ROLL NO. _____

Code: AC23 Subject: MICROPROCESSOR BASED SYSTEM DESIGN

AMIETE – CS (OLD SCHEME)

Time: 3 Hours **JUNE 2012** **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. The first general-purpose, programmable computer was called

(A) Colossus **(B)** ENIAC
(C) Enigma Machine **(D)** Z3 Computer

b. The popular business language RPG is

(A) Report Program Generator **(B)** Report Pattern Generator
(C) RISC Program Generator **(D)** None of the above

c. The extended BX register is addressed as

(A) BX and EBX **(B)** BH and BL
(C) Only BX **(D)** Only EBX

d. The Stack memory is addressed by a combination of

(A) SS and IP **(B)** SS and SP
(C) SS ,IP, EIP **(D)** SS, SP and BP

e. Suppose that BX=1000H, DI=0010H and DS=01000H. Determine the memory address accessed by MOV DX, [BX+DI] instruction.

(A) 02011H **(B)** 02010H
(C) 02015H **(D)** 030ABH

f. If EAX=00112233H, Determine contents of EAX after execution of BSWAP instruction

(A) 00112233H **(B)** 11003322H
(C) 33221100H **(D)** 22330011H

g. Accelerated Graphics Port (AGP) is high speed connection between _____ and _____

(A) memory and video graphics card **(B)** internet and video graphics card
(C) I/O and memory **(D)** memory and I/O

h. The SIMMs are known as

(A) Single in-line memory module **(B)**Simple instruction memory machines
(C) Single insert memory module **(D)** None of the above

i. Which pins are general purpose I/O pins during mode-2 operation of the 82C55?

(A) PA0-PA7 **(B)** PB0-PB7
(C) PC3-PC7 **(D)** PC0-PC2

j. Which Flags can be set or reset by the programmer and also used to control the operation of the processor

(A) Trace Flag
(B) Trace Flag and Interrupt Flag
(C) Trace Flag, Interrupt Flag, Direction Flag
(D) Interrupt Flag and Direction Flag

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Explain the paging mechanism in the 80386 processor. **(6)**

b. Compare the silent features of 80286 and 80386 microprocessors. **(5)**

c. Explain A/D and D/A conversion. **(5)**

Q.3 a. Explain various addressing modes with an illustration. **(8)**

b. Explain the features of PUBLIC and EXTRN in assembly programming. Give an example. **(5)**

c. Explain the working of procedures in assembly programming. **(3)**

Q.4 a. Discuss the following assembler directives with example:
(i) DWORD (ii) OFFSET
(iii) SEGMENT (iv) MACRO
(v) ASSUME (vi) ENDP **(10)**

b. Explain the different types of 8086 assembly instructions with examples. **(6)**

Q.5 a. Explain the features of microprocessor based personal computer system. Mention various operations. **(8)**

b. Explain protected mode memory addressing. **(5)**

c. Mention various fields of page table. **(3)**

Q.6 a. Design a NAND gate decoder to select a 2716 EPROM memory component for memory locations FF800H – FFFFFH. Describe 74LS138 and 74139 decoders. **(8)**

b. Explain the features of bus buffering and latching. **(5)**

c. Mention features of hardware interrupt. **(3)**

Q.7 a. What are the functions of a DMA controller? Explain various DMA modes. Describe in brief the steps that take place during a DMA write cycle. **(8)**

b. Explain the different modes in which 8255 Programmable Peripheral Interface (PPI) can operate. **(8)**

Q.8 a. Draw the architecture of arithmetic co-processor in a micro-computer system and mention any five co-processor (8087) instruction. **(5+5)**

b. Describe the main features of 80486. **(6)**

Q.9 a. Draw the system block diagram for the personal computer that contains a PCI bus. **(5)**

b What is EISA bus? Write down its salient features. **(6)**

c. Explain features of hardware debugging. **(5)**