



FINAL EXAMINATION SEMESTER 1, SESSION 2016/2017

COURSE CODE : SKAA 4823 / MKAQ 1043
COURSE : TRANSPORTATION PLANNING
PROGRAMME : BACHELOR / MASTER DEGREE
DURATION : 2 $\frac{1}{2}$ HOURS
DATE : JANUARY 2017

INSTRUCTION TO CANDIDATES:

1. ANSWER ANY FOUR (4) QUESTIONS FROM SIX (6) QUESTIONS.
2. WRITE YOUR NAME, SECTION AND LECTURER'S NAME ON THE FRONT PAGE OF EVERY ANSWER'S BOOKLET
3. YOU ARE NOT ALLOWED TO REFER TO ANY NOTES

WARNING!

Students caught copying/cheating during the examination will be liable for disciplinary actions and the faculty may recommend the student to be expelled from the study.

This examination question consists of (6) printed pages only.

Q1. Transport planning process can be broken down into five (5) important stages namely:

- (i) Survey and analysis of existing conditions;
- (ii) Forecast and analysis of future conditions and plan synthesis;
- (iii) Evaluation and anticipation of future problems;
- (iv) Programme adoption and implementation; and
- (v) Continuing study

Clearly discuss those five (5) stages of transport planning process.

(25 marks)

Q2. (i) Intelligent Transportation System (ITS) has been widely used nowadays to improve the efficiency of the transportation system.

What is ITS and why is it important?

(5 marks)

(ii) Five primary functional areas of ITS are:

- (a) Advanced Traffic Management Systems (ATMS);
- (b) Advanced Traveler Information Systems (ATIS);
- (c) Commercial Vehicle Operations (CVO);
- (d) Advanced Public Transportation Systems (APTS); and
- (e) Advanced Vehicle Control Systems (AVCS).

Briefly explain those five (5) functional areas and give example/examples of the ITS application for each of them.

(10 marks)

(iii) Discuss factors that influence the mode choice in terms of socio - economic, trips, and system variables

(10 marks)

(25 marks)

Q3. A simple network shown in Figure 1 has four zonal centroids (nodes A to D) and nine street intersections (nodes 1 to 9). Using the travel time shown against each link, determine the minimum-path tree and final tree table from node A to all other nodes and intersections.

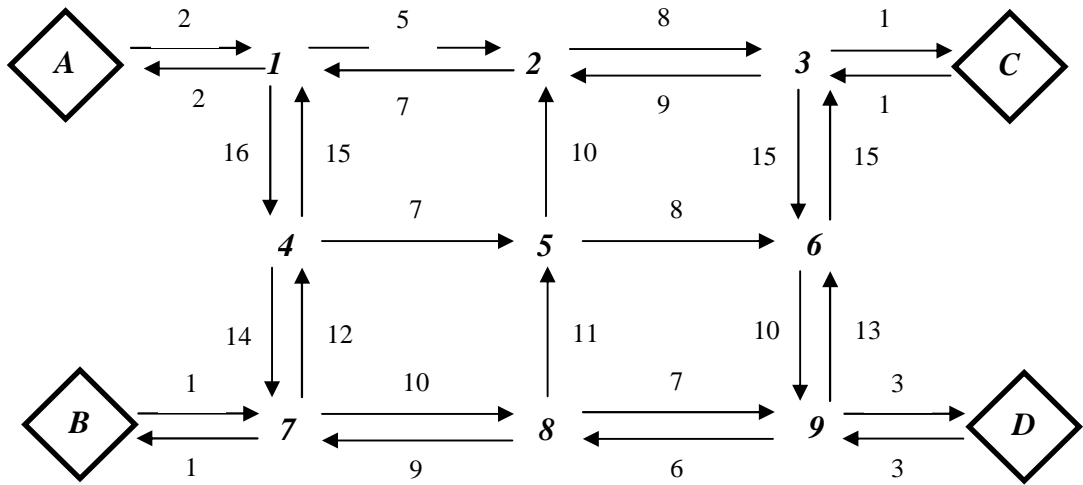


Figure 1: Origin/Destination travel network

(25 marks)

