Admission Test

GRADUATE MASTER'S DEGREE PROGRAM
SECTORAL MANAGEMENT

Full Name	
Date of Birth	

Notes:

Fill your full name and the date of birth on the front page (above). Then circle the assigned test variant.

Each question has exactly one correct answer. Mark the answer you consider correct by circling the corresponding letter (see the example). Wrong or missing answers earn zero points.

If you make a mistake, you can correct the answer as in the example.

Examples of marking the answers, and correcting the mistakes:

1. (A)   B   C   D

2. (A)   (B̶)   C   D

3. (A)   (B̶)   (C̶)   D

Applicant's Signature

ADMISSION TEST – ENGLISH

LISTENING TASK 1

You will hear an interview with Anita and her son Darren. Choose the best answers for the questions. You will hear the interview <u>twice</u>.

1. **Before the family joined the circus, the mother**

   A) was unemployed
   B) worked as an electrical engineer
   C) stayed at home

2. **Darren first went to see a circus when he was**

   A) 14
   B) 9
   C) 3

3. **Anita suggests that Darren's fascination with clowns**

   A) started when he learned not to be frightened by them
   B) was understandable given the family history
   C) came as something of a surprise to her

4. **The family first considered circus work after**

   A) his father lost his job
   B) his brothers had completed university
   C) his mother had failed to find work locally

5. **When Darren said the family could join a circus, at first his father**

   A) doubted if they had the right skills
   B) said they couldn't afford a caravan
   C) didn't think it was a serious suggestion

6. **How did Darren feel when his father wrote off to various circuses?**

   A) unsure how easy it would be to find work
   B) worried about whether they'd like the work
   C) confident that they would all be offered work

7. **The father was offered**

   A) to work as a trainee clown
   B) to sell tickets
   C) to work as an electrician

8. **What problem did Anita have during the family's first period with a circus?**

   A) It was hard not having a holiday.
   B) It was difficult living in a small space.
   C) It was tough being away for a whole year.

9. **What does Darren say about life in the circus?**

    A) He loves performing in front of the public.
    B) He wishes he could go to normal school lessons.
    C) He's learning useful skills by watching the experts.

10. **How does Anita feel now about their decision to join the circus?**

    A) She sometimes wonders it was a mistake.
    B) She's pleased that they took the risk.
    C) She's got used to discomfort.

LISTENING TASK 2

You will hear five different speakers giving their reasons for taking up a sport. Choose what each speaker says. Use each letter only once. There is one extra letter you do not need to use. You will hear <u>each speaker only once</u>.

A) I was persuaded by other people.
B) I was advised to take more exercise.
C) I did it to raise money for charity.
D) I wanted to give my family a surprise.
E) I needed to find a way to relax.
F) I wanted to prove to someone that I could do it.

Speaker 1	Speaker 2	Speaker 3	Speaker 4	Speaker 5

READING TASK 1

Read the article. Five sentences have been removed from the article. Choose from the sentences the one which fits each gap (1—5). There is one extra sentence which you do not need to use.

A) Having been repeatedly warned about the ferocity of the customs staff, I was determined to get through with as little trouble as possible.

B) This self-indulgence was all well and good, but before I knew it darkness had fallen and I was undeniably hungry.

C) And I was still feeling a little apprehensive about how I would manage on my own the next morning.

D) The next morning I went looking for a traditional New York diner for my breakfast.

E) I set out to prove that I could have the ultimate trip to the Big Apple, even if I was alone.

F) But holding my head high, I took a deep breath and sat up at the bar, where I ordered a champagne cocktail and oysters.

Ten years ago, my boyfriend and I planned to go on a romantic trip to New York. I didn't want to go with my girlfriends and spend the time simply shopping — New York was somewhere to wander, to inhale the atmosphere. Then my boyfriend broke up with me. Never mind, I thought. I'll find someone else to go with some day. And so it happened that I spent my savings on a watch.

A couple of months ago, my now ten-year-old watch finally stopped. A day or two later, I realised I still owned an almost-unopened Guide to New York. It was time to take control. If no one was going to take me on a trip to New York, I was clearly going to have to make myself. 1) _____ I decided that luxury was the only way to go and as I waited in the luxurious Upper Class lounge at Heathrow, I soon realised I'd made the right decision. By the time we landed in New York, I was in a state of excitement and nervousness. Nevertheless, the electric jolt I felt on seeing the "stars and stripes" as I entered the airport surprised me. 2) _____. But when the official asked me how' I was, I alarmed even myself with my strangled sob, and wobbly answered: 'Fine — I just can't believe I'm here!' As two big tears landed on my passport I was ushered away with great haste.

However, my initial smugness at how well I was coping almost entirely deserted me when I arrived at my luxury hotel that evening and was asked the questions 'Is it just you?' or 'Is it just the one bag?' 3) _____ In my room I switched on the television and saw the news channels reporting the Christmas tree being hoisted above the Rockefeller Centre. It felt as if New York was showing off for me! I decided I couldn't let it down by hiding in my room.

