

# 國立清華大學 102 學年度碩士班考試入學試題

系所班組別：科技管理研究所

考試科目（代碼）：英文(4303)

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\*請在【答案卷、卡】作答

**There are 20 multiple-choice questions in this exam. Each question is 5 points. Please choose the best answer for each question.**

## Section One: Vocabulary, Grammar, and Structure

1. \_\_\_\_ our carbon dioxide emissions output so that the atmosphere can heal is a multigenerational commitment.  
A. Reduce  
B. Reduced  
C. Reduction  
D. Reducing
2. About 65 million years ago, a mass \_\_\_\_ took place on Earth. Hundreds of species of organisms died off.  
A. contamination  
B. extinction  
C. distinction  
D. chaos
3. Imagination is important, as it allows us to \_\_\_\_ of all kinds of possibilities in the future and to understand the past in a way that has real survival value.  
A. contemplate  
B. conceive  
C. comprehend  
D. deliberate
4. \_\_\_\_, polar bears are starting to turn up drowned.  
A. As sea ice vanishing  
B. With sea ice vanishing  
C. With sea ice vanishes  
D. That sea ice vanishes
5. The United States, which is home to less than five percent of Earth's population but produces 25 percent of carbon dioxide emissions, \_\_\_\_.  
A. refusing to sign the Kyoto treaty  
B. but refuses to sign the Kyoto treaty  
C. refuses to sign the Kyoto treaty  
D. which refuses to sign the Kyoto treaty

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6. It seems that in America, being a parent is one of the least desirable roles in the society. It used to be that the American dream involved a house, a spouse, at least two kids, and a dog. Nowadays, the dream is shifting, and \_\_\_\_.
- A. kids are less increasingly likely to be part of the picture
  - B. kids are less likely to be increasingly part of the picture
  - C. kids are increasingly less likely to be part of the picture
  - D. kids are increasingly to be part of the less likely picture
7. Sometimes people \_\_\_\_ the theory of natural selection, but about the concept of evolution as well.
- A. not only have misconceptions about
  - B. have not only misconceptions about
  - C. have misconceptions about not only
  - D. have misconceptions not only about
8. The theory of evolution is complex, \_\_\_\_ so often misunderstood.
- A. and may help to explain why it is
  - B. which may help to explain why it is
  - C. it may help to explain why it is
  - D. that may help to explain why it is
9. Suppose that, in a population of a particular species of insect, 5% of the insects have genes that make them resistant to a specific insecticide. The first application of the insecticide could, therefore, kill 95% of the population. However, tolerant insects would then \_\_\_\_ the majority of the breeding population that survived.
- A. constitute
  - B. be composed of
  - C. consist of
  - D. contribute
10. Greenland ice is not just melting but doing so more than twice as fast, with 53 cubic miles draining away into the sea last year alone, \_\_\_\_ with 22 cubic miles in 1996.
- A. comparing
  - B. compared
  - C. to compare
  - D. comparison

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11. Striving to maximize their incomes, \_\_\_\_\_.
  - A. time with family and friends is sacrificed by workers
  - B. time with family and friends being sacrificed by workers
  - C. workers sacrifice time with family and friends
  - D. and workers sacrifice time with family and friends
12. Evolution is the continuous genetic \_\_\_\_\_ of a population of organisms to its environment over time.
  - A. manifestation
  - B. adaptation
  - C. mutation
  - D. multiplication
13. The current high carbon emissions are responsible for global warming. If power generation did not so much depend on fossil fuel, carbon dioxide emissions \_\_\_\_\_ so high.
  - A. would not be
  - B. will not be
  - C. would not have been
  - D. are not
14. According to Senator Hillary Clinton, violent entertainment is a silent epidemic, \_\_\_\_\_.
  - A. she argues that it has harmful effects on teenagers
  - B. and it has harmful effects on teenagers
  - C. who argues that it has harmful effects on teenagers
  - D. arguing that it has harmful effects on teenagers
15. One of the reasons the loss of the planet's ice cover is accelerating is \_\_\_\_\_, more heat is absorbed by the Earth's surface.
  - A. that as the pole's white reflective surface shrinks
  - B. because that the pole's white reflective surface shrinks
  - C. because as the pole's white reflective surface shrinks
  - D. that the pole's white reflective surface shrinks

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## Section Two: Reading Comprehension

A particular nuclear scenario was loss of cooling which resulted in melting of the nuclear reactor core, and this motivated studies on both the physical and chemical possibilities as well as the biological effects of any dispersed radioactivity. Those responsible for nuclear power technology in the West devoted extraordinary effort to ensuring that a meltdown of the reactor core would not take place, since it was assumed that a meltdown of the core would create a major public hazard, and if uncontained, a tragic accident with likely multiple fatalities.

