



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

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

COURSE NAME : ROLLING STOCK TECHNOLOGIES

COURSE CODE : BNT 30103

PROGRAMME CODE : BNT

EXAMINATION DATE : JULY/ AUGUST 2023

DURATION : 3 HOURS

**INSTRUCTION :1. ANSWER ALL QUESTIONS
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

TERBUKA

- Q1** (a) List out **FOUR (4)** types of rolling stock that available at present railways operation in Malaysia. (4 marks)
- (b) Explain what is railway standards and the purpose of it associated with operation, safety, and economy. (10 marks)
- (c) Standard of safety and operation are often being followed. Discover **ONE (1)** standard of railways concerning on grade of automation. (6 marks)
- Q2** (a) With aid of diagram, demonstrate **FIVE (5)** main components of a rolling stocks. (5 marks)
- (b) High speed train imposes greater demands on the design of a railway vehicle. Discover the ways in which the railway vehicle design has developed in order to overcome aerodynamic forces at these high speeds. (5 marks)
- (c) There are various type of traction system in rolling stock. Differentiate **TWO (2)** types of rolling stock traction system available in present technology. (10 marks)
- Q3** (a) Computer Based Communication Control (CBTC) system offers faster, safer, and efficient operation in railways. This system allows trains to operate in “moving block” operation rather than “fix block” operation. Compare these two train operations. (10 marks)
- (b) Vehicle on Board Controller (VOBC) is an important component in urban train system. Discuss main function of VOBC particularly on the onboard train operation. (10 marks)
- Q4** (a) With aid of diagrams, demonstrate the differences of motor bogies and non-motor bogies components and functions. (12 marks)
- (b) The use of active suspensions is currently limited to only a few applications. Sketch and label an active suspension system. (8 marks)

- Q5** (a) Wheel-rail contact in certain duration of train operation would lead to the wheel worn-out. Thus, wheel re-profiling is necessary. Infer **FIVE (5)** important inspection to be conducted after wheels re-profile process being done. (10 marks)
- (b) Braking systems compose slowing and stopping function in a rolling stock operation. Discover **FIVE (5)** types of braking system applied in urban train operation. (10 marks)

-END OF QUESTIONS –