

1/MDC-112 Syllabus-2023

2 0 2 5

(Nov-Dec)

FYUP : 1st Semester Examination

MULTIDISCIPLINARY COURSE

(Fundamentals of Computer Systems)

MDC-112

Marks : 56

Time : 2½ hours

*The figures in the margin indicate full marks
for the questions*

SECTION—A

(Short answer-type questions)

Answer any *four* of the following questions : $3 \times 4 = 12$

1. Explain the role of cache memory and registers.
2. Differentiate between a compiler and an interpreter.

26D/178

(Turn Over)

(2)

3. Which gates are universal gates? Explain why they are called universal gates, and draw their logic symbols.
4. State De Morgan's theorems and verify any one of them using a truth table.
5. Explain any two output devices of a computer system.
6. Explain the octal number system.

SECTION—B

(Long answer-type questions)

Answer any *four* of the following questions :

$$11 \times 4 = 44$$

7. What is RAM? Explain the types of RAM. Describe how data is stored and accessed in RAM. Support your answer with a suitable diagram.
$$2 + 2 + 7 = 11$$
8. Draw a neat block diagram of a computer system and explain the functions of its main units in detail.
$$3 + 8 = 11$$

(3)

9. Perform the following : $2+3+3+3=11$

(a) $(1011)_2 + (1101)_2$

(b) $(10101)_2 - (1100)_2$

(c) $(101)_2 * (11)_2$

(d) $(11000)_2 / (10)_2$

10. Perform the following number system conversions : $2+3+3+3=11$

(a) $(245)_{10} = (?)_2$

(b) $(10010111)_2 = (?)_8$

(c) $(AE6)_{16} = (?)_{10}$

(d) $(453)_8 = (?)_{16}$

11. (a) Explain real-time operating system with its key feature. 4

(b) Describe the three main types of networks based on geographical coverage—local, metropolitan and wide. Highlight at least two features and one example for each. $3+4=7$

(4)

12. Explain the following types of operating systems with suitable examples :

- (a) Embedded operating system
- (b) Network operating system

Also, mention at least two key differences between them.

4+4+3=11