- Q4. A city undertook a nested logit model estimation study for three modes; Automobile (A); Bus (B) and Rapid Transit (R) and found that:

$$U_T = a_T + \theta \times \text{Logsum}$$

with $a_T = -0.41$ and $\theta = 0.2$. For a particular zonal interchange the following modal utilities were calculated in accordance with the estimated nested logit model:

$$U_A = -0.41 \quad U_B = -1.05 \quad U_R = -0.95$$

- (i) Determine the corresponding modal shares.
- (ii) Determine the effect of a policy that is expected to cause a change $\Delta U_B = -0.30$.

(25 marks)

- Q5. (i) List five (5) elements in the Traffic Impact Assessment Report?
(5 marks)
- (ii) Briefly explain four (4) elements in Traffic Impact Assessment for new development area.
(10 marks)
- (iii) Figure 2 shows the performance of volume-capacity analysis at existing dual-two carriageway road network. Please describe the all junction performance and propose any solution/suggestion to improve the efficiency of the junction to achieve better level of service (LOS).
(10 marks)

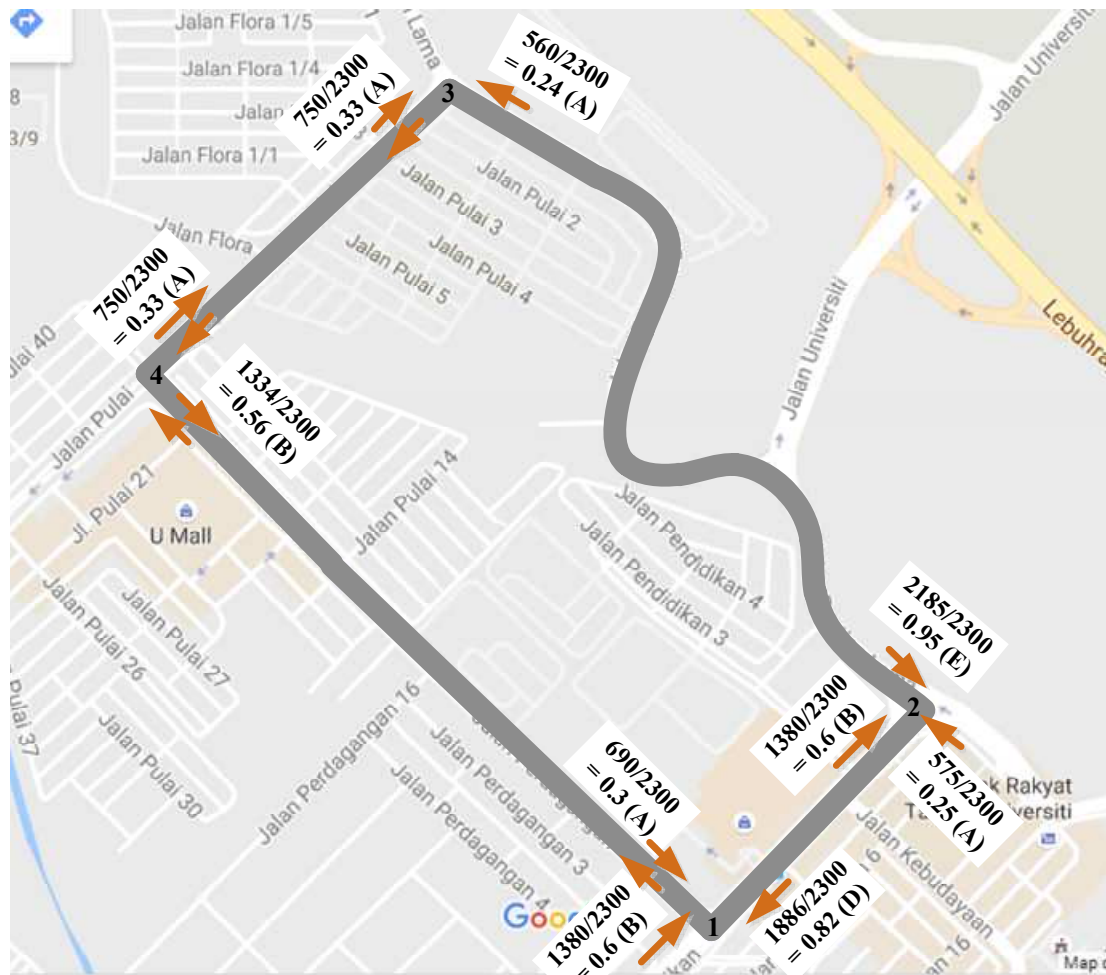


Figure 2 : Volume/Capacity analysis on existing road network

(25 marks)

Q6. (i) Briefly explain, why transport systems closely related to socio-economy growth?

