HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY

Final Test

- Time : 50 minutes. Date: 02 Jan 2024 Số thứ tự (theo danh sách):
- Closed book examination: Closed book; NO Laptop, NO phone
- Full name: . . . . . Student's number: . . . . . .

ANSWER SHEET

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
A																									
B																									
C																									
D																									

(Record your answer on the answer sheet)

1. How does increasing colour depth affect an image file?

A. Increases number of colours in image
B. Increases resolution of image
C. Increases image width
D. Decreases metadata for an image

2. Compression helps when sending files over the Internet because...

A. Less packets have to be sent so it is quicker
B. Lossy compression is better
C. Routers can recognise zipped files
D. Lossless compression is better

3. Convert B2 from hex to denary

A. 178 **B.** 14 **C.** 256 **D.** 1001 1110

4. What is the biggest number that can be stored as 8 bits?

A. 255 **B.** 256 **C.** 8 **D.** 16

5. Convert the binary number 00111100 to decimal.

A. 60 **B.** 56 **C.** 46 **D.** 24

6. Decimal 53 can be written in binary as?

A. 110101 **B.** 110001 **C.** 111000 **D.** 111110

7. In binary, 11 + 11 = ?

A. 111 **B.** 100 **C.** 22 **D.** 110

8. The binary number 10001010 expressed in hex is

A. AA **B.** A8 **C.** 8A **D.** 88

9. The ASCII code for a letter A is 01000001 what is the code for a C

A. 11000011 **B.** 01000011 **C.** 01100001 **D.** 01001001

10. Type of memory that is read only and non-volatile

A. ROM **B.** RAM **C.** Virtual **D.** Cache

11. Maximum number of addressable locations in an address bus with 8 lines ?

A. 256 **B.** 64 **C.** 8 **D.** 800

12. Secondary Storage is

A. Non-volatile **B.** Volatile **C.** Extremely small **D.** portable

13. Device drivers ....

A. Allow peripherals to communicate with the OS
B. Allow users to communicate with the OS
C. Allow peripherals to works directly with the CPU
D. Allo user to change settings of their peripherals

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14. Which is the correct formula for calculating image file size in bits

A. Allow peripherals to communicate with the OS
B. image width × image height × colour depth
C. (image width + image height × colour depth) / 8
D. (image width × image height × colour depth) / 8

15. An image has a resolution of 13 X 11 and it shows five colours (colour depth of three) what would the file size be

A. 715 bits **B.** 429 bits **C.** 429 bytes **D.** 715 bytes

16. What is digital sound?

A. Soundwaves travelling through the air. **B.** Sound represented as denary values.
C. Sound represented as binary values. **D.** Sound that humans emit.

17. How many bits per pixel would be needed to show the colours in this bitmap?



A. 2 **B.** 4 **C.** 8 **D.** 16

18. How many samples per second is 44.1 Khz?

A. 44 100 samples per second. **B.** 44.1 samples per second.
C. 441 samples per second. **D.** 4 410 samples per second

19. What is measured when a sound wave is sampled?

A. Amplitude. **B.** Hertz. **C.** Bit rate. **D.** Frequency

20. If the sample rate and sample resolution are increased, what happens to the sound file?

A. The quality and the size of the file increase
B. The quality and the size of the file decrease
C. The quality increases and the size of the file decreases.
D. The quality decreases and the size of the file increases.

21. What is the binary number 01110110 in decimal?

A. 97 **B.** 118 **C.** 56 **D.** 102

22. The ability to easily increase the size of computing storage or processing power is

A. Redundancy. **B.** A data centre. **C.** Cloud Storage. **D.** Scalability

23. What are the types of Cloud Services?

A. Infrastructures as a service (IaaS) platform as a service (PaaS), software as a service (SaaS)
B. Mail server, collaboration server, web server, application serve
C. Cirrius

24. Which of the following is an example of the cloud?

A. Amazon Web Services (AWS). **B.** Dropbox.
C. Google Cloud. **D.** All of above

25. Which of the following statements could be used to describe a private cloud deployment?

A. A multi-tenant cloud environment accessed over the internet
B. A cloud service that can only be accessed from a private computer
C. A cloud environment maintained within an enterprise's own data center
D. A cloud formation that can be seen across the globe

Part 2: Short Answer (problem solving)

Q1. You have a text file with 1500 characters encoded using standard ASCII. Calculate the file size of the text file in bits.

Working

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Answer ..... bits

Q2. An image has a resolution of 20×30 pixels and a colour depth of 8 bits. Calculate the file size of the bitmap image in byte

Working

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Answer ..... bytes

Q3. Calculate the size of a sound file with a sample rate of 96000 Hz, a sample resolution of 24 bits, and a duration of 2.5 seconds. Give the answer in kilobytes.

Working

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Answer ..... kilobytes

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Q4. The table shows the ASCII denary values for five characters.

Character	ASCII denary value
a	97
b	98
c	99
d	100
e	101

a) Give the 8-bit binary value for the ASCII character 'b'.

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b) Complete the table by writing the ASCII denary value for the character 's' and its hexadecimal equivalent.

Character	**s**
ASCII denary value	
Hexadecimal value	

Q5. Many components of the computer system transfer data between them using buses. One example of a bus is an address bus.

(i) Name two other buses that exist within a computer and give the purpose of each.

Bus 1 .....

Purpose

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Bus 2 .....

Purpose

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END