1) **UPS is an American shipping and supply chain management company that intends to use digital tools to synchronize its operations and logistics strategy to better meet customer needs. They ran interviews with a portion of their customers and concluded that there are two major customer experience challenges UPS need to deal with: 1) fast delivery and 2) real-time package tracking. As a chief innovation officer (CIO) at UPS:**

   a) **Can you propose a solution that can significantly improve the customer and stakeholder experiences and enhance efficiencies of the company operations?**

      a. A solution to help UPS be more efficient and at the same time improve customer and stakeholder experience would be the **ORION** (On-Road Integrated Optimization Navigation. This will save the a lot of time and distance for the drivers, since the route will optimize for fastest arrival. I would also suggest that when the package is registered for departure, the customer should get a link so they can see where the car that carries their package is in real time, insted of having to wait for the package to be randomly delivered between 08:00 – 16:00

   b) **Describe what emerging technology you will use to implement that solution?**

      a. To implement these solutions i would use IoT and Ai. IoT, since everything hase to be connected to internet and Ai, so the ORION can learn the traffic pattern for each route.

   c) **Define your role as a CIO within UPS?**

      a. My role as a CIO is to identify oppurtunities for the organization with digital services that can be contributed to the community.

   d) **If your business has a gap in the skills required to implement your innovative solution, how would you help your business to bridge that gap?**

      a. I would suggest bringing in an outside consultant company that have expertise in the fields we lack knowledge in. I would then use their work as a way of learning for my own employees so that in the future we can operate it on our own.

e) **The Sustainable Development Goals (SDGs) are a collection of 17 interlinked global goals designed to be a blueprint to achieve a better and more sustainable future for all. The SDGs were setup in 2015 by the United Nations and are intended to be achieved by 2030. Which SDGs your digital transformation solution will positively impact and how?**

a. I would say that my solutions would benefit Goal 13(**Climate action**). By using the ORION, the driver use less time on the road which leads to less fuel consumption and intoxication of the environment. Goal 8 (**Decent work and economic growth)** can also be discussed since UPS will save a lot of money by shortening their distances.

2) **The COVID-19 pandemic has affected the education industry and nearly all institutions have been adopted to digital education approaches that make it safer for both students and teachers to meet social distancing constraints while keeping the academic standard unaffected. Major problems with remote learning are the limited access to labs and lab equipment and inability to monitor suspicious activities such as opening tabs, chat boxing in the background, picture exchange and more while students are taking home exams.**

a) **Propose a digital solution to help students to collaboratively run lab experiments from their own locations while enhancing the real feeling of objects and their learning experience?**

i. The school / country can implement VR equipment, or the funding so the students can buy this. This way students can «meet» in virtual environments and perform experiments and have a visual experience even though they have to stay at home.

b) **Propose a solution that can monitor students' activities during home exams such that it can provide real-time feedback to prohibit suspicious actions and enhance credibility and fairness of such exams in the future?**

i. A solution to students cheating or conversating during home exams would be to have a program that restricts the student to only have the program with the exam open. However, it will be very difficult to stop students from using tools

that are not allowed, since everyone have 2 or more devices connected to the internet, and also you can have other people be with you and help you. You can ofcourse monitor the students wifi and search for suspicious activities reagrding the exam, but this will be extremely difficult since we now can use 4G/5G and may break some privacy rules by «spying» on private networks.

c) Describe the emerging technologies you will use to develop these solutions?

i. To develop these tools i would probably try to use, GPS, IoT, and maybe 5G if possible. However, as i stated earlier, this will be extremely difficult.

d) What are the challenges that might impact online learning?

i. Funding for equipment might be too expensive for some schools / countries which makes it very limited what you can achieve with online learning.

e) Refer to 1e), which SDGs your digital transformation solution will positively impact and how?

i. It will impact Goal 4(**Quality Education**) since it will force the students to study as normal and not cheat their way through exams and school. Also buy giving VR equipment to the students, everyone will have to be prestn and its easier for the teachers to know that everyone participates.

3) As hospitals strive to provide the right care to the right patient at the right time, healthcare providers need to do two things: evaluate patients' needs accurately and manage hospital resources effectively. Shortage in healthcare staff can lead to overworking, crowding and hence more medical errors, and patients feel neglected.

a) Propose a digital transformation strategy to mitigate healthcare personel staffing shortages in hospitals to lower operating costs and enhance services?

i. I would propose remote monitoring systems, so that the hospitals dont need full on-site personel watching the patients that is'nt in immediate danger. This allows for nurses and other staff to og home earlier, rest and not be exhasuted by overworking. If a situation should occure, where more nurses are needed.

