平成 29 年度　東北大学大学院環境科学研究科

人文・社会科学系群博士課程前期2年

入学試験問題

専　門　科　目

（外国人留学生等特別選抜）

環境科学・政策論

注　意　事　項

1. 試験開始の合図があるまで、この問題の中を見てはいけません。
2. 問題の印刷不鮮明に気づいた場合は、手を挙げて監督者に知らせてください。
3. 問題冊子1部（ 4 頁）、解答用紙（ 4 枚）及び草案用紙（ 2 枚）を配布します。
4. 各解答用紙の「受験番号」欄には、受験番号のみを記入し、氏名は記入しないでください。
5. 所要時間は、90 分（13:00～14:30）です。
6. 問題用紙は、持ち帰らないでください。

以上

平成 29 年度　東北大学大学院環境科学研究科　人文・社会科学系群

博士課程前期 2 年の課程・秋季入学試験問題

専門科目	環境科学・政策学	1／4

問題　1.
次の英文を読んで、（ア）～（イ）の問いに日本語で答えなさい。

One of the major sources of error in the contingent valuation (CV) method is 'embedding'[A] that is frequently reported in many CV studies (Bateman et al., 1997). Embedding refers to a phenomenon in which a wide range of variation is found to occur in willingness to pay (WTP) value for the same good depending on whether the good is valued on its own or valued as a part of a more inclusive package (Kahneman and Knestch, 1992). The embedding is also called part–whole bias, disaggregation bias, sub-additivity effect, scope effect (see Cummings et al., 1986; Mitchell and Carson, 1989; Hanemann, 1994; Bateman et al., 1997) even though the meaning between these concepts differs (Boyle et al., 1994). The embedding effect is defined in different ways by different authors. According to Kahneman and Knestch (1992), the embedding occurs if 'the same good is assigned a lower value if WTP for it is inferred from WTP for a more inclusive good rather than if the particular good is evaluated on its own' (Kahneman and Knestch, 1992, p. 58). According to Harrison (1992), embedding occurs when the WTP value for one good differs 'insignificantly' with the WTP value for a more inclusive good. The existence of the embedding effect is supposed to result in a situation where 'different surveys can obtain widely variable stated willingness-to-pay amounts for the same public good, with no straightforward way for selecting one particular method as the appropriate one' (Diamond and Hausman, 1994, p. 46). Embedding affects the validity of the CV results[B], and therefore, it is recommended that every CV study should have an inbuilt mechanism called, 'internal consistency test' to assess the validity of results (NOAA, 1993). One way of assessing the internal consistency of the results is to involve the results for 'scope test'. To understand the nature of embedding effect and how the scope test is used for assessing the validity of the results, let us discuss briefly about some of the studies that have looked into these issues.

(Venkatachalam, L. (2004) The contingent valuation method: a review. *Environmental Impact Assessment Review*, 24(1), pp. 89–124.より。以下、同じ)

（ア）　下線部[A]について、具体例を挙げながら説明しなさい。
（イ）　下線部[B]について、具体例を挙げながら説明しなさい。

平成 29 年度　東北大学大学院環境科学研究科　人文・社会科学系群

博士課程前期２年の課程・秋季入学試験問題

専門科目	環境科学・政策学	２／４

問題　２.
次の英文を読んで、（ウ）～（エ）の問いに日本語で答えなさい。

Another source of error found to affect the value of willingness to pay (WTP) is the 'sequencing effect'[C] (Cummings et al., 1986), which is also called 'question order bias' (Mitchell and Carson, 1989). Sequencing effect is said to occur if a WTP value for a particular good differs depending on the order of the good in a sequence. Like the embedding problem, the sequencing effect occurs in multigood valuation studies (Diamond and Hausman, 1994).

There are empirical CV studies which have reported sequencing effect in their results. For example, Samples and Hollyer (1990) conducted an experiment using two different goods—seals and whales to see the sequencing effect. Two different scenarios—one with the WTP question for the seals first and the whales next and another with the reverse order—were assigned to two different respondent groups. The WTP value for the seals was found to be lower than the whales' value for the scenario which described seals first and whales next, and the value for the whales was found to be unaffected for the scenario that described the reverse order. Kahneman and Knestch's (1992) study, discussed under the embedding problem above, also found that the median WTP value for 'improved equipment, personnel' while valued alone, was found to be 25 times greater than the median WTP value for the same good when valued in a sequence of other 'environmental services'.

