1. What is the most suitable communication protocol to temporarily connect your mobile to your laptop?

   Bluetooth

   Because it does not need any wires or intermediate devices.. and also your laptop and mobile stays close by and works well under low power consumption

2. Why Ethernet is popular choice as a LAN over other communication protocols?

   Compared to other technologies Ethernet is faster in speed, and also typically less vulnerable to disruptions. It can also offer a greater degree of network security and control than wireless technology because devices must connect using physical cabling.

3. What is the wireless network protocol suitable to cover a large geographic area such as a state or a country?

   We learned 6 types and infrared, Bluetooth and zigbee works in short distance. So does wifi.
   Then we have Ethernet and celluar remaining and Ethernet is not wireless.
   So the answer is celluar

4. Wi-Fi is suitable for a home network over Bluetooth. Explain why.

   Bluetooth is working in a very short distance like few feet. In order for a home network to work we need wifi as it serves the purpose of home automation and communication needs

5. Explain the usage of Zigbee and for what type of solutions it should be used.

Zigbee is a popular choice for home automation... and smart buildings. And also integrated into devices that need to transmit small volumes of data . Examples are health measurements of people such as heart rate, and blood pressure. But it is not suitable for streaming data.

In home automation we can set up a zigbee network
and connect our devices such as refrigerator, airconditioner , dishwasher, roller gate, fan and manage through a mobile..; for an an example if you want to switch on or off a Zibgee-enabled aircon, you simple click the action on your smartphone's app and the command will be relayed through the coordinator to the Zibgee module in the aircon to carry out the action. Another usage is that elderly care services can issue Zigbee wearables for their patients and collect vital health signs to a central system that can alert medical teams if the measurements are bad so that they can check on the patient. This could be for elders located in an elder care centre or could be for patients living alone in their own homes in a city.

6. What is the most suitable protocol for a bank's internal network?

Bank network must be a very secure network.. wireless connections can be trapped and alter and a risk for high value data inside a bank.. There for having a private wired Ethernet is more secure for a bank network.

Also inside a bank there could be many transactions happening frequently.. and to get a better speed also a wired Ethernet connection is good.

(d) Mikhail's employees often need to transfer large video files over the network.

The Ethernet cables connecting the LAN are rated at 10 gigabits per second.

(i) Construct an expression to show how long it should take, in seconds, to transfer a 20 gibibyte file.

You do **not** need to do the calculation.

(3)

7.

Award **one** mark for each of:

- Bytes to bits by using x 8 in the numerator
- Gibibits to bytes by using 1024 x 1024 x 1024 in the num
- Bits to seconds by using 10 x 1000 x 1000 x 1000 in the

$$\frac{20 \times 8 \times 1024 \times 1024 \times 1024}{10 \times 1000 \times 1000 \times 1000}$$