The ones who have had the longest «break» would get a ping on theyr phone and asked to go to the hospital to assist.

b) What emerging technologies you will use to accelerate the proposed transformation?

i. For this solution i would use IoT technology. This allows for continious cooperation between the staff and monitors.

c) State advantages and disadvantages of implementing this solution on the cloud. State the four different cloud models?

i. Advantages would be that pasient data is stored and watched and can also be accessed by family membes so they know how the pasient is doing. Disadvantages would be that everyone theoretaically coul daccess this information, which could lead to something bad. Therefore this information need to be very protected. In this scenario i think a hybrid cloud would be optimal.
ii. The four cloud models are: Public Cloud, Private Cloud, Hybrid Cloud and Multicloud.

d) Hospitals and healthcare providers as non-profit/public organizations does not have the skills and resources to finance, develop and run such projects. Can you propose a way to accelerate and complete this solution so expected services are delivered to the public on the right time?

i. Here i would try to get IT-companies or similar to invest in the hospital/become partner (i.e: Telenor Public Hospital) so they can provide the equipment to the hospitals. This way, even though its an non profit organization, Telenor would stand out as a company with good ethics and using their wealth and technology for something good, and the hospitals would be much better than they used to.

e) Refer to 1e), which SDGs your digital transformation solution will positively impact and how?

i. The SDGs this will impact is: 9(**Industry, Innovation and infrastructure**), 11(**Sustainable cities and communities**), 17(**partnerships to achieve goals**).

ii. **Goal 9**: It will beneift the healthcare industry by implementing IoT, taking it a step forward towards the future and off-loading maxed out staff capacities.

iii. **Goal 11:** It will positiviley impact the communites, because the nurses and other hospital workers can use more time with the community instead having to be locked up in the hospitals all the time.

iv. **Goal 17**: This will hopefully make it so that more IT and healthcare organizations go together to make good partnerships and then more hospitals will have a better way of taking care of pasients.

4) Industrial digital transformation can be defined as the minimum effort to stay in business.

a) In the commercial sector, industrial digital transformation is driven by two kinds of strategies: defensive and offensive strategies. Define and compare between the two strategies with examples?

i. **Defensive strategy:** Protecting business from competitors and disruptors.
ii. **Offensive strategy:** Tries to disrupt the rest of the industry
iii. **Tesla**: Tesla is an example of offensive strategy, where they try to disrupt the industry with their extremey high tech cars. Tesla as a company is not very profitable, but due to all its tech, they can provide a very smart car, with lots of features such ass self-driving, anti-theft cameras and alerts, customization possibilites etc. So, rather than going the defensive way like most automobile factories, du to the loss in production of these cars, Tesla goes all out right away.

b) Crisis has always helped industries to identify an opportunity for transformation. A new survey finds that responses to COVID-19 have speeded up the adoption of digital technologies by several years ahead. Explain that with examples?

i. In a response to Covid-19, automotive companies all around started to make products such as respirators, masks, sanitizing products etc. They all adapted quick to the current situation and started to hand out helping products to the public and healtcare organizations. This is a product of a good approach of transformation. It provided good revenue, productivity gain and social good.

c) Define technical debt?

i. Technical debt is the cost of not thinking for the future when going for solutions. Instead companies can choose the easier route, which can be cheaper at the time, but in the long run it will be more expensive due to the difficulty and expenses of transforming a business fast, rather then have a slow and steady digitalization of the company.

d) What are some of the leading indicators of failure in an industrial digital transformation?

i. When a project is not completed or has to be restarded, failures will occur. Causes to failure can be that the company has a wrong vision towards the project, such as focusing on stakeholders gain instead of what the public and consumer needs/wants. It could also be a mismatch between what you planned vs what has actually been done. Economic reasons is also a major part in transformation. Funding to a project can run out before the project is done.

e) What is lights-out manufacturing? How is industrial digital transformation driving lights-out manufacturing?

i. Lights-out manifacturing is when everything is automated and employees only role will be to perform maintenance and repair tasks.