

M.Tech(CSE) 1st Semester Examination -2019

Sub: ARM Processor (AP)

Full Mark – 70

Time: 3Hrs

(Answer all questions. Figure in the right hand margin indicates marks.)

- Q1. (i) Define and differentiate 8085 microprocessor from 8086 microprocessor? [14]
(ii) Write an assembly language program for 8085 microprocessor:
(a) to add fifty 8-bit numbers and sum is 16-bit.
(b) to find the sum of odd numbers between 10 and 80.

OR

- (i) What is an ARM processor? Discuss the basic features of ARM processor? [14]
(ii) Elaborate the register structure of ARM processor with a neat and labeled diagram?

- Q2. Write an assembly language program for ARM processor: [14]
(i) to find the sum of first thirty even numbers.
(ii) to find the smallest number between three numbers.

OR

- (i) Define pipelining? Explain 3-stage pipeline organization and 5-stage pipeline organization of ARM processor in detail with suitable examples. [14]
(ii) What is data forwarding? Why is it required?

- Q3. (i) Discuss half word and signed byte data transfer instruction of ARM processor along with binary encoding? [14]
(ii) Define and explain branch and branch with link instructions with binary encoding?

OR

- (i) What is an interrupt? Explain how software interrupt is implemented by ARM processor? [14]
(ii) What do you mean by exception? How it is implemented? What are its advantages?

Q4. Write down the ARM code for the following program codes: [14]

```
(i)  int x=0;
      if(x <=20)
      {
        i = x + 2;
        sum = (x + i) * 2;
      }
      else
      {
        i = x - 2;
        sum = 2 * i - x;
      }

(ii) int i=15;
      while(i>0)
      {
        j=(i-1)*2;
        x=j*3;
        i=i-4;
      }
```

OR

(i) What do you mean by normalized floating-point number? Discuss different types of floating-point operations performed by ARM processor? [14]

(ii) Define and explain FPA10 Organization with a suitable diagram?

Q5. (i) Define and explain various types of Thumb data processing instructions with binary encodings? [14]

(ii) Define and differentiate ARM mode from Thumb mode?

OR

(i) Explain Thumb programmer's model of ARM processor with a suitable diagram? [14]

(ii) What is a Thumb breakpoint instruction? Explain it along with its binary encoding?