



## GENERAL SIR JOHN KOTELAWALA DEFENCE UNIVERSITY

Faculty of Engineering  
Department of Mechanical Engineering

BSc Engineering Degree  
Semester 6 Examination – October 2024  
(Intake 39 - ME, MC, and EE)

### ME 3212- Entrepreneurship for Engineers

The time allowed: 02 hours

Date: 02 October 2024

#### INSTRUCTIONS TO CANDIDATES

This paper contains Five (05) questions on Three (03) pages.  
Answer any FOUR (04) questions.

#### Question No. 01

##### MechaFlow Solutions – Turning Engineering Skills into a Sustainable Business

David, a mechanical engineer with a passion for sustainable solutions, noticed excessive energy use in fluid management systems across industries and believed there was a more efficient, eco-friendly way to handle fluid flow. With limited financial resources but a strong technical background, he founded Mecha Flow Solutions, a business focused on creating high-efficiency flow control valves designed to reduce friction loss and optimize energy use. He also integrated sensors to minimize water wastage. Despite challenges such as limited funds, lack of business experience, and needing market research, David bootstrapped his prototype using personal savings, secured green technology grants and collaborated with a local university for product testing. By partnering with local farmers for feedback, he refined his product. Eventually, he launched his sustainable valves, which gained success among small-scale farmers and manufacturers, leading to a partnership with an industrial distributor. Through perseverance, technical expertise, and market understanding, David turned his vision into a profitable venture, demonstrating how innovation and sustainability can align with business success.

- 3 a) How can David start identifying potential opportunities for his MechaFlow Solutions startup? Suggest three (3) ideas. (05 Marks)
- b) David is passionate about sustainability but has limited financial resources. How can he leverage his passion and technical skills to attract potential investors or secure funding for his MechaFlow Solutions startup? Provide at least two (02) methods he can pursue. (05 Marks)

Briefly explain the creative process David can adopt to generate innovative ideas for his MechaFlow Solutions startup. (05 Marks)

d) Develop a detailed step-by-step action plan for David, outlining the key actions he should take to move from the concept stage to the implementation stage of his MechaFlow Solutions startup. Include specific strategies for opportunity recognition, idea generation, funding, and other crucial aspects. (10 Marks)

(Total: 25 Marks)

## Question No. 02

### A Sustainable Garage Venture

Shehan, an automotive enthusiast with a passion for sustainability, has always been fascinated by cars and is now considering opening an eco-friendly auto repair shop called GreenWheels Auto Repair. His vision is to offer services that focus on sustainability, such as using environmentally safe car fluids, recycling auto parts, and promoting electric vehicle maintenance. Shehan believes there is a growing market for green automotive solutions, especially as more consumers seek to reduce their environmental footprint in transportation.

However, Shehan faces several uncertainties about the feasibility of his venture. He's concerned about the high competition in the auto repair industry, especially with established garages already dominating the market. He also worries about the costs associated with sourcing sustainable materials and tools, as well as the potential risks of fluctuating demand for eco-friendly services. Shehan knows that understanding his competition, conducting market research, and managing operational risks will be crucial in determining the success of GreenWheels Auto Repair. He needs to carefully assess these factors before moving forward with his business plan.

Product / Industry / Organization / Financial

a) Explain the importance of conducting a feasibility study in entrepreneurship. What key components should Shehan consider when conducting a feasibility study for his GreenWheels Auto Repair venture? (05 Marks)

b) Identify at least three (03) key factors to be considered for the bargaining power of suppliers in the auto repair industry that could impact the success of Shehan's business. (05 Marks)

Human risks, Technological, Environmental

c) What are the potential risks or challenges that Shehan may face when starting his eco-friendly auto repair shop? Provide two (02) specific risks or challenges, and briefly discuss strategies he can implement to mitigate them. (05 Marks)

d) Develop a risk management plan for Shehan's GreenWheels Auto Repair venture. Outline the steps he should take to identify, assess, and mitigate risks. Include strategies for both internal and external risks. (10 Marks)

(Total: 25 Marks)

### Question No. 03

- ✓ a) Define a Niche Market. (05 Marks)
- ✓ b) List the stages of the new product development process. (05 Marks)
- ✓ c) List key HR practices required for a start-up company. (05 Marks) 12
- ✓ d) Explain STP (Segmentation, Targeting, and Positioning) analysis for any selected product of your choice. (10 Marks)

(Total: 25 Marks)

### Question No. 04

- a) List three (03) sources of personal financing. (05 Marks)
- b) Briefly discuss the difference between business angels and venture capitalists. (05 Marks)
- c) Briefly explain four financial objectives of a firm. (05 Marks)
- d) Discuss the components of a Business Plan. (10 marks)

(Total: 25 Marks)

### Question No. 05

Write short notes on the following topics.

- ✓ a) Innovation
- b) Product Desirability → product desirability ?  
→ product demand
- ✓ c) PESTEL Analysis
- ✓ d) Financial Statements
- ✓ e) Mass Marketing

(Marks: 5x5= 25)

(Total: 25 Marks)

-----End of question paper-----