In avoiding such accidents the industry has been very successful. In over 14,500 cumulative reactor-years of commercial operation in 32 countries, there have been only three major accidents to nuclear power plants - Three Mile Island, Chernobyl, and Fukushima - the second being of little relevance to reactor design outside the old Soviet bloc.

It was not until the late 1970s that detailed analyses and large-scale testing, followed by the 1979 meltdown of the Three Mile Island reactor, began to make clear that even the worst possible accident in a conventional western nuclear power plant or its fuel would not be likely to cause dramatic public harm. The industry still works hard to minimize the probability of a meltdown accident, but it is now clear that no-one need fear a potential public health catastrophe simply because a fuel meltdown happens. Fukushima has made that clear, with a triple meltdown causing no fatalities or serious radiation doses to anyone, while over two hundred people continued working on the site to mitigate the accident's effects.

The decades-long test and analysis program showed that less radioactivity escapes from molten fuel than initially assumed, and that most of this radioactive material is not readily mobilized beyond the immediate internal structure. Thus, even if the containment structure that surrounds all modern nuclear plants were ruptured, as it has been with at least one of the Fukushima reactors, it is still very effective in preventing escape of most radioactivity.

It is the laws of physics and the properties of materials that mitigate disaster, as much as the required actions by safety equipment or personnel. In

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fact, licensing approval for new plants now requires that the effects of any core-melt accident must be confined to the plant itself, without the need to evacuate nearby residents. 35

The three major accidents occurred during more than 14,500 reactor-years of civil operation. Of all the accidents and incidents, only the Chernobyl and Fukushima accidents resulted in radiation doses to the public greater than those resulting from the exposure to natural sources. The Fukushima accident resulted in some radiation exposure of workers at the plant, but not such as to threaten their health, unlike Chernobyl. Other incidents (and one 'accident') have been completely confined to the plant. 40

Apart from Chernobyl, no nuclear workers or members of the public have ever died as a result of exposure to radiation due to a commercial nuclear reactor incident. Most of the serious radiological injuries and deaths that occur each year (2-4 deaths and many more exposures above regulatory limits) are the result of large uncontrolled radiation sources, such as abandoned medical or industrial equipment. There have also been a number of accidents in experimental reactors and in one military plutonium-producing pile - at Windscale, UK, in 1957, but none of these resulted in loss of life outside the actual plant, or long-term environmental contamination. 45 50

16. The main point of this passage is that
- A. the design of Chernobyl nuclear plant is inferior to the design outside the old Soviet bloc.
  - B. nuclear power plants are relatively safe.
  - C. laws of physics and the properties of materials mitigate disaster.
  - D. the meltdown of the core would create a major public hazard and tragic accident with likely multiple fatalities.
17. According to this passage, which of the following is true?
- A. The nuclear reactor accidents at Chernobyl, Three Mile Island and Fukushima plants were all confined to the plants.
  - B. The Chernobyl accident resulted in radiation exposure of workers at the plant, but not such as to threaten their health.
  - C. Accidents in a conventional western nuclear power plant or its fuel cause

- serious public harm.
- D. The accident at Three Mile Island did not result in excessive radiation doses to the public.
18. What is the reason that the ruptured containment structure is still effective in preventing escape of most radioactivity?
- A. Most of the radioactive material is not readily mobilized beyond the immediate internal structure.
- B. Licensing approval for new plants now requires that any core-melt accident must be prevented.
- C. The nuclear industry works hard to minimize the probability of a meltdown accident.
- D. The loss of cooling does not always result in melting of the nuclear reactor core.
19. Most of the serious radiological injuries and deaths that occur each year are the result of \_\_\_\_.
- A. large uncontrolled radiation sources, such as abandoned medical or industrial equipment
- B. melting of the nuclear reactor core
- C. earth quakes
- D. inadequate safety equipment and operation procedures of nuclear power plants
20. The word "hazard" in line 7 means \_\_\_\_.
- A. danger
- B. pollution
- C. disaster
- D. casualty