codebash

OCR GCSE (9-1) Computer Science J277

J277/01 Diagnostic Test

Computer systems

Time allowed: 40 minutes **Total: 40 marks**

Name _____

Class _____

Instructions

- There are 40 questions. Each has four options, A, B, C and D, and only one is correct.
- Circle your answers on the answer sheet at the back of this booklet. You may use the question pages for working, but only the answer sheet is marked.
- Each question is worth 1 mark. There are no marks taken off for wrong answers.
- This is a diagnostic test: your wrong answers tell your teacher exactly what to reteach. If you have no idea at all, leave the question blank rather than guessing.

1 A sound recording's sample resolution (bit depth) is increased. What effect does this have?

A Fewer possible amplitude values can be stored for each sample
B More possible amplitude values can be stored for each sample
C More samples are taken each second
D The sound becomes louder, because each sample is a bigger number

2 Which is the best definition of a pixel?

A The smallest element of an image, which holds one colour
B A small square that can show several colours at once
C One bit of an image file
D A square on the monitor screen

3 An image uses 64 different colours. How many bits are needed for each pixel?

A 64
B 6
C 2^6
D 8

4 An image is 1000 × 500 pixels with a colour depth of 8 bits. How much storage do 4 of these images need? (Use 1 MB = 1 000 000 bytes.)

A 0.5 MB
B 16 MB
C 2 MB
D 1 MB

5 A file is 24 000 000 bits. What is its size in megabytes (MB)? (Use 1 MB = 1 000 000 bytes.)

A 24 MB
B 3 MB
C 192 MB
D 0.3 MB

6 A photographer carries her laptop to outdoor shoots. Which justification for choosing an SSD would gain a mark?

A It is faster than a hard drive, so it is the best choice for any laptop
B It has no moving parts, so it is unlikely to be damaged if the laptop is knocked
C It is better than a magnetic hard drive in every way, including cost
D It is the newest type of storage, so it will last longer

7 Which operating system function makes sure two programs do not use the same area of RAM?

A Memory management
B Peripheral management
C User management
D File management

8 A printer driver is part of which operating system function?

A Peripheral management
B Memory management
C User management
D File management

9 Which is the best description of the purpose of utility software?

A Software that defragments the hard drive to speed it up
B Software that is useful to the user, such as a word processor
C Software that helps to maintain and optimise the computer
D The operating system, which manages the hardware

10 Data is encrypted before it is sent over the internet. What does the encryption do?

A It makes intercepted data unreadable without the key
B It stops the data being intercepted
C It stops hackers getting into the network
D It makes the file smaller

11 An 8-mark question asks you to discuss the impact of a new technology, considering ethical, legal and environmental issues. Which answer is most likely to reach the top level?

A One that covers every bullet, applies points to the scenario and weighs benefits against drawbacks
B One that lists as many relevant points as possible, as briefly as possible
C One that gives a long, detailed list of drawbacks for each bullet
D One that names every law that could apply to the scenario

12 What is the main difference between a LAN and a WAN?

A A WAN has more computers connected to it than a LAN does, so it is bigger
B A LAN uses cables to connect devices, while a WAN connects them using Wi-Fi
C A WAN is always faster, because it uses fibre
D A WAN covers a large geographical area and uses infrastructure owned by others

13 Which describes a mesh topology?

A Every device is connected to a central switch, which sends data to the right device

B A server controls access to files and security, and the other devices request them

C Devices take turns to send data along one shared cable with a terminator at each end

D Each device is connected to several other devices, so data has more than one route

14 Which answer would gain a mark for explaining how bandwidth affects network performance?

A Bandwidth is the amount of data that can be sent per second

B Bandwidth affects the speed of the network

C Higher bandwidth means more data can be sent per second, so files transfer faster

D More users means more bandwidth is available to each one

15 A school moves its files to cloud storage. Which statement is accurate?

A The cloud is less secure than a school server

B Cloud storage only works over Wi-Fi

C Data in the cloud cannot be hacked

D The school relies on the provider to keep its data secure

16 Which device connects a home LAN to the internet?

A Router

B Network interface card (NIC)

C Ethernet cable

D Switch

17 Which of these is a valid IPv4 address?

A 192.168.0.256

B 192.168.0.1.5

C 192.168.0.25

D 192.168.0

18 A user types a web address into a browser. Where is the domain name sent to be looked up?

A The web server that hosts the site

B The router, which stores the IP address of every website

C The network interface card

D A DNS server

19 After the IP address has been found, where is it sent?

A To the person using the computer, who types it in
B To the web server
C To another DNS server
D Back to the browser on the user's computer

