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**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER II  
SESSION 2022/2023**

COURSE NAME : AVIATION SAFETY MANAGEMENT  
COURSE CODE : BDL 30602  
PROGRAMME CODE : BDC  
EXAMINATION DATE : JULY/AUGUST 2023  
DURATION : 2 HOURS  
INSTRUCTION : 1. SECTION A: ANSWER **ALL** QUESTIONS  
SECTION B: ANSWER **ONE** QUESTION **ONLY**  
2. THIS FINAL EXAMINATION IS CONDUCTED VIA **CLOSED BOOK**.  
3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF **THREE(3)** PAGES

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**SECTION A: ANSWER ALL QUESTIONS.**

- Q1** (a) Briefly explain the origin and evolution of safety thinking in aviation industry. (10 marks)
- (b) Safety Management System is a systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures. Relate the benefits and importance of having safety management system in an organization. (10 marks)
- (c) Briefly describe the **four (4)** pillars of SMS. (5 marks)
- Q2** (a) Edwards (1972) presented the SHELL model dealing with man and machine interface. SHELL is a visual conceptual tool in aviation accident theory. Describe **five (5)** basic elements of the SHELL model. (5 marks)
- (b) Demonstrate the SHELL model with respect to the pilot being in the center of the model. (10 marks)
- (c) Describe **five (5)** variables that affect human performance. (10 marks)
- Q3** (a) As mentioned in Annex 19: Safety Management of International Civil Aviation Organisation (ICAO), States is responsible to establish a State Safety Programme (SSP) in order to achieve an Acceptable Level of Safety (ALoS) in civil aviation. Classify and elaborate the framework of SSP. (10 Marks)
- (b) Error Management is the mitigation or reduction in seriousness of the error outcome. Propose **five (5)** behaviours which flight crews can use to detect errors. (10 Marks)
- (c) “Operational Improvements” from the ICAO reflects changes to air traffic management (ATM) system and improvements to infrastructure and operations aimed at achieving a sustainable and efficient aviation system. Suggest **two (2)** improvement plans to improve the ATM system. (5 marks)

**SECTION B: ANSWER ONE QUESTION ONLY.**

**Q4** The main purpose of aircraft safety systems is it is designed to help pilots avoid potential hazards and response to emergency quickly in order to prevent accidents and protect passengers.

(a) Determine **five (5)** interesting safety features available in aircraft system. (10 marks)

(b) Demonstrate how hazards from volcanic ash can damage aircraft engine and structures. Support your answer with aircraft accident case due to volcanic ash. (15 marks)

**Q5** The Air Accident Investigation and Aviation Safety Board (AAIASB) investigated an accident of Helios Airways Flight 522 that crashed into a mountain in Greece. Before take-off, crew failed to correctly set pressurization system. During climb at 16000ft, the Captain reported two problems to the company Operations Center which are take-off configuration warning and equipment cooling system problem.

(a) Deduce the 'direct and latent causes' in the context of HELIOS FLIGHT 522 accident on 14 August 2005. (10 marks)

(b) Using the SHELL model, break down on what happened in this tragic incident of Flight 522 and support your answer with recommendations to the aviation authority and regulatory body. (15 marks)

- END OF QUESTIONS -