Answers -

1) Checked whether I have net-tools installed
2) hostname is Kali
3) Checked whether my system is connected by running a ping command and getting a response from that particular server indicates my connectivity
4) netstat command for network statistics

```
┌──(kalix20㉿Kali)-[~]
└─$ sudo apt install net-tools
net-tools is already the newest version (2.10-1.1).
Summary:
  Upgrading: 0, Installing: 0, Removing: 0, Not Upgrading: 878

┌──(kalix20㉿Kali)-[~]
└─$ hostname
Kali

┌──(kalix20㉿Kali)-[~]
└─$ ping -c 5 www.truthsocial.com
PING www.truthsocial.com (104.18.39.93) 56(84) bytes of data.
64 bytes from 104.18.39.93: icmp_seq=1 ttl=52 time=38.1 ms
64 bytes from 104.18.39.93: icmp_seq=2 ttl=52 time=34.7 ms
64 bytes from 104.18.39.93: icmp_seq=3 ttl=52 time=42.0 ms
64 bytes from 104.18.39.93: icmp_seq=4 ttl=52 time=38.3 ms
64 bytes from 104.18.39.93: icmp_seq=5 ttl=52 time=36.5 ms

── www.truthsocial.com ping statistics ──
5 packets transmitted, 5 received, 0% packet loss, time 4009ms
rtt min/avg/max/mdev = 34.652/37.914/41.957/2.414 ms

┌──(kalix20㉿Kali)-[~]
└─$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 192.168.64.2:bootpc     192.168.64.1:bootps     ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  3      [ ]         STREAM     CONNECTED     12329    @/tmp/.X11-unix/X0
unix  3      [ ]         STREAM     CONNECTED     11357
unix  3      [ ]         STREAM     CONNECTED     9066     /run/dbus/system_bus_socket
unix  3      [ ]         STREAM     CONNECTED     7366
unix  3      [ ]         STREAM     CONNECTED     11509    /run/user/1000/bus
unix  3      [ ]         STREAM     CONNECTED     8857     /run/user/1000/bus
unix  3      [ ]         STREAM     CONNECTED     10200    /run/user/1000/bus
unix  3      [ ]         STREAM     CONNECTED     6126
unix  3      [ ]         STREAM     CONNECTED     10566
unix  3      [ ]         STREAM     CONNECTED     10679    /run/user/1000/bus
unix  3      [ ]         STREAM     CONNECTED     9065
unix  3      [ ]         STREAM     CONNECTED     12307
```

5) arp is used to display the mapping of logical to physical address ie IP to MAC address
Also arp -a displays the corresponding mapping.

```
┌──(kalix20㉿Kali)-[~]
└─$ arp
Address                       HWtype  HWaddress            Flags Mask            Iface
192.168.64.1                  ether   52:ed:3c:25:e3:64    C                     eth0

┌──(kalix20㉿Kali)-[~]
└─$ arp -a
? (192.168.64.1) at 52:ed:3c:25:e3:64 [ether] on eth0

┌──(kalix20㉿Kali)-[~]
└─$ █
```

6) Used ifconfig
Have to use sudo as to access it via root user mode to alter the network information
Ifconfig eth0 down help us to disconnect system from internet access
We also can check the status of via ip link show eth0 and it will show DOWN

```
┌──(kalix20㉿Kali)-[~]
└─$ sudo ifconfig eth0 down

┌──(kalix20㉿Kali)-[~]
└─$ ifconfig
docker0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        inet 172.17.0.1  netmask 255.255.0.0  broadcast 172.17.255.255
        ether 02:42:0b:1f:af:c7  txqueuelen 0  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 16  bytes 1128 (1.1 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 16  bytes 1128 (1.1 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

┌──(kalix20㉿Kali)-[~]
└─$ ip link show eth0
2: eth0: <BROADCAST,MULTICAST> mtu 1500 qdisc fq_codel state DOWN mode DEFAULT group default qlen 1000
    link/ether 8a:c0:46:5a:a2:88 brd ff:ff:ff:ff:ff:ff

┌──(kalix20㉿Kali)-[~]
└─$ █
```