20 A company stores its customers' names and addresses. Which law covers how it must look after this data?

A Computer Misuse Act 1990
B Data Protection Act 2018
C Copyright, Designs and Patents Act 1988
D No law, as long as the data is kept secret

21 What is the result of adding the binary numbers 01101100 and 00110101? Give the result as an 8-bit binary number.

A 01011001
B 10010001
C 10100001
D 10100000

22 A binary number is shifted to multiply it by 8. Which shift is used?

A 3 places to the left
B 8 places to the left
C 4 places to the left
D 3 places to the right

23 What is 01010000 after a shift of two places to the right?

A 01000000
B 00101000
C 00010100
D 00010000

24 In ASCII, C = 67, A = 65 and T = 84. How is the word CAT stored?

A As one code: 216
B As one code for the first letter only
C As two codes, by adding the characters in pairs
D As three separate codes: 67, 65 and 84

25 How does Unicode compare with ASCII?

A Unicode uses fewer bits per character, so files are smaller
B Unicode uses the same number of bits but has more characters
C ASCII can already represent every world language
D Unicode uses more bits per character, so it can represent more characters

26 What does the memory address register (MAR) hold?

A The data that has just been read from a location in memory
B The result of the last calculation carried out by the ALU
C The address of the memory location being read from or written to
D The next instruction to be decoded and executed by the CPU

27 Which of these is a register?

A The arithmetic logic unit
B The program counter
C The control unit
D Cache

28 Which statement about virtual memory is correct?

A It is part of secondary storage used as RAM when RAM is full
B It is extra RAM that makes the computer faster
C It is memory stored in the cloud
D It is another name for cache

29 Which statement about lossy compression is correct?

A It lowers the quality of an image but does not change the file size
B It reduces the file size and the original can be fully restored
C It is the same as lossless compression, but quicker
D It permanently removes some data to reduce the file size

30 An employee opens an infected email attachment. Which would detect and remove the malware?

A A firewall
B Anti-malware software
C A strong password
D Encryption

31 A CPU is upgraded from 4 cores to 8 cores with the same clock speed. What is the most likely effect?

A Every program runs twice as fast
B No program runs any faster, because only clock speed matters
C Programs run more slowly
D Some programs run faster, if their work can be split between cores

32 Which describes cache?

A Storage where the user's files are saved when the computer is switched off
B A section of RAM that is set aside for the operating system to use
C Small, fast memory in or near the CPU that holds frequently used instructions and data
D The same as virtual memory: space on the hard drive used when RAM is full

33 Someone phones a school pretending to work for the IT company and asks a teacher for their password. What is this?

A Hacking
B Social engineering
C A brute-force attack
D Data interception

34 Software automatically tries every possible password until one works. What is this attack called?

A A brute-force attack
B Phishing
C Social engineering
D Data interception

35 What is the largest denary number that can be stored in 8 bits?

A 256
B 128
C 8
D 255

36 The sample rate of a recording is increased. What effect does this have?

A Each sample can store more amplitude values
B More samples are taken each second, so the recording is closer to the original sound
C The recording becomes quieter, because the samples are closer together
D The file becomes smaller, because each sample is shorter

37 How many bits are there in 3 KB? (Use 1 KB = 1000 bytes.)

A 3000
B 375
C 24 000
D 24

38 A school has two sites 50 miles apart, joined by lines leased from a telecoms company. What type of network is this?

A A LAN, because it has fewer than 100 computers connected to it
B A LAN, because the school owns all of the computers on both sites
C A WAN, because it covers a large area using another company's infrastructure
D A PAN, because each site connects its own devices over short distances

39 Why is defragmentation software described as utility software?

A It helps maintain the computer by making files on a hard drive quicker to load
B Because it defragments the files that are stored on the hard drive
C Because it runs other programs and shares processor time between them
D Because it is built into the hardware of the hard drive itself

40 An employee guesses a colleague's password and reads their emails. Which law makes the unauthorised access itself illegal?

A Data Protection Act 2018

B Computer Misuse Act 1990

C Copyright, Designs and Patents Act 1988

D None, as work emails are not private

END OF QUESTIONS

Answer sheet

J277/01 Diagnostic Test. Circle ONE letter for each question. If you have no idea, leave the row blank.

Name _____

Class _____

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

Q	A	B	C	D
21	A	B	C	D
22	A	B	C	D
23	A	B	C	D
24	A	B	C	D
25	A	B	C	D
26	A	B	C	D
27	A	B	C	D
28	A	B	C	D
29	A	B	C	D
30	A	B	C	D
31	A	B	C	D
32	A	B	C	D
33	A	B	C	D
34	A	B	C	D
35	A	B	C	D
36	A	B	C	D
37	A	B	C	D
38	A	B	C	D
39	A	B	C	D
40	A	B	C	D

Total: _____ **/ 40**