

Three/Four Year B.C.A. II Semester**Examination – July 2024****(Faculty of Science)****(Three-Year scheme of 10+2+3 Pattern)****Paper – BCA – 52T – 111****COMPUTER ORGANIZATION & ARCHITECTURE****Time Allowed: Three Hours****Maximum Marks – 120****QUESTION PAPER CONSISTS OF THREE PARTS A, B AND C.****Part A : 20 Marks**

Part A is compulsory having 10 very short answer-type questions (with a limit of 20 words) of two marks each. The first question is based on knowledge, understanding and applications of the topics/text covered in the syllabus.

(भाग अ में दो अंक के 10 अति लघुउत्तरीय प्रश्न (20 शब्दों की सीमा के साथ) अनिवार्य हैं। पहला प्रश्न पाठ्यक्रम में शामिल विषयों / पाठ के ज्ञान, समझ और अनुप्रयोगों पर आधारित हैं।)

Part B : 20 Marks

Part B has 4 questions (with a limit of 150 words) of 10 marks from each unit. The candidate is required to attempt any 2 questions.

(प्रश्न पत्र के भाग ब में 10 अंक के 4 प्रश्न (150 शब्दों की सीमा के साथ) हैं। परीक्षार्थी को कोई भी 2 प्रश्न हल करने हैं।)

Part C : 80 Marks

Part C of the question paper is divided into four units comprising question numbers 6 – 9. There is one descriptive question from each unit with internal choice. Each question will carry 20 marks.

(भाग स के प्रश्न पत्र को प्रश्न संख्या 6–9 सहित चार इकाइयों में विभाजित है। प्रत्येक इकाई से आंतरिक विकल्प के साथ एक वर्णनात्मक प्रश्न है। प्रत्येक प्रश्न 20 अंक का है।)

PART – A

1.

[2*10=20]

(a) Write any two characteristics of combinational circuit.

(b) What is the primary function of a half adder?

- (c) List out the applications of Boolean algebra.
- (d) What is micro – operation?
- (e) What is Bus?
- (f) What is Instruction?
- (g) What is an Operation Code (Op – Code)?
- (h) List out the phases of Instruction Cycle.
- (i) Define Virtual Memory.
- (j) Explain I/O Interrupt.

PART – B

Attempt any two questions.

- 2. AND, OR and NOT gates are logically complete. Discuss. [10]
- 3. What is the relationship between instruction and micro-operation? [10]
- 4. Using the register transfer notations, explain the Memory – Reference instructions with example. [10]
- 5. Discuss the Memory Hierarchy in computer system with regard to Speed, Size and Cost with suitable diagram. [10]

PART – C

- 6. What are the different types of logic gates? Explain each one. [20]

OR

What do you understand by Parallel Binary Adder? Write its advantages, disadvantages and significance also. [20]

- 7. Convert the following numbers: [20]

(a) $(10110110111)_2 = (?)_{16}$

(b) $(18.71875)_{10} = (?)_2$

(c) $(11011.0101)_2 = (?)_{10}$

(d) $(10010.1010)_2 = (?)_8$

OR

Explain the following:

[10 + 10]

(a) Register Transfer Language

(b) Arithmetic Micro – Operations.

8. Explain the different types of addressing modes with suitable example. [20]

OR

List and describe different registers used in basic computer. [20]

9. Write short note on the following: [10 + 10]

(a) Asynchronous Data Transfer

(b) Mode of Transfer

OR

What is Associative Memory? Explain its advantages and disadvantages. [20]