(5 marks)

(ii) What is the concept of “*Just In Time*” in supply chain management of the efficiency transportation?

(5 marks)

(iii) Figure 3 shows the transport mode and technology is linked to a set of economic opportunities. Please briefly explain the development of transportation system to the economic opportunities.

(5 marks)

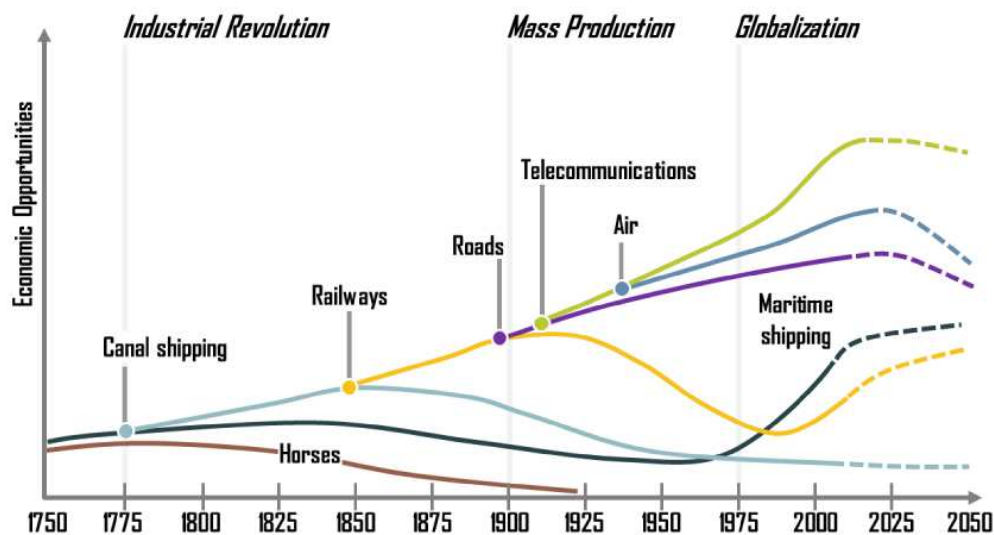


Figure 3 : Time, mobility and economic growth

(iv) Rail transportation system in Malaysia is rapidly growing. There are Express Rail Link (ERL), Mass Rapid Transit (MRT), Light Rail Transit (LRT), Monorail, KTM Komuter and Electric Train Service (ETS). Rail network is served to integrate the existing rail networks and alleviate the severe traffic congestion. Next rail transportation project is High Speed Rail (HSR) from Kuala Lumpur to Singapore. Please discuss the rail transportation system to the economic growth development.

(10 marks)

(25 marks)

EQUATIONS

The symbols indicate parameters usually used.

$$P(A) = \frac{\exp(U_A)}{\exp(U_T) + \exp(U_A)}$$

$$P(T) = \frac{\exp(U_T)}{\exp(U_T) + \exp(U_A)}$$

$$P(B|T) = \frac{\exp(U_B)}{\exp(U_B) + \exp(U_R)}$$

$$P(R|T) = \frac{\exp(U_R)}{\exp(U_B) + \exp(U_R)}$$

$$P(B) = P(B|T) \times P(T)$$

$$P(R) = P(R|T) \times P(T)$$