For those who — like me — continue to find even simple mathematics frightening, Soho is an ideal base because you are gently eased into the city via streets that have actual names, not just numbers. And I criss-crossed up and down almost all of them! I was starting to feel relaxed but I still had a nagging awareness that I hadn't yet made it to the New York of the movies, numbered streets and towering skyscrapers. Then, just as I was starting to feel a little guilty, I looked right before crossing the road and was confronted with the Chrysler Building at the end of the street. My stomach lurched - I really had made it. It slowly dawned on me that being on my own meant I was entirely free to spend as long as I wanted doing what I wanted. 4) _____. A quiet evening in with room service watching TV did seem appealing, but I was determined to go out.

There have been things I have been scared of, but little else in life will frighten me now that I've walked alone into a chic, crowded restaurant at nine o'clock on a Friday night. 5) _____ Now, high on independence, determined to travel the world unhindered for the rest of my life. Some of the people I talked to about my trip simply couldn't understand why I had wanted to do it on my own. My response was that I wanted to know that I could.

1.	2.	3.	4.	5.

READING TASK 2

Read the article. Then choose the best option to complete the sentences below.

The Norwegian Government is doing its best to keep the growth of the oil industry under control. A new law limits exploration to an area south of the southern end of the long coastline; production limits have been laid down (though these have already been raised); and oil companies have not been allowed to employ more than a limited number of foreign workers. But the oil industry has a way of getting over such problems, and few people believe that the Government will be able to hold things back for long. As one Norwegian politician said last week: 'We will soon be changed beyond recognition.'

Ever since the war, the Government has been carrying out a programme of development in the area north of the Arctic Circle. During the past few years this programme has had a great deal of success: Tromso has been built up into a local capital with a university, a large hospital and a healthy industry. But the oil industry has already started to draw people south, and within a few years the whole northern policy could be in ruins.

The effects of the development of the oil industry would not be limited to the north, however. With nearly 100-percent employment, everyone can see a situation developing in which the service industries and the tourist industry will lose most of their workers to the oil industry. Some smaller industries might even disappear altogether when it becomes cheaper to buy goods from abroad.

The real argument over oil is its threat to the Norwegian way of life. Farmers and fishermen do not make up the majority of the population but they are an important part of it because the Norwegians see in them many of the qualities that they regard with pride as essentially Norwegian. And it is the farmers and the fishermen who are most critical of the oil industry because of the damage that it might cause to the countryside and to the sea.

6. **The Norwegian Government would prefer the oil industry to**
   A) slow down its rate of development.
   B) provide more jobs for Norwegians.
   C) look for oil in the southern coast.
   D) develop more quickly than at present.

7. **What has the Norwegian Government's policy been for the area north of the Arctic Circle since the war?**
   A) To prevent a growth in population.
   B) To improve facilities in the area.
   C) To develop a large tourist industry.
   D) To discourage industrial development.

8. **What might be the effect of the oil industry on northern Norway?**
   A) The development of industry.
   B) A growth in population.
   C) The failure of the development programme.
   D) The development of new towns.

9. **In Norway, the effect of the development of the oil industry might be**
   A) a large reduction in unemployment.
   B) an increase in unemployment in the north.
   C) a reduction in the number of existing industries.
   D) the development of a number of service industries.

10. **Why are Norwegian farmers and fishermen important?**
    A) The economy depends on agriculture and fishing.
    B) They form the majority of the population.
    C) They are thought of as the real Norwegians.
    D) They are responsible for preventing pollution.

LANGUAGE IN USE

1. My boyfriend has this irritating habit of never putting anything _____.

    A) around   B) away   C) about   D) over

2. The children asked him why he hadn't learned to swim _____ he was at school.

    A) during   B) after   C) while   D) whenever

3. The police warned that the motorway was blocked by vehicles _____ in the storm.

    A) fallen   B) upset   C) collapsed   D) overturned

4. Alex was worried that he wouldn't _____ enough money to pay his mother back.

    A) afford   B) spend   C) earn   D) provide

5. Do you think Tom _____ to take his jacket? It might rain.

    A) has   B) must   C) should   D) needs

6. When Janet goes on holiday, she prefers going on _____ rather than lying on the beach.

A) sightseeing B) excursions C) visiting D) travel

7. Regular exercise keeps your heart healthy. _____, it provides you with a general sense of well-being.

A) Moreover B) Although C) Despite D) However

8. In times of recession people stop spending. _____, poor sales can lead to closures of some businesses.

A) However B) As a result C) Because D) But

9. The new smartphone is beautiful and _____, with that elegant yet functional design.

A) useful B) useless C) pretty D) dull

10. I've never seen _____ movies starring this actor, but I've heard he was very popular in his time.

A) few B) any C) much D) some

11. I always take something to read when I go to the doctor's _____ I have to wait.

A) as if B) so that C) in order D) in case

12. Some people think it's a waste of _____ trying to prevent crime.

A) study B) work C) time D) space

13. The Japanese car was slightly more expensive but the quality was _____ better.

A) as B) far C) more D) quite

14. _____ to the schedule, the first workshop starts at ten.

