



For examiners' use only

EBU5305 A

1	
2	
3	
4	
Total	

Joint Programme Examinations 2018/19

EBU5305 Interactive Media Design and Production

Paper A

Time allowed 2 hours

Answer ALL questions

Complete the information below about yourself very carefully.

QM student number

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BUPT student number

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Class number

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Allowed: electronic calculators

INSTRUCTIONS

1. You must NOT take answer books, used or unused, from the examination room.
2. Write only with a black or blue pen and in English.
3. Do all rough work in the answer book – do not tear out any pages.
4. If you use Supplementary Answer Books, tie them to the end of this book.
5. Write clearly and legibly.
6. Read the instructions on the inside cover.

Examiners

Dr Marie-Luce Bourguet, Dr Yizhe Song

Instructions

Before the start of the examination

- 1) Place your BUPT and QM student cards on the corner of your desk so that your picture is visible.
- 2) Put all bags, coats and other belongings at the back/front of the room. All small items in your pockets, including wallets, mobile phones and other electronic devices must be **placed in your bag in advance. Possession of mobile phones, electronic devices and unauthorised materials is an offence.**
- 3) Please ensure your mobile phone is switched off and that no alarm will sound during the exam. **A mobile phone causing a disruption is also an assessment offence.**
- 4) Do not turn over your question paper or begin writing until told to do.

During the examination

- 1) You must not communicate with or copy from another student.
- 2) If you require any assistance or wish to leave the examination room for any reason, please raise your hand to attract the attention of the invigilator.
- 3) If you finish the examination early you may leave, but not in the first 30 minutes or the last 10 minutes.
- 4) For 2 hour examinations you may **not** leave temporarily.
- 5) For examinations longer than 2 hours you **may** leave temporarily but not in the first 2 hours or the last 30 minutes.

At the end of the examination

- 1) You must stop writing immediately – **if you continue writing after being told to stop, that is an assessment offence.**
- 2) Remain in your seat until you are told you may leave.

Question 3

- a) Describe the colour which is encoded with the following RGB values: (200, 200, 50), in terms of its hue, saturation and brightness. Explain your answer.

[5 marks]

	Do not write in this column	
		5 marks

- b) This question is about digitisation.

[5 marks]

- i) How can you prevent aliasing when digitising sound?

(2 marks)

- ii) Now explain the appearance of an image that has been subsampled.

(3 marks)

	Do not write in this column	
		5 marks

c) This question is about image encoding.

[5 marks]

i) Calculate the size in kilo bytes (KB) of a 200 x 300 pixels true colour image.

(3 marks)

ii) Now calculate the size of the grayscale version of the same image.

(2 marks)

	Do not write in this column	
		5 marks

d) This question is about sound encoding.

[10 marks]

i) What are speech formants and how can they be used for doing speech recognition?

(5 marks)

ii) What is psychoacoustics and how does it contribute to sound compression?

(5 marks)

	Do not write in this column	

**10
marks**

Question marking: $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{10} = \frac{1}{2}$

Question 4

a) This question is about media compression.

[15 marks]

i) If your image contains large areas of uniform colour, which lossless compression technique will work best? Why and how does it work?

(5 marks)

ii) Why is JPEG said to be lossy? Give detailed explanations.

(5 marks)

iii) In MPEG, why are B frames typically smaller than I and P frames?

(5 marks)

[illegible]

	15 marks
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