Sir Chhotu Ram Institute of Engg. & Technology
C.C.S University Campus, Meerut(U.P.)

QUESTION BANK

Subject : Microcontroller for Embedded Systems   **Paper code:** BT-607
Year & **Sem:** III year & 6 sem   **Topic:** QUESTION BANK
Faculty Name: Dr.Nidhi Chauhan

1. (a). Explain briefly about characteristics of Embedded system.

(b). Write various applications of Embedded System? 2. Explain Embedded System Architecture.

3. (a). Compare Port I/O & Memory Mapped I/O.

(b). Explain CISC vs RISC design philosophy.

4. (a). Compare Harvard vs Von-Neumann memory architectures.

(b). What are the features of MSP430 microcontrollers?

5. Explain the architecture of MSP430 microcontroller.

6. Describe the Instruction set of MSP430 microcontroller.

7. Explain the instruction formats of MSP430 microcontroller.

8. Explain the MSP430 microcontroller addressing modes.

9. Compare MSP430 family viz.MSP430x2x,4x, and 5x series devices? 10. Briefly explain any sample embedded system based on MSP430 microcontroller.

11. Explain the CPU of MSP430 microcontroller.

UNIT – I

2 MARK QUESTIONS

1. What are Important characteristics of Embedded system?

2. What are the categories of Embedded system?

3. What are the important features of Embedded system?

4. Write the application areas of Embedded system?

5. Sketch the block diagram of Embedded system architecture.

6. Write a short note on RAM and its types.

7. Write a short note on ROM and its types

8. Write a short note on TIMER and various types of timers in MSP430 microcontroller.

9. What is the purpose of Address bus & Data bus in a Microcontroller/processor?

10. Generate Memory & I/O control signals using any logic GATEs.

11. Draw the memory mapping of Memory mapped I/O & I/O mapped I/O.

12. Sketch the diagram of Von Neumann & Harvard memory architectures and Mention any three differences of them.

13. Sketch the block diagram of MSP430 architecture.

14. Sketch the CPU block diagram of MSP430 microcontroller.

15. Write about Program counter(PC) register of MSP430 microcontroller with an example.

16. Write about Stack pointer(SP) register of MSP430 microcontroller with an example.

17. Write about Status Register(SR) register of MSP430 microcontroller with an example.

18. What is the purpose of Constant Generator(CGR)s of MSP430 microcontroller and Table out the values provided by CGRs.

19. Sketch the instruction formats of MSP430 microcontroller.

20. What are the Arithmetic instructions are present in MSP430 microcontroller?

UNIT – I

OBJECTIVE QUESTIONS

1. Which of the following is not an embedded system [ ]

 A) Smartphone   B) Digital Camera

C) MP3 Player   D) Desktop Computer

 2. Name of the first Microprocessor produced by Intel is [ ]

 A) 8085   B) 8086

C) 4004   D) 4002

3." Navigation system" falls under in which application area of embedded system [ ]

A) Security   B) Personal

C) Aerospace   D) Instrumentation

4. Program memory is also known as [ ]

 A) RAM   B) ROM

C) Flash   D) Both (B) & (C)

5. No. of locations that an 32-bit address bus can handle, approximately [ ]

A) 2GB   B) 4GB

C) 16GB   D) 32GB

6. If the frequency of clock is fclk = 24KHz, then what is the value to be loaded in timer register to flash an LED for one second [ ]

A) 0x2EE0h   B) 0x1770h

C) 0x5DC0h   D) 0xBB80h

7. The number of instructions used by the MSP430 CPU are   [ ]

A) 24 core & 27 emulated instructions

 B) 20 core and 14 emulated instructions

C) 27 core & 24 emulated instructions

D) 27 core and 14 emulated instructions

8. The MSP430 CPU is based on   [ ]

A) Reduced instruction set

 B) Complex instruction set

C) Pattern matching & absence of instructions

D) a CPU without peripherals.