A) According B) Looking C) Agreeing D) Seeing as

15. I found out that Taiwan is the biggest _____ of this type of TV.

A) product B) produce C) production D) producer

16. In order to _____ money, you must show two forms of identification.

A) earn B) cost C) spend D) withdraw

17. Her parents were very _____ because she was out so late that night.

A) responsible B) sorry C) worried D) overcome

18. After a lot of difficulty, he _____ to open the door.

A) managed B) succeeded C) obtained D) realized

19. I have been looking for this book for months, and I _____ have found it.

A) at last B) in time C) at the end D) at present

20. My employer's _____ of my work does not matter to me at all.

A) meaning B) belief C) opinion D) expression

21. The purpose of the examination was to _____ the students' knowledge of the subject.

A) try B) inspect C) prove D) test

22. I'll have to _____ to you, otherwise he will hear.

A) shout   B) say   C) whistle   D) whisper

23. As soon as the firebell rang everyone walked quickly downstairs and out of the building, _____ gathered in the car park.

A) while   B) then   C) before   D) to

24. There's _____ to be frightened of the dog; he's quite harmless.

A) a fear   B) no fear   C) no need   D) any reason

25. After closing the envelope, the secretary _____ the stamps on firmly.

A) licked   B) sucked   C) stuck   D) struck

Mathematics entrance test

1. Determine whether the vectors **a**, **b** and **c** are linearly dependent or independent:

$$\mathbf{a} = \begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix} \ , \mathbf{b} = \begin{pmatrix} 2 \\ 1 \\ -1 \end{pmatrix} \ , \mathbf{c} = \begin{pmatrix} 3 \\ 2 \\ -1 \end{pmatrix}$$

   (a) Linearly dependent.

   (b) Linearly independent.

   (c) It cannot be decided.

   Correct answer: (b).

2. Find the limit of the function $\lim\limits_{x \to +\infty} f(x) = \frac{x+x^3}{3x^2-1}$.

   (a) $+\infty$

   (b) $\frac{1}{3}$

   (c) 0

   (d) The limit does not exist

   Correct answer: (a).

3. Find interval on which the function $f(x) = \sqrt{x} - \frac{1}{\sqrt{x}}$ is decreasing.

   (a) $(-\infty; -1)$

   (b) $(1, +\infty)$

   (c) $(0, 1)$

   (d) $\emptyset$

   Correct answer: (d).

4. Find the value of the definite integral

$$\int_1^e \frac{1+\ln x}{x} dx \quad .$$

(a) $\frac{2}{3}$

(b) $\frac{3}{4}$

(c) $\frac{4}{3}$

(d) None of the answers is correct.

Correct answer: (d).

5. The value of the global minimum of the function $f(x) = \frac{x^2+4}{x}$ on the interval $[1, 3]$ is

(a) 1

(b) 2

(c) 4

(d) 5

Correct answer: (c).

6. Find $\frac{\partial f}{\partial y}$ for $f(x, y) = \frac{xy}{x-y}$

(a) $\frac{-x^2}{(x-y)^2}$

(b) $\frac{y^2}{(x-y)^2}$

(c) $\frac{x^2}{(x-y)^2}$

(d) $\frac{-y^2}{(x-y)^2}$

Correct answer: (d).

7. Which of the following equations always holds? (X and Y are random variables, a is a deterministic constant.)

(a) $E(X + Y) = E(X) + E(Y)$

(b) $E(XY) = E(X)E(Y)$

(c) $E(X + Y) = E(X) + E(Y) + 2Cov(X, Y)$

(d) $E(aX) = a^2 E(X)$

Correct answer: (a).

8. Which of the following statements is true?

(a) The R^2 of a regression measures the percentage difference between predicted and observed values.

(b) The R^2 of a regression measures the joint statistical significance of explanatory variables.

(c) The R^2 of a regression measures the percentage of dependent variable variance explained by independent variables.

(d) The R^2 of a regression measures the precision of the forecast.

Correct answer: (c).

9. You own a financial instrument that ensures an infinite stream of annual payments of 50 000CZK, starting next year. What is the present value of this instrument if the annual interest rate is 5%?

   (a) 500 000 CZK

   (b) 1 000 000 CZK

   (c) 1 250 000 CZK

   (d) 2 500 000 CZK

   Correct answer: (b).

10. The supply is given by $Q_S = 2p - 4$ and the demand by $Q_D = 20 - 2p$, where Q_S is the quantity supplied, Q_D is the quantity demanded and p is the price. Assume that there is a price ceiling $p_{max} = 4$. Determine the size of the excess demand (difference between quantity demanded and quantity supplied).

    (a) 4

    (b) 8

    (c) 12

    (d) None of the answers is correct.

    Correct answer: (b).