Exam

Question 1

A. A solution that can significantly improve customer and stakeholder experiences and enhance efficiencies of UPS operations.

With the intention of using digital tools to improve experiences with UPS I propose an integration with IoT and AI. With IoT It would be possible to solve the issue of real-time package tracking, by having UPS delivery trucks scan what packages are being delivered as well as updating on GPS where the trucks are driving, it would assist in solving the challenge of real-time tracking.

Solving the challenge of faster delivery, implementing AI that is trained to read roadmaps and give suggestions for the most efficient travel path would assist greatly in improving delivery times, as well as save on fuel, and allow trucks to deliver more packages in a day.

The idea of proposing AI and IoT comes from (Shyam Varan Nath, Ann Dunkin, Mahesh Chowdhary, Nital Patel, "Industrial Digital Transformation Accelerate digital transformation with business optimalization, AI, and industry 4.0", Page 69) Where they go over UPSs digitalization.

B. What emerging technology will be used to implement the solution

The emerging technologies that will be used to implement the proposed solution are **IoT** and **GPS**, which will provide a method of tracking packages in real-time. As well as **AI**, which will assist the UPS drivers in finding the most efficient paths to take.

C. My role as Chief Information Officer (CIO) in UPS.

Taking on the role of CIO I bear the responsibility of overseeing the development and implementation of the digital products and services of UPS, making sure that the development is in line with UPS values and ensuring success in transforming the business.

D. How would I bridge the skill gap to enable implementation of our solution?

A good method of bridging the gap, would be for the developers of the solution, or the team's digital talent, to give lectures on how the implementation will work, as well as to work closely with the drivers and encourage learning about it. Showing how it can help them with their work.

E. Which SDGs do our digital solution positively impact?

The solution would positively affect primarily goal 9 and goal 12. With goal 9, the use of IoT will prove innovative and improve the use of the existing infrastructure. With goal 12, the AI road-assistant, will improve fuel usage and improve UPSs Responsible consumption.

Question 2

A. A digital solution that will help students collaborate in lab experiments and enhance their learning experience from home.

The solution that comes out as the most optimal for this challenge would be an implementation of VR, With VR and gamification, it could allow students to participate in Lab from home and make them feel like they're really taking part in the lab course.

B. A solution that can monitor students and give feedback in real-time, prohibit suspicious actions and enhance credibility and fairness of exams.

Finding a solution that will fully monitor students and their activity during exams to ensure fairness is quite tricky, it would be possible to provide a solution that enables the camera and microphone, to ensure the individual taking the test is alone and doesn't have their phone. As well as having an exam tab software, that could detect if the individual opened more tabs, or simply locked the computer on the exam tab. Lastly, implementing an IP check, to scan for students that operate on the same IP address or checking phone GPS with an app, to check for collusion among students.

C. Describe the emerging technologies to use for these solutions.

The main emerging technology to use with these solutions is the internet, and the software that can be developed on it. Creating a safe exam browser that monitors the use of the computer, during exams. With enabled camera and microphone. There's also the possibility of using IoT, in this case on the student's phone, possibly a phone app that logs GPS position.

D. Challenges that impact online learning.

There are a few challenges with online learning, the first problem, I believe, is the lacking IT knowledge on the lecturer's side. Having to suddenly work with a lot of students over unoptimized software and, or possibly with outdated hardware, without proper training has proven a big challenge for many teachers. Secondly, for students it is a lot easier to get distracted during lessons, and to lose focus of what is being taught. Lastly, the equipment for both teachers and students might not be up to par, making it difficult for some, which can cause inequality in learning.

E. What SDGs will be positively impacted by this digital transformation.

With the solutions we provided in 2A and 2B, we are positively impacting goal 4, that stands for quality education, with VR to participate in labs. As well as Goal 10, with ensuring that all individuals taking exams, have the same opportunity, nobody will cheat, or get ahead by immoral means.

