Computer System

Standard difficulty · 20 questions · 40 marks · Time: 36 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. Which part of the CPU carries out arithmetic and logical operations?

(a) the cache memory **(b)** the address bus
(c) the control unit **(d)** the ALU (arithmetic logic unit)

2. How many bytes are there in 52 MB?

(a) 54,525,952 **(b)** 52,000,000 **(c)** 53,248,000 **(d)** 53,248

3. Which of these is an input device?

(a) monitor **(b)** speaker
(c) printer **(d)** fingerprint scanner

4. What is raw facts that have not yet been processed called?

(a) data **(b)** ROM **(c)** assembler **(d)** cache memory

5. Which of these is the fastest to read data from?

(a) a solid state drive **(b)** an optical disc (DVD)
(c) registers **(d)** RAM

6. How many photos of 15 MB each can be stored, at most, on a 2 GB memory card?

(a) 136 **(b)** 138 **(c)** 133 **(d)** 137

7. How many nibbles are there in 14 bytes?

(a) 28 **(b)** 56 **(c)** 112 **(d)** 14

8. A 32-bit data bus moves 32 bits in one transfer. How many bytes does it move in 9 transfers?

(a) 36 **(b)** 288 **(c)** 72 **(d)** 40

Section B — Short answer — 8 × 2 = 16 marks

9. Name the three main parts of a computer system and say what each does.

10. Convert 75,776 TB into PB.

11. Convert (a) 9 GB into MB (b) 18,432 KB into MB.

12. Name the term for each: (a) the part of the CPU that does calculations and comparisons (b) a translator that converts a whole program into machine code before it runs

13. Is each an input or an output device? (a) touchpad (b) monitor

14. Is each memory volatile or non-volatile? (a) an optical disc (b) cache memory

15. An 8 GB music player is empty. Songs are 7 MB each. (a) How many whole songs fit? (b) How many MB are left over?

16. Is each system software, application software or a language translator? (a) an antivirus utility (b) a spreadsheet program

Section C — Word problems — 4 × 4 = 16 marks

17. Draw and explain the block diagram of a computer system.

18. A 16 GB pen drive holds 336 photos of 5 MB each and 11 videos of 661 MB each. (a) How many MB are used? (b) How many MB are free? (c) How many more photos of 5 MB can it take?

19. A pen drive copies data at 50 MB per second. (a) How many seconds does a 3,350 MB file take? (b) How many such files can be copied completely in 8 minutes? (c) How many MB are copied in 8 minutes?

20. A computer has a 32-bit data bus and an 18-bit address bus, and each memory location holds 1 byte. (a) How many bytes move in one transfer on the data bus? (b) How many locations can be addressed? (c) What is the largest memory it can use, in KB?

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Answer key

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Q	Answer	Working
1	**(d) the ALU (arithmetic logic unit)**	—
2	**(a) 54,525,952**	52 × 1024 × 1024
3	**(d) fingerprint scanner**	—
4	**(a) data**	—
5	**(c) registers**	registers, cache, RAM, SSD, hard disk, optical disc: fastest to slowest
6	**(a) 136**	2 × 1024 = 2,048 MB; 2,048 ÷ 15 = 136 (whole photos only)
7	**(a) 28**	a byte is 8 bits = 2 nibbles
8	**(a) 36**	32 ÷ 8 = 4 bytes each, × 9
9	**Input devices take in data, the CPU processes it, and output devices give out the results; memory stores the data and programs.**	—
10	**74 PB**	75,776 ÷ 1024
11	**(a) 9,216 MB; (b) 18 MB**	9 × 1024; 18,432 ÷ 1024
12	**(a) ALU; (b) compiler**	—
13	**(a) input (b) output**	—
14	**(a) non-volatile (b) volatile**	volatile memory loses its contents when the power goes off
15	**(a) 1170; (b) 2 MB**	8,192 MB = 7 × 1170 + 2
16	**(a) system software (b) application software**	—
17	**Input unit → CPU (ALU, control unit, registers) → output unit, with primary memory connected to the CPU and secondary storage below; arrows show data and control flow.**	—
18	**(a) 8,951 MB; (b) 7,433 MB; (c) 1,486**	336 × 5 + 11 × 661 = 8,951; 16,384 − 8,951 = 7,433; 7,433 ÷ 5
19	**(a) 67; (b) 7; (c) 24,000 MB**	3,350 ÷ 50 = 67 s; 480 ÷ 67; 50 × 480
20	**(a) 4; (b) 262,144; (c) 256 KB**	32 ÷ 8; 2 to the power 18; 262,144 bytes ÷ 1024

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