

Total number of printed pages-3

53 (CS 301) CPOA

2021

**COMPUTER ORGANIZATION
AND ARCHITECTURE**

Paper : CS 301

Full Marks : 100

Time : Three hours

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

Answer **any five** questions.

1. (5×2+10)=20

(a) Convert the following :

(i) $(1739)_{10} = (?)_2$

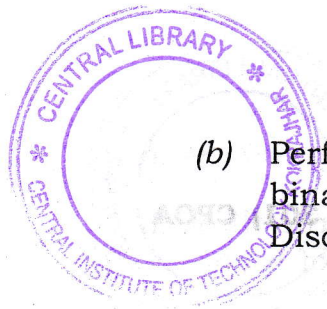
(ii) $(1101.01)_2 = (?)_{10}$

(iii) $(145)_6 = (?)_{10}$

(iv) $(ABCF)_{16} = (?)_8$

(v) $(737)_8 = (?)_5$

Contd.



- (b) Perform (17-23) in signed-magnitude binary and 2's complement method. Discuss which one is better and why.

2. 10+10=20

- (a) Represent 17.25 in IEEE floating-point single-precision and double-precision representation.

- (b) Use floating-point arithmetic to perform the following :

$$5.375 + 199.25.$$

3. 10+10=20

- (a) With a suitable diagram, discuss a 3-bit carry-lookahead adder.

- (b) With Booth's multiplication, perform $(-8) \times (-5)$.

4. 10+10=20

Perform $15/4$ using —

- (a) restoring division algorithm

- (b) Non-restoring division algorithm.

5. 5+7+8=20

- (a) Differentiate among the Write through and Write back protocols of cache.
- (b) In a computer, if the hit ratio = 80%, cache read time = $1ns$, RAM read time = $10ns$ and there are 1000 instructions, then compute the speedup.
- (c) With a diagram, discuss the Read/Write operations of a DRAM cell.

6. Write short notes on : **(any four)** 5×4=20

- (a) μ programmed vs H/W control unit
- (b) Virtual memory
- (c) Stored Programmed Architecture
- (d) Read operations of CD
- (e) Memory hierarchy
- (f) Pipelining.