Question 3

A. Propose a digital transformation strategy to mitigate staff shortage and lower operating costs.

I propose the use of automation and AI, as well as robotics. With these solutions it would be possible to alleviate stress on the hospital workers by assisting in a great number of tasks, allowing the medical staff to focus on their manual tasks, and not overwork themselves. Automation and AI would be able to handle processing documents and AI would contribute in sorting priorities for the medical staff. With robotics, there would be robots to handle processing and restocking of medicines and lab results, as well as assisting patients.

B. What emerging technologies will accelerate the proposed transformation

The emerging technologies that will accelerate this proposed transformation are artificial intelligence (AI), to contribute to prioritization and handling documentation, as well as robotic process automation (RPA), to handle processing and restocking of medicines and lab results.

C. State Advantages and disadvantages of implementing the solution on the cloud

Advantages to implementing the solution onto the cloud would give the medical staff members the ability to utilize this solution quickly and from any compatible device, it will increase efficiency and reduce costs and allow for collaboration and scalability. Disadvantages, however, include the possibility of a data loss/theft, which in a medical institution I assume is bad news and possibility of dedicated denial of service attacks (DDOS) which could compromise the entire cloud.

The four different cloud models are: **Public cloud**, which is an online service. **Private cloud**, where the institute itself hosts the servers/cloud, which is more secure. **Hybrid cloud**, which combines the previous public and private cloud, so that the institute can separate important and regular data. And lastly, **Multicloud**, that use different components from different public clouds.

Answering this I used reference from (Shyam Varan Nath, Ann Dunkin, Mahesh Chowdhary, Nital Patel, “Industrial Digital Transformation Accelerate digital transformation with business optimalization, AI, and industry 4.0”, Page 106-107)

D. Propose a way to accelerate and complete this solution, so expected services are delivered right on time.

A method I can propose, is with a private company working on a solution for the government and non-profit organizations, to implement in hospitals. Working to provide a full solution, however, starting with a minimum viable product (MVP) that could be sent out quickly to provide a little assistance to health institutions. And that can be further funded and developed to suit the hospital’s needs.

E. Which SDGs do this solution positively impact?

This solution positively impacts SDGs goal 3, in that it will improve health and wellbeing. Goal 9, with how it will improve the industry as well as advance innovation. and goal 15, as it will improve life on land.

Question 4

A. In the commercial sector, define and compare defensive and offensive strategies with examples.

The defensive strategy is one that protects its business from competitors and disruptors trying to shake the business. While the offensive strategy tries to disrupt the industry with innovation and new business models. An example of the offensive strategy could be to develop and implement self-checkout in the company's stores, whereas the defensive strategy would be to maintain competitive by implementing their own version of self-checkout.

B. Explain how COVID-19 has sped up development that would otherwise have taken years.

The covid pandemic that abruptly appeared at the start of 2020, forced massive change in most people's daily lives, many working people and students who were used to taking daily commutes suddenly found themselves stuck inside, with either too much toilet paper, or no toilet paper at all. This forced the technological advance of services such as Microsoft teams and zoom. that allowed the ability of working from home and attending lectures from home.

Worse off were the older generation, many pensioners found themselves isolated, unable to be visited by family and friends, which also drove technological advancements in easy-to-use communication devices. To provide an improved method of communication with those unable to leave home.

The need for masks and other medical equipment as well caused rapid change in production model, and a massive increase in production speed.

C. What is technical debt?

Technical debt is a term for a short-term technical solution that can be seen as an easy, and limited, solution that only grows more problematic the longer it remains without a proper solution. A proper solution would take longer to develop. Hence the name technical debt, since it accumulates problems the longer it remains as the solution.

D. Some leading indicators of failure in industrial digital transformation

Some of the leading indicators of failure are a lack of industrial digital transformation strategy, lack of top-down support from the company's higher management, not following industry trends, and improper use of minimal viable products (MVPs).

E. What is lights-out manufacturing, and how is industrial digital transformation driving it.

Lights out manufacturing is automated manufacturing that does not require employees other than maintenance and repair. It is fully automated machinery that fulfil the job of what would previously require human employees and can run 24/7.

Industrial digitalization is running lights-out manufacturing with how it is a disruptive technology consisting of robotic process automation (RPA), artificial intelligence (AI), Information of things (IoT) and other emerging technologies, that drive change and create new business models.

Thank you for reading.