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Universiti Tun Hussein Onn Malaysia

**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
(ONLINE)  
SEMESTER II  
SESI 2020/2021**

COURSE NAME : ROAD SAFETY ENGINEERING  
COURSE CODE : BFT 40603  
PROGRAMME CODE : BFF  
EXAMINATION DATE : JULY 2021  
DURATION : 3 HOURS  
INSTRUCTION : ANSWER ALL QUESTIONS

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THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

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- Q1**
- (a) Since 1996 Road Safety Audit has been enforced by researchers, road providers and authorities (enforcement) in Malaysia. In 1997 the first (1<sup>st</sup>) guideline for the safety audit of roads and road projects in Malaysia been published while the 2<sup>nd</sup> was published in 2002. This shows how serious these issues are and acquired action by many parties involved.
- (i) In your opinion why do we need Road Safety Audit (RSA).  
(5 marks)
- (ii) Will RSA increase the total of the road project cost?  
(5 marks)
- (iii) Briefly explain the main benefit of RSA to the community as well as to the nation.  
(5 marks)
- (b) Site inspections are an essential element of RSA Stage 4 and Stage 5. State the site inspections during daytime and at night for this two Stages.  
(10 marks)
- Q2**
- (a) A new road project will involve four of the five Road Safety Audit Stages. You have been appointed as a RSA auditor for this new road project that is 28 KM in total length. The road design was R% standard with 70 to 90 km/h in speed limit and it is a dual carriageway road. Explain each stage that you will be involved and what should you do as an auditor. (in detail explanation state the assumption that you will make)  
(20 marks)
- (b) Road accidents are no laughing matter. Some 300,000 cases are reported in Malaysia, causing over 6,000 fatalities a year. The Malaysian road safety community is serious about keeping down the accident rates. As an engineering student WHAT should you do to realize the Malaysia Road Safety Plan?  
(5 marks)
- Q3**
- (a) Based on the **TABLEQ3(a)** data, compute all relevant population-based accident and fatality rate for these 5 years back data. Compare these to national norms for the current's year based on Severity Index.  
(10 marks)
- (b) First Year Rate Return (FYRR), Net Present Value (NPV), and Benefit-Cost Ratio (BCR) are three types of economic assessments in Evaluation Technique for Road Safety Engineering. In your opinion why are these three assessments very important and which agencies will use this data?  
(5 marks)

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- (c) **FIGURE Q3 (c)** shows a collision diagram of a blackspot area. As a traffic safety engineer, carry out a preliminary accident diagnosis and propose a functional design as the treatment to mitigate the problem.

(10 marks)

- Q4** (a) Under the Road Transport (Amendment) Bill 2020, the Road Transport Act 1987 (Act 333) for heavier penalties for driving while intoxicated. Under existing law, for the offense of driving under the influence of intoxication resulting in death, the offender can be punished according to Section 44 of the Road Transport Act 1987 which carries a maximum fine of RM10,000 and a maximum jail term of 12 months. As a road user, give your opinion along with your arguments on this issue.

(5 marks)

- (b) In general, we know there are **THREE (3)** main factors that contribute to road accidents, which are human, vehicle and environment. As a Civil Engineer the environment factor is typically catered during the design stage, construction stage as well as in the implementation stage. By giving an assumption and example, explain **THREE (3)** elements in environment factor that should be tackled to reduce these issues.

(9 marks)

- (c) State **FIVE (5)** errors drivers make that might cause road accidents.

(5marks)

- (d) Referring to **Figure Q4(d)(i)** state the function of this sign and what is the significance of this sign. Referring to **Figure Q4(d)(ii)** specify the type of signage and where to place this sign.

(6 marks)

– END OF QUESTIONS –

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**Table Q3(a)**

Year	Registered Vehicles	Population	Road Crashes	Road Deaths	Serious Injury	Slight Injury
1997	8550469	21665600	215632	6302	14105	36167
1998	9141357	22179500	211037	5740	12068	37896
1999	9929951	22711900	223166	5794	10366	36777
2000	10598804	23263600	250429	6035	9790	34375
2001	11302545	23795300	265175	5849	8680	35944
2002	12068144	24526500	279711	5891	8425	35236
2003	12819248	25048300	298653	6286	9040	37415
2004	13828889	25580000	326815	6228	9218	38645
2005	15026660	26130000	328264	6200	9395	31417
2006	15790732	26640000	341252	6287	9253	19885
2007	16813943	27170000	363319	6282	9273	18444
2008	17971907	27730000	373071	6527	8868	16879
2009	19016782	28310000	397330	6745	8849	15823
2010	20188565	28910000	414421	6872	7781	13616
2011	21401269	29000000	449040	6877	6328	12365
2012	22702221	29300000	462423	6917	5868	11654
2013	23819256	29947600	477204	6915	4597	8388
2014	25101192	30300000	476196	6674	4432	8598
2015	26301952	31190000	489606	6706	4120	7432
2016	27613120	31,660,000 <sup>e</sup>	521466 <sup>a</sup>	7152 <sup>a</sup>	NA	NA