（中略）

According to Carson et al. (2001), the sequencing effect may be attributed to the influence of substitution and income effect[D] (see also, Hoehn and Randall, 1989). More precisely, the respondents may substitute the first good for other goods in the sequence and will be left only with a little amount of money to spend on other goods after spending on the first good. Therefore, according to Carson et al. (2001), the sequencing problem is not due to the CV method as such but arises from the way in which the CV practitioner adds up the results, without taking into account the substitution and income effects. However, much larger sequencing effect which is not theoretically consistent is disturbing (see, McFadden, 1994), and therefore, there exists a need for minimising it. According to Mitchell and Carson (1989), the

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sequencing effect is another phenomenon that occurs due to improper administration of the survey. They suggest two procedures to minimise it: (i) informing the respondents about what is going to come before asking the WTP questions; and (ii) providing opportunity to the respondents to revise their bids after asking questions completely (also see Smith, 1992).

（ウ）　下線部[C]について、具体例を挙げながら説明しなさい。
（エ）　下線部[D]について、具体例を挙げながら説明しなさい。

問題　３.
次の英文を読んで、（オ）～（キ）の問いに日本語で答えなさい。

The strategic bias is another problem in CV studies. There are two forms of strategic behaviour, namely, free riding[E] and overpledging[F] (Mitchell and Carson, 1989). Free riding would occur if an individual understates her true WTP for a public good on the expectation that others would pay enough for that good, and therefore, she need not have to pay. On the other hand, overpledging occurs when an individual assumes that her stated WTP value would influence the provision of good under question, provided that the stated WTP would not form any basis for the future pricing policy.

The debate on strategic bias was initiated by Samuelson (1954) when he criticised the survey methods on the ground that individuals would always tend to 'free ride' on survey questions. Following this, many laboratory experiments have been conducted and the experiments provide mixed results about occurrence of strategic bias in CV results (see Mitchell and Carson, 1989). Some of the empirical studies have also reported strategic bias in their results. For example, Whittington et al. (1992) designed a study to test the impact of time given to the respondents on WTP value for improved services of water supply. Two independent sample households were selected from three villages of Nigeria. One set of sample households was given an opportunity (1-day time period) to 'think' about their WTP value, whereas the other set of sample households was not given this opportunity. The results suggest that the WTP values for improved water services—elicited from those households who were provided time to think about their stated WTP—are found to be less than that of the households who were not provided

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the time to think. This implies that the households who were given time to think about the WTP values might have behaved strategically (by understating their true WTP) on the assumption that their stated WTP value would form the basis for the future water tariff policy.

It should be noted that there are only very few CV studies that exclusively deal with addressing the issue of strategic bias. Many of the CV studies take a stand that the strategic bias is not a major problem in CV experiments[G] (Griffin et al., 1995; Schulze et al., 1981). According to Mitchell and Carson (1989), the following reasons make the strategic behaviour very weak for most of the CV respondents: (a) the amount of information required for strategic behaviour are great; (b) CV surveys convey to the respondents that a larger number of people are interviewed, and therefore, respondents get the impression that their stated WTP would not influence the overall outcome; (c) the payment vehicles used in CV studies remind the respondents about the budget constraint so that the respondents could not overstate their true WTP; and (d) the understatement of true willingness to pay might be discouraged given the respondents' impression that the good under investigation may not be provided. Apart from these aspects, it has been found that using incentive compatible elicitation techniques (such as dichotomous choice technique) would minimise the impact of strategic bias (see Carson et al., 2001). Having reviewed different kinds of experiments on strategic bias, Mitchell and Carson (1989) suggest that the CV questionnaires should be designed such that it would not give any 'hint' to the respondents that makes them behave strategically.

（オ）　下線部[E]について、具体例を挙げながら説明しなさい。
（カ）　下線部[F]について、具体例を挙げながら説明しなさい。
（キ）　下線部[G]について、その理由を文意に即して説明しなさい。