nc. Sorted by Positive cases (descending):")
sorted_df = COVID_TESTS.sort_values(by='Positive', ascending=False)
print(sorted_df)
```

```
c. Sorted by Positive cases (descending):
   Number           State  Active_Cases  Positive
3       4           Delhi           235       150
2       3         Gujarat           694       100
5       6          Kerala          1836        87
4       5  Madhya Pradesh           548        65
1       2       Karnataka          1278        45
0       1     Maharashtra          2000        36
```

```python
# d. States where positive cases >= 100
print("\nd. States with Positive cases >= 100:")
states_high_positive = COVID_TESTS[COVID_TESTS['Positive'] >= 100]
['State']
print(states_high_positive.to_string(index=False))
```

```
d. States with Positive cases >= 100:
Gujarat
  Delhi
```

```python
# e. Records where positive < 100 and active > 1000
print("\ne. Records with Positive < 100 and Active_Cases > 1000:")
filtered_records = COVID_TESTS[(COVID_TESTS['Positive'] < 100) &
(COVID_TESTS['Active_Cases'] > 1000)]
print(filtered_records)
```

```
e. Records with Positive < 100 and Active_Cases > 1000:
   Number        State  Active_Cases  Positive
0       1  Maharashtra          2000        36
1       2    Karnataka          1278        45
5       6       Kerala          1836        87
```

```python
# f. Bar chart showing active and positive cases
print("\nf. Creating bar chart...")
states = COVID_TESTS['State']
active = COVID_TESTS['Active_Cases']
positive = COVID_TESTS['Positive']

x = range(len(states))
width = 0.35

plt.figure(figsize=(12, 6))
plt.bar([i - width/2 for i in x], active, width, label='Active Cases',
color='orange')
plt.bar([i + width/2 for i in x], positive, width, label='Positive
Cases', color='red')

plt.xlabel('State', fontsize=12)
plt.ylabel('Number of Cases', fontsize=12)
plt.title('Active and Positive COVID Cases by State', fontsize=14,
fontweight='bold')
plt.xticks(x, states, rotation=45, ha='right')
plt.legend()
plt.grid(axis='y', alpha=0.3)
plt.tight_layout()
plt.show()
```

```
f. Creating bar chart...
```