e = estimated value from Department of Statistics Malaysia

a = media statement

NA = Not available (The official figures are not available yet)

VKT=Vehicle Kilometre TRAVELLED

Population – based rates:

Fatalities,accidents,or involvements per 100,000 area population

Fatalities,accidents,or involvements per 10,000 registered vehicles

Fatalities,accidents,or involvements per 10,000 licensed drivers

Fatalities,accidents,or involvements per 1,000 miles of highway

Exposure – based rates are stated accordingly to:

Fatalities,accidents,or involvements per 100,000,000 vehicle-miles traveled

Fatalities,accidents,or involvements per 10,000,00 vehicle-hour traveled

Fatalities,accidents,or involvements per 1,000,00 entering vehicle (for intersection only)

Severity Index, SI = Fatalities / total no.accidents (deaths per accident)

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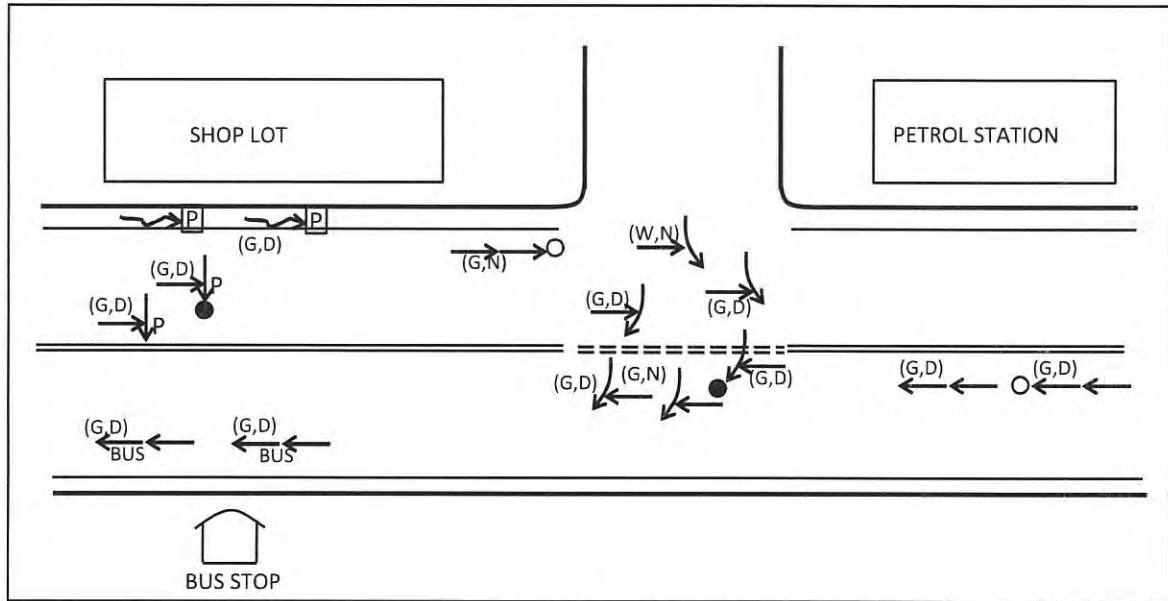


Figure Q3(c)

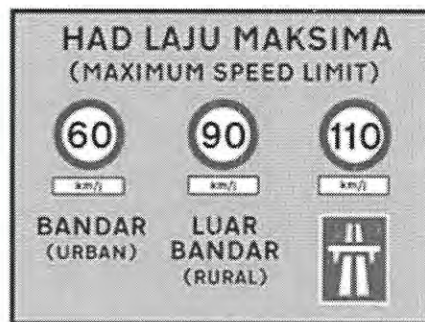


Figure Q4(d)(i)



Figure Q4(d)(ii)

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