9. The Von-Neumann architecture has: [ ]

 A) separate bus just for peripherals

B) separate bus for Code & Data memory

C) common bus for Code & Data memory

D) none

10. The ALU in the MSP430 handles   [ ]

A) Add, Sub, Mult & Div operations

 B) Add, Sub, Comp & logical operations

 C) Add, Sub, Comp,Mult & logical operations

 D) Add, Sub, Mult & logical operations

11.The MSP430 CPU incorporates   [ ]

A) 14   B) 16

C) 18   D) 20

12. The program counter(PC) will: [ ]

A) Stores the return address of sub routine calls B) Stores states and control bits C) Stores next instruction to be executed by CPU D) Points next instruction written to memory

13. The result of the status register is SR= 0x0010 indicates [ ]
A) CPUOFF   B) Maskable interrupts enabled

C) OSCOFF   D) Arithmetic operation result is zero

14. The MSP430 status register(SR) bit : [ ]
A) V is set when result of operation overflows

B) Z is set when result of operation zero

C) N is set when result of operation is negative

 D) All the above

 15.The MSP430 supports addressing modes : [ ]
A) 7 for source & 3 for destination operand

 B) 6 for source & 4 for destination operand

C) 7 for source & 4 for destination operand

 D) 6 for source & 3 for destination operand

16. Among which company follows CISC Architecture : [ ]
A) Intel   B) ARM

C) PIC   D) AVR

17. The MSP430 CPU is [ ]

A) 8-bit   B) 16-bit

 C) 32-bit   D) 12-bit

18. The typical operating voltage range of MSP430 is: [ ]
A) 0-5V   B) 1.8-3.6V

C) 5-7V   D) 5-12V

19. The current consumption of MSP430 at active mode is   [ ]
A) 200µA/MIPS   B) 150µA/MIPS

C) 250µA/MIPS   D) 100µA/MIPS

20. No. of Immediate values produced by the constant generators are:[ ]
A) 5   B) 4

C) 6   D)

