

試験科目名
Subject

科目名 交通計画・都市計画

(英文) Transportation and Urban Planning

受験番号
Applicant
Number

M

令和元年度 広島大学大学院国際協力研究科 (博士課程前期) 入学試験問題 (10月入学)

Entrance Examination for Master's Programs (October 2019 Enrollment), IDEC

令和2年度 広島大学大学院国際協力研究科 (博士課程前期) 入学試験問題 (4月入学)

Entrance Examination for Master's Programs (April 2020 Enrollment), IDEC

<注意事項>

D) 日本語または英語で答えてもよい。

<Notice>

D) You can answer either in Japanese or English.

Select and answer two out of the following Questions 1–4.

Question 1

Answer the following questions, supposing the user equilibrium principle always holds.

- Suppose that there are two roads (road A and road B), where the total traffic volume is 3000 pcu/hr from origin (O) to destination (D). The link performance functions of these roads are given as shown in Fig. 1 (t_A and t_B indicate travel time, and x_A and x_B refer to traffic volume, on roads A and B, respectively). Then, calculate the expected travel time from O to D.

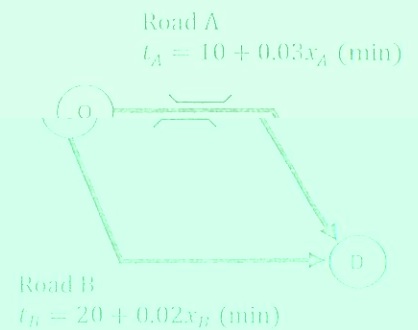


Fig.1 Road network

- The link performance function of road A is shown in Fig.2(0) before a natural disaster. However, it changes into a different shape after the disaster. Choose the most proper link performance function of damaged road A after the disaster out of options Fig.2(a) to Fig.2(d).

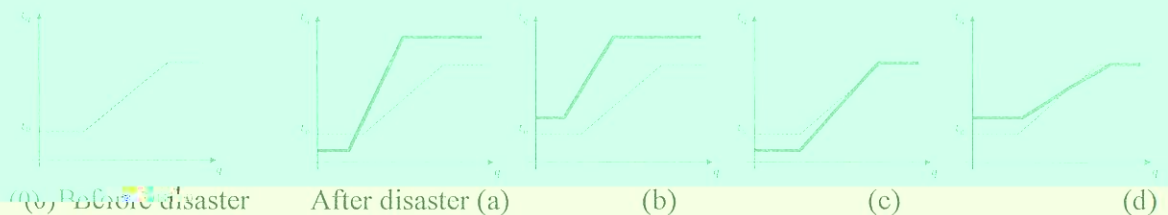


Fig.2 Link performance functions before and after disaster

[t_0, t_a : travel time, q : traffic volume]

- Suppose that a natural disaster causes intolerable damage on road A. Total volumes of both roads are reduced to 2000 pcu/hr but travel time is increased to 58 min during the disaster recovery period. And the link performance function of road A becomes $t_A = 30 + \beta x_A$. Obtain the parameter β of the new link performance function of road A.

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Question 2

It is necessary to correctly understand people's travel behaviors for resolving transportation issues. Please answer the following questions.

1. First, name two types of travel behavior surveys. Next, briefly explain each of their advantages and the shortcoming(s) of each and the corresponding method(s) to overcome the shortcoming(s).
2. Discrete choice models have been widely applied in travel behavior analysis. Name two types of discrete choice models, explain the advantages and disadvantages of each, and describe how to overcome the disadvantages.

科目名 都市・建築環境学

(英文) Urban and Building Environment

受験番号
Applicant
Number

M

令和元年度 広島大学大学院国際協力研究科 (博士課程前期) 入学試験問題 (10月入学)
Entrance Examination for Master's Programs (October 2019 Enrollment), IDDEC令和2年度 広島大学大学院国際協力研究科 (博士課程前期) 入学試験問題 (4月入学)
Entrance Examination for Master's Programs (April 2020 Enrollment), IDDEC

＜注意事項＞

① 日本語または英語のどちらかで解答して下さい。

＜Notice＞

① You can answer either in Japanese or English.

問題 [1] 建築設備に関する次の4項目(a)～(d)から2項目を選択し、説明せよ。

Question [1] Choose two from the following four items (a) to (d) concerned with building equipment and explain each one.

(a) 排水システムにおける通気管
Vent pipe in drainage system(b) パッシブソーラーハウス
Passive solar house(c) 氷蓄熱システム
Ice thermal storage system(d) 第1～3種機械換気方式
Class 1 to 3 mechanical ventilation systems

問題 [2] 建築分野における水資源の有効利用に関する質問(a)、(b)に答えよ。

Question [2] Answer the following questions (a) and (b) concerned with the utilization of water resources in the field of architecture.

(a) 水資源の有効利用を図るため、いかなる対策があるか説明せよ。
Explain the measure(s) for the utilization of water resources.

(b) 前問(a)(a)の対策を、開発途上国に導入する際の問題点を説明せよ。

Explain the problems in introduction of the measure(s) in the former question (a) to the developing countries.

試験科目名 Subject
科目名 植物機能科学 (英文) Functional Plant Sciences

受験番号 Applicant Number	M
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令和元年度 広島大学大学院国際協力研究科（博士課程前期）入学試験問題（10月入学）
Entrance Examination for Master's Programs (October 2019 Enrollment) (HDEC)
令和2年度 広島大学大学院国際協力研究科（博士課程前期）入学試験問題（4月入学）
Entrance Examination for Master's Programs (April 2020 Enrollment)



試 験 科 目 名 Subject
科目名 生態学
(英文) Ecology

受験番号 Applicant Number	M
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令和元年度 広島大学大学院国際協力研究科（博士課程前期）入学試験問題（10月入学）
 Entrance Examination for Master's Programs (October 2019 Enrollment), IDEC
 令和元年度 広島大学大学院国際協力研究科（博士課程前期）入学試験問題（10月入学）

問1. 以下の単語を、中文に説明せよ。

- (1) 生態系サービス
- (2) 生態系レジリエンス
- (3) 生態系サービスの価値

Explain the following words in Chinese.

- (1) Ecosystem services
- (2) Ecosystem resilience
- (3) Ecological value

問2. 生態系サービスは、自然環境だけでなく、人間活動によっても形成される生態系サービスとして、その価値を説明せよ。

Question 2. Ecosystem services have often been formed not only by natural environments but also by human activities. There are examples of ecosystems that have been formed by traditional human activities. Explain the value of these ecosystems.