Ref. No.: Ex/ET/T/316/2018

Department of Electronics and Telecommunication Engineering, Jadavpur University
B. E. Electronics and Telecommunication Engineering Third year 1st semester Examination 2018.
Attempt any five questions and all question carry equal mark. Missing data may be assumed.
Subject : COMPUTER ORGANIZATION & ARCHITECTURE
Time : Three Hours Full marks : 100

Q1. a) what is IEEE 754 Format? write the importance of such format. Write the format of single precision floating point number in IEEE 754 Format and apply it for the following conversion: Convert decimal number 202.625 into IEEE 754 Format.

b) Explain the operation of a serial multiplier with necessary diagram along with justification for the components of such diagram 12+8 =20

Q2. (a) Logically establish the minimum hardware for a digital computer. What are various Buses in such computer? Explain them with diagram

b). Explain Booth's Algorithm. Apply Booth's algorithm to multiply the two numbers $(+14)_{10}$ and $(-12)_{10}$. Assume the multiplier and multiplicand to be of 5 bits each. 12+8=20

Q3. Define addressing modes ? Explain them with example of each along with advantages & disadvantages . Also give a table for their comparison 2+14+4 =20

Q4. (a) Explain computer instructions and various fields of an instruction with example. Give different formats of computer instruction.

(b)) List most commonly used registers and its operation for a basic computer system.. 12+8=20

Q5. (a) Describe the following parameters with reference to performance evaluation of digital computers : (i) MIPS, (ii) CPI (c) Benchmark suites

(b) Explain Amdahl's law with suitable example. How will you compare the performance of two computers when working in (i) both in same platform and , (ii) in different platforms.

(c) Distinguish between Computer architecture and organization. 6+ (6+4) +4 =20

Q6. (a) What do you mean by data processing, information processing, knowledge processing and intelligence processing. How are they related ?

(b) What are Batch processing, multiprogramming and multiprocessing

(c) Distinguish between loosely coupled and tightly coupled multiprocessors

(d) Define parallel processing. Explain the various ways of classification of parallel processing

(e) Distinguish between multiprocessors and multi computers 4+ 3 + 4 + 5 + 4 +20

Q7. (a) Explain pipelining with its various classifications along with proper description of pipeline cycle time, efficiency and throughput of a linear pipelining.

(b) Mathematically show the theoretical maximum speed up that a pipeline can provide .

(c) What are pipeline hazards? Why do they occur ? Is there any remedy ?

Q8. Write short notes on any four of the following:

(a) Computer architectural classification (b) By Pass scheme (c) Micro operation and its classification (d) Design of four bit ALU. (e) Control Unit of a digital computer 4x5=20