

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2019
(Second Semester)

Branch - APPLIED ELECTRONICS

16-BIT MICROCONTROLLER

Time: Three Hours

Maximum: 75 Marks

SECTION-A (IO Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

The original range of MSP 430 devices, which can address _____ of memory.

- (i) 64 KB (ii) 32 KB
(iii) 16 KB (iv) 1 MB

In CPU, the generous set of 16 registers is characteristics of a _____.

- (i) CISC (ii) RISC
(iii) HSC12 (iv) PIC 16

The F20XX provides four frequencies calibrated at the factory' to within

- (i) $\pm 5\%$ (ii) $\pm 1\%$
(iii) $\pm 2\%$ (iv) $\pm 8\%$

Identify the ACLK comes from a low frequency crystal oscillator typically at

- (i) 16 KHZ (ii) 12 KHZ
(iii) 32 KHZ (iv) 8 KHZ

Which one is the typical LCD needs to be refreshed at _____ or faster to avoid flicker?

- (i) 30 KHZ (ii) 13 KHZ
(iii) 20 HZ (iv) 22 KHZ

In POR, the device is

- (i) powered up (ii) powered down
(iii) detected (iv) reset

What is the major difference between then is that I C is a _____ ?

- (i) Data bus (ii) True bus
(iii) Clock (iv) SPI

In SPI uses two lines for data so that information can be sent simultaneously in _____ direction.

- (i) single (ii) forward
(iii) both (iv) reverse

In _____ mode CPU, all clocks and enabled modules are I is approximately 300 pA.

- (i) passive (ii) low power
(iii) higher (iv) active

- 10 What is the usual instructions in assembly language can be used to _ the bits that control the low power modes ?
(i) sleep (ii) active
(iii) modify (iv) identify

SECTION - B (35 Marks!)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks (5 x 7 = 35)

- 11 a Explain the history of MSP430.
OR
b Discuss about the features of CPU.
- 12 a Illustrate the functions of Watch Dog Timer.
OR
b Discuss about the clock source with diagram.
- 13 a Discuss briefly the Interruptible and non-interruptible.
OR
b Explain about power supplies and reset.
- 14 a What is USI? Explain it with neat diagram.
OR
b Discuss in detail about Asynchronous communication.
- 15 a Explain the flash memory structure operation.
OR
b Explain design of
(i) Low power mode (ii) Low power design

SECTION - C (30 Marks)

Answer any **THREE** Questions

ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

- 16 Enumerate the functional block diagram of MSP430.
- 17 Elucidate the operation of DCO with neat diagram.
- 18 Determine the functions of Hardware multiplier in on chip peripherals.
- 19 Enumerate the asynchronous serial communication in UART with diagram.
- 20 Classify the characteristics of power consumption in low power design.

Z-Z-Z

END