Recovered from the down mode to normal internet mode via ifconfig eth0 up
And status as UP

```
  ┌──(kalix20㉿Kali)-[~]
  └─$ sudo ifconfig eth0 up

  ┌──(kalix20㉿Kali)-[~]
  └─$ ifconfig
docker0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        inet 172.17.0.1  netmask 255.255.0.0  broadcast 172.17.255.255
        ether 02:42:0b:1f:af:c7  txqueuelen 0  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.64.2  netmask 255.255.255.0  broadcast 192.168.64.255
        inet6 fdda:2dd2:74bf:799c:fd94:f324:965c:2c40  prefixlen 64  scopeid 0×0<global>
        inet6 fdda:2dd2:74bf:799c:88c0:46ff:fe5a:a288  prefixlen 64  scopeid 0×0<global>
        inet6 fe80::88c0:46ff:fe5a:a288  prefixlen 64  scopeid 0×20<link>
        ether 8a:c0:46:5a:a2:88  txqueuelen 1000  (Ethernet)
        RX packets 6845  bytes 9641633 (9.1 MiB)
        RX errors 0  dropped 0 overruns 0  frame 0
        TX packets 1961  bytes 180901 (176.6 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0×10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 16  bytes 1128 (1.1 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 16  bytes 1128 (1.1 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

  ┌──(kalix20㉿Kali)-[~]
  └─$ ip link show eth0
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP mode DEFAULT group default qlen 1000
    link/ether 8a:c0:46:5a:a2:88 brd ff:ff:ff:ff:ff:ff
```

7) Accessed two servers creepypasta.com and cia.gov and their respective IP addresses.

```
┌──(kalix20💀Kali)-[~]
└─$ nslookup creepypasta.com
Server:          192.168.64.1
Address:         192.168.64.1#53

Non-authoritative answer:
Name:    creepypasta.com
Address: 104.21.16.1
Name:    creepypasta.com
Address: 104.21.96.1
Name:    creepypasta.com
Address: 104.21.112.1
Name:    creepypasta.com
Address: 104.21.64.1
Name:    creepypasta.com
Address: 104.21.32.1
Name:    creepypasta.com
Address: 104.21.80.1
Name:    creepypasta.com
Address: 104.21.48.1
Name:    creepypasta.com
Address: 2606:4700:3030::6815:7001
Name:    creepypasta.com
Address: 2606:4700:3030::6815:5001
Name:    creepypasta.com
Address: 2606:4700:3030::6815:1001
Name:    creepypasta.com
Address: 2606:4700:3030::6815:6001
Name:    creepypasta.com
Address: 2606:4700:3030::6815:2001
Name:    creepypasta.com
Address: 2606:4700:3030::6815:4001
Name:    creepypasta.com
Address: 2606:4700:3030::6815:3001


┌──(kalix20💀Kali)-[~]
└─$ nslookup cia.gov
Server:          192.168.64.1
Address:         192.168.64.1#53

Non-authoritative answer:
Name:    cia.gov
Address: 184.31.213.3
Name:    cia.gov
Address: 2600:1409:3c00:391::184d
Name:    cia.gov
Address: 2600:1409:3c00:38f::184d
```

8) Used tracerouter command to trace the path that packets take from my system to the destination server.

It outputs a list of the routers (or hops) the packets traverse, along with latency details for each hop.

*   *   * Indicate that the hop did not respond within the timeout

```
┌──(kalix20㉿Kali)-[~]
└─$ traceroute reddit.com
traceroute to reddit.com (151.101.129.140), 30 hops max, 60 byte packets
 1  * * 192.168.64.1 (192.168.64.1)  0.400 ms
 2  reliance.reliance (192.168.29.1)  14.726 ms  14.688 ms  14.649 ms
 3  10.10.40.1 (10.10.40.1)  16.449 ms  16.308 ms  16.108 ms
 4  172.16.19.113 (172.16.19.113)  16.057 ms  16.011 ms 172.16.19.9 (172.16.19.9)  16.028 ms
 5  192.168.13.228 (192.168.13.228)  15.888 ms 192.168.13.230 (192.168.13.230)  15.842 ms 192.168.13.228 (192.168.13.228)  15.799 ms
 6  172.26.102.84 (172.26.102.84)  15.791 ms  15.631 ms  10.463 ms
 7  172.26.102.194 (172.26.102.194)  10.327 ms  7.883 ms  7.765 ms
 8  192.168.20.234 (192.168.20.234)  8.704 ms  6.620 ms 192.168.20.230 (192.168.20.230)  9.212 ms
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
23  * * *
24  * * *
25  * * *
26  * * *
27  * * *
28  * * *
29  * * *
30  * * *
```