21. Immediate constants produced by constant generator are: [ ]
A) -1,0,1,2,4,8   B) 0,1,2,4,6,8

C) -1,0,2,4,6,8   D) -1,0,1,2,4,6

22. MOV.W R5,R6 is an example of which addressing mode: [ ]
A) Indexed mode   B) register mode

C) indirect register mode   D) absolute mode

23. MOV.W 3(R5),R6 is an example of which addressing mode: [ ]
A) Indexed mode   B) register mode

C) indirect register mode   D) absolute mode

24. MOV.W LoopCtr,R6 is an example of which addressing mode: [ ]
A) Symbolic mode   B) register mode

C) indirect register mode   D) absolute mode

25. MOV.W &R5,R6 is an example of which addressing mode: [ ]
A) Indexed mode   B) register mode

C) indirect register mode   D) absolute mode

26. MOV.W 2(SP),R6 is an example of which addressing mode: [ ]
A) Indexed mode   B) SP-relative mode

C) indirect register mode   D) absolute mode

27. MOV.W @R5,R6 is an example of which addressing mode: [ ]
A) Indexed mode   B) register mode

C) indirect register mode   D) absolute mode

28. MOV.W @R5+,R6 is an example of which addressing mode: [ ]
A) Indexed mode   B) register mode

C) indirect auto increment register mode   D) absolute mode

29. MOV.W #45h,R6 is an example of which addressing mode: [ ]
A) Indexed mode   B) register mode

C) indirect register mode   D) Immediate mode

30. No of operands required for the instruction 'reti': [ ]
A) 0   B) 1

C) 2   D)3

31. MOV.B R5,R6,after executing the instruction the value of the PC is:
A) PC+2   B) PC+1   [ ]

C) PC-2   D) PC-1

32. Which of the following instructions performs "decimal add with carry
Operation"   [ ]
A) addc.w   B) adc.w

C) dadc.w   D) dadd.w

33. Which of the following instructions performs "invert Operation" [ ]
A) inv.w   B) swapb

C) sxt   D) bis.w

34. Which of the following instructions performs "jump if less than" for
signed values   [ ]
A) jl   B) jlt

C) jlo   D) jne

35. Which of the following instructions performs "shift right" operation [ ]
A) rla   B) rra

C) rlc   D) rrc

36. The version of CPU in MSP430x5x series is: [ ]
A) CPU   B) CPUX

C) CPUXV2   D) CPUX2

37. Maximum CPU clock speed in MSP430x5x series is: [ ]
A) 12MHz   B) 16MHz

C) 8MHz   D) none

38. Hardware multiplier present in MSP430x4x series is: [ ]
A) 16-bit   B) 32-bit

C) either 16 or 32-bit   D) none

39. Wakeup time of MSP430x2x series from Low power mode 3 is: [ ]
A) 1µs   B) 2µs

C) 6µs   D) 5µs

40. Port leakage current in MSP430 devices is :   [ ]

A) $<$20nA   B) $<$30nA
C) <40nA   D) <50nA

UNIT –II
ESSAY TYPE QUESTIONS

1. With a neat sketch explain the block diagram of MSP4305xx series devices.

2. Sketch and explain in detail about the address space of MSP430 microcontroller.

3. a) Explain in detail about the register sets of MSP430 microcontroller.

b) Mention the major differences between MSP430 CPU & MSP430 CPUx.

4. Explain the concepts of I/O pull up/down resistors and various registers associated with it.

5. a) Write about the Watch Dog Timer present in MSP430 microcontroller in detail.

b) Write a program to demonstrate Watchdog timer.

6. Briefly explain about various On-Chip peripherals present in MSP430 microcontroller.

7. Explain in detail about various operating modes of MSP430 microcontroller.

8. What are the system clocks present in the MSP430 microcontroller? Explain them briefly.

9. a) Explain in detail about the interrupts of MSP430 microcontroller.

b) Write a program to demonstrate interrupt processing in MSP430 microcontroller.

10. a) With a neat sketch explain the Active vs Stand-By current consumption in MSP430 microcontroller.

b) Write the differences between FRAM & Flash memories.

UNIT – II
2 MARK QUESTIONS

1. Write about the address space of peripheral modules.

2. Draw the address space of MSP430 microcontroller.

3. Mention various timers present in MSP430 microcontroller.

4. What is the purpose of Watchdog Timer?

5. Write about Watchdog Timer counter(WDTCNT) register.

6. Write a Short note on the three MSP430 microcontroller system clocks.

7. Explain the purpose of EEM (Embedded Emulation Module) in MSP430 microcontroller.

8. What is the function of hardware multiplier?

9. Write a short note on Interrupts processing.

10. Write the definitions of ISR,VECTOR,VECTOR TABLE?

11. Explain the function of #pragma, vector, __interrupt keywords used in MSP430 programming.

12. Write about Low Power Mode 0 & Low Power Mode 1.

13. Write about Low Power Mode 2 & Low Power Mode 3.

14. Write about active mode & Low Power Mode 4.

15. Write about PxIN, PxOUT, PxDIR registers?

16. Write about PORTs of MSP430 controller.

17. Write about PORT2 of MSP430 controller.

18. Write a short note on Flash memory

19. Write a short note on FRAM.

20. Sketch the graph of current consumption in various operating modes MSP430 microcontroller.

UNIT – II
OBJECTIVE QUESTIONS

1. MSP430 families address space is configured in -------------- architecture. [ ]
A)Von-Neumann   B) Harvard
C) RISC   D) CISC

2. Special function registers are located at the memory space from ------------------
                                                                                [ ]
A) 0200h to 09FFh   B)0C00h to 010FFh
C)0000h to 000Fh   D) 01100h to 0FFFFh

3.The peripheral modules can be accessed with byte instructions, if the module is----
------   [ ]
A)16-bit   B) 8-bit
C) 32-bit   D) 64-bit

4.The peripheral modules can be accessed with word instructions, if the module is----
-----   [ ]
A)16-bit   B) 8-bit
C) 32-bit   D) 64-bit

5.8-bit peripheral modules are mapped into memory from----------------------- [ ]
A) 0200h to 09FFh   B)0C00h to 010FFh
C)0000h to 000Fh   D) 0100h to 01FFh

6. The basic timer is constantly incremented by [ ]
A) ACLK   B) MCLK
C) A or B   D) SMCLK

7.The width of basic timer control register is --------------   [ ]
A)16-bit   B) 8-bit
C) 32-bit   D) 64-bit

8. There are -------------- 8-bit counters in basic timer.   [ ]
A) 2   B) 8-bit
C) 32-bit   D) 64-bit

9. The basic timer counter1 takes input from----------------   [ ]
A) ACLK   B) MCLK
C) CLK   D) SMCLK

10. Watch dog timer generates a ……………… if the selected time interval expires.
                                                                                [ ]
A) interrupt   B) reset
C) enable   D) disable

