

TUNKU ABDUL RAHMAN UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

FACULTY OF ACCOUNTANCY, FINANCE AND BUSINESS

ACADEMIC YEAR 2025/2026

MAY EXAMINATION

BBDS2123 TECHNOLOGY AND INNOVATION IN TRANSPORTATION MANAGEMENT

WEDNESDAY, 13 MAY 2026

TIME: 2.00 PM – 4.00 PM (2 HOURS)

BACHELOR IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT (HONOURS)

Instructions to Candidates:

This paper is divided into TWO (2) sections:

SECTION A: Answer **ONE (1)** compulsory case study question. (40 marks)

SECTION B: Answer **ALL** questions. (60 marks)

BBDS2123 TECHNOLOGY AND INNOVATION IN TRANSPORTATION MANAGEMENT**SECTION A (40 marks)**

Answer **ONE (1)** compulsory case study question.

Question 1**Impact of the Internet of Things (IOT) on Logistics**

A network that links objects together via in-built electronics, sensors, and social connections is known as the internet of things (IoT). The IoT is practically worth billions of dollars in the logistics industry. It enables companies to make key business decisions that will optimise production, lower manufacturing costs, and keep raw material costs to a minimum. Improving supply chains and real-time logistics tracking are two of the market's driving forces. However, the market's expansion is hampered by a lack of skilled workers, excessive prices, and strict government rules and policies. Aerospace, defence, retail, food and beverage, healthcare, and automotive industries all combined are starting to utilise IoT solutions for their logistics operations. Businesses utilise connection technologies to track their operations on the ground and in transit. Cellular (2G, 3G, and 4G), WIFI, Bluetooth, GPS, GPRS, NFC, RFID, and other technologies are employed. Businesses are also utilising fleet control, tracking, and surveillance technologies in the IoT era.

According to Infoholic surveys, the global IoT market for logistics is projected to grow at an estimated CAGR of 35.5% between 2016 and 2022. North America now dominates the industry, and one of the fastest developing regions is Asia-Pacific. The dossier includes information on several significant players, including IBM, Microsoft, Intel, SAP, FedEx, XPO Logistics, Cisco Systems, and North Carolina. This study provides a comprehensive analysis of technology, services, solutions, and end users. The research also discusses market trends, geographic regions, and vendor evaluations.

The study documents and examines the global IoT within the logistics industry. The research aims to completely disseminate important business information and aid players in understanding current trends, market conditions, government initiatives, and industry-related developments. Additionally, it helps venture capitalists recognise businesses better and make informed decisions. The Internet of Things (IoT) describes how physical devices are connected via integrated sensors, actuators, and other devices that may collect or communicate information about objects. The logistics industry is a spot market for IoT. The 2010 reality has expanded the market. Businesses are beginning to invest in IT solutions to improve the visibility of their logistics operations and boost their transparency. Organisations may automate logistical processes collectively with the help of IoT solutions, including automatic stock updates, demand analysis, and fleet control. The logistics method includes some usage of IoT solutions. Logistics solutions for inbound, internal, and outbound help manage etherification and production plans and also provide useful resources for fleet management.

By the end of 2018, it is anticipated that 25% of global gamers will have installed IoT-based entirely integrated solutions, including demand sensing and short-term response planning technology, in their supply chains. In the meantime, businesses are investing in route optimisation solutions that lower their gas use and carbon footprint. It allows you to streamline your business strategy, to put it another way. Businesses in the food and beverage, healthcare, and chemical industries are once again heavily investing in sensor-based temperature control solutions. Sensors are used by Enterprise to track product waves and monitor factory temperatures. IoT generation improves warehouse management, inventory, and personnel performance in the music industry.

Additionally, IoT technology enables businesses to plan product deliveries and delivery routes that weren't possible with conventional systems. The introduction of new materials, the switch to a new generation of products, the automation of production techniques, and the use of upgrades within the logistics industry are the most significant changes in the digital financial system when viewed through the lens of production. The main difference between the modern economy and the digital economy is

BBDS2123 TECHNOLOGY AND INNOVATION IN TRANSPORTATION MANAGEMENT**Question 1 (Continued)**

how much forecasting is employed for financial purposes. The company calculated the related post-production effects to assess the manufacturing system's effectiveness before implementing this generation. Today, there may be an increasing tendency toward unskilled manufacturing planning that lowers costs and maximises the use of contemporary resources. In addition to traditional logistics (postal and courier services), the use of drones, robots, and autonomous vehicles for shipment is expanding. The advent of the internet of things era has made all this possible (internet of things).

Source: Gowri, K. (2022). Impact of the Internet of Things (IOT) on Logistics. *Journal of Image Processing and Intelligent Remote Sensing*, 3 (1).<https://doi.org/10.55529/jipirs.31.1.10>

Required:

- (a) Based on the case study, explain the role of the Internet of Things (IoT) in enhancing transportation and logistics operations. (8 marks)
 - (b) Describe how IoT-enabled technologies contribute to real-time transportation visibility and fleet management. (10 marks)
 - (c) Discuss the key challenges associated with implementing IoT in transportation and logistics. (10 marks)
 - (d) Describe the impact of IoT adoption on sustainable transportation and logistics practices. (12 marks)
- [Total: 40 marks]

BBDS2123 TECHNOLOGY AND INNOVATION IN TRANSPORTATION MANAGEMENT**SECTION B (60 marks)**

Answer **ALL** questions.

Question 2

- (a) Identify the major operational risks involved in transportation operations. (10 marks)
 - (b) Define passenger freight transportation and cargo freight transportation in terms of their operational characteristics. (10 marks)
- [Total: 20 marks]

Question 3

- (a) Determine the key functions of seaports in international transportation and trade. (8 marks)
 - (b) Determine the role of air freight in modern transportation systems. (12 marks)
- [Total: 20 marks]

Question 4

- (a) Describe the importance of sea freight transportation in global logistics. (10 marks)
 - (b) Identify the role of Third-Party logistics (3PL) providers in transportation management. (10 marks)
- [Total: 20 marks]