11.Watch dog timer operates in ……………… Modes.   [ ]
A) one   B) three
C) four   D) two

12. The width of Watchdog timer control register is --------------   [ ]
A) 16-bit   B) 8-bit
C) 32-bit   D) 64-bit

13. The Watch dog timer will operate in watch dog mode if TMSEL=-------------
                                                                                [ ]
A) 0   B) 2
C) 1   D) 3

14. The Watch dog timer will operate in interval time mode if TMSEL=------------ [ ]
A) 0   B) 2
C) 1   D) 3

15. The width of Watch dog timer counter is -------------- [ ]
A) 16-bit   B) 8-bit
C) 32-bit   D) 64-bit

16.The CPU of MSP430 processor consists of ----------------- registers totally. [ ]
A) 4   B) 12
C) 16   D)27

17. Main clock (MCLK) is the system clock used by the --------------------. [ ]
A)CPU   B) peripheral
C) RTC   D) registers

18.The width of registers of MSP430 processor is ------------------. [ ]
A) 64-bit   B) 8-bit
C) 32-bit   D) 16-bit

19. The MSP430 processor has ----------------- special purpose registers. [ ]
A) 4   B) 12
C) 16   D)27

20. The MSP430 processor has ----------------- general purpose registers. [ ]
A) 4   B) 12
C) 16   D)27

21.The value of PC is incremented by ------------- after each fetch. [ ]
A) 2   B) 1
C) 3   D)4

22. The carry flag is set to------ if the result of arithmetic operations produces a carry.
[ ]
A) 2   B) 0
C) 1   D)4

23.The zero flag is set to ------- when the result of an operation is zero. [ ]
A) 1   B) 0
C) 2   D)4

24.The overflow flag is set to-----, when the result of signed operation has over
flowed. [ ]
A) 4   B) 0
C) 2   D)1

25.The general interrupt enable is set to---------,if it disables the maskable interrupts.
[ ]
A) 4   B) 0
C) 2   D)1

26. Auxiliary clock (ACLK) is selectable for --------------------------. [ ]
A) CPU   B) peripheral
C) RTC   D) registers

27. Sub-Main clock (SMCLK) is selectable for ------------------------------. [ ]
A) CPU   B) peripheral
C) RTC   D) registers

28. The MSP430 has ------------------- active mode of operation.   [ ]
A) one   B) five
C) four   D) seven

29. In Low-power mode 0 (LPM0)--------------- clock is disabled.   [ ]
A) ACLK   B) MCLK
C) CLK   D) SMCLK

30.In Low-power mode 1 (LPM1) CPU is -------------------.   [ ]
A) enabled   B) interrupted
C) disabled   D) none

31.In Low-power mode 3 (LPM3), ACLK is ---------------------.   [ ]
A) enabled   B) interrupted
C) disabled   D) active

32.The interrupt vector table is mapped at the memory space from----------------- [ ]
A) 0FFE0h to 0FFFFh   B)0C00h to 010FFh
C) 0000h to 000Fh   D) 0100h to 01FFh

33. The Timer_A can be used as an -----------------with all low power modes.   [ ]
A) WDT   B) basic timer
C) RTC   D) none

34. The hardware multiplier allows --------------different multiply operations (modes):
                                                                                     [ ]
A) two   B) three
C) four   D) five

35. Each port of MSP430 is associated with---------------- memory locations   [ ]
A) two   B) three
C) four   D) five

36. The Input register: P1IN is a --------------type register   [ ]
A) read   B) write
C) read/write   D) none

37.The Output register: P1OUT is a --------------------- type register   . [ ]
A) read   B) write
C) read/write   D) none

38. If P1DIR= "1" then the corresponding port data bit is an ------------------------. [ ]
A) output   B) input
C) interrupt flag   D) interrupt enable

39.If P1DIR= "0" then the corresponding port data bit is an--------------------------. [ ]
A) output   B) input
C) interrupt flag   D) interrupt enable

40. The Interrupt Enable P1IE=--------------------- for enabling interrupts. [ ]
A)1   B) 0
C) 2   D)4

UNIT –III
ESSAY TYPE QUESTIONS

1. Describe in detail about the operations performed by

a) Timer_ A
b) Timer_B in MSP430 microcontrollers.
2. With the help of block diagram explain the operation of Basic Timer module in MSP430.

3. Analyze the various Interrupt vectors of Timer _ A and Timer _ B

4. a) Elaborate the operations of Real time clock of MSP430.

b) Write a program to demonstrate Real Time Clock
5. a) What are the different types of analog to digital conversion techniques?

b) Explain any one the ADC techniques in detail with help of program.
6. a) Explain the configurations and operations of DMA controller

b) Describe the block diagram and various registers of DMA controller
7. Design the remote controller of air conditioner using MSP430.

8. Write a program to generate the various timing using any of the timers in MSP430.

9. Write a program to measure various timing intervals using any of timers in MSP430

10. a) Explain the Operation of Comparator in MSP430.

b) Write a program to demonstrate working of comparator.

UNIT –IV

OBJECTIVE QUESTIONS

1. The number of wires used in I2C communication is   [ ]

 A) 4   B) 6

C) 2   D) none

2. To select I2C operation, the UCMODEx bits must be set to
_____   [ ]

 A) 00   B) 10

 C) 11   D) none

3. A START condition in I2C is a _____ transition on the SDA line while
SCL is high.   [ ]

A) Low   B) Low to High

 C) High   D) high-to-low

 4. A STOP condition in I2C is a _____ transition on the SDA line while
SCL is high.   [ ]

 A) Low   B) Low to High

 C) High   D) high-to-low

 5. When UCA10 = 0, _____ addressing is selected   [ ]

A) 7 bit   B) 8 bit

C) 10 bit   D) None

6. When UCA10 = 1, _____ addressing is selected   [ ]

 A) 7 bit   B) 8 bit

C) 10 bit   D) None

7. When UCA10 = 0, _____ addressing is selected   [ ]
A) 7 bit   B) 8 bit

C) 10 bit   D) None

8. _____ module of msp430 supports UART communication   [ ]
A) USCI_Ax   B) USCI_

Cx C) USCI_Bx   D) None

9. UART is a type of _____ mode of communication   [ ]
A) Asynchronous   B) Synchronous

 C) both   D) None

10. Two external used in UART communication are UCAxRXD and
_____   [ ]
A) UCAxTXD   B) UCAxWRT

 C) UCAxCLR   D) None

11. UART mode is selected when the _____ bit is cleared   [ ]
A) UCSYNC   B) UCSWRST

C) PUC   D) None

 12. _____bit resets the UCRXIE,UCTXIE, UCRXIFG, UCRXERR,
UCBRK, UCPE, UCOE, UCFE, UCSTOE, and UCBTOE bits,   [ ]
A) UCSYNC   B) UCSWRST

C) PUC   D) None

13. When _____bit is set it also sets the UCTXIFG bit   [ ]
A) UCSYNC   B) UCSWRST

C) PUC   D) None

14. The _____ bit controls the direction of the transfer in UART   [ ]
A) UCSYNC   B) UCSWRST

C) UCMSB   D) None

15. When UCMODEx = _____, the idle-line multiprocessor format is selected   [ ]

A) 00   B) 10

 C) 11   D) None

16. When UCMODEx = _____, the Address-Bit Multiprocessor Format is selected   [ ]

A) 00   B)10

 C) 11   D) None

17. When an idle line is detected, the _____ bit is set.   [ ]

A) UCSYNC   B) UCSWRS

T C) UCIDLE   D) None

18. When UCMODEx = __ UART mode with automatic baud-rate detection is selected   [ ]

A) 11   B) 10

 C) 00   D) None

19. The minimum baud rate detectable is ___ baud in oversampling mode .   [ ]

A) 488   B) 512

 C) 556   D) None

 20. The minimum baud rate detectable is ____baud in low-frequency mode   [ ]

A) 30   B) 10

C) 20   D) None

 21. A _____ error occurs when a low stop bit is detected.   [ ]

A) Framing   B) Parity

C) Receive over run   D) break

22. A ____error is a mismatch between the number of 1s in a character and the value of the Parity bit. [ ]
A) Framing   B) Parity

C) Receive over run   D) break

23. An _____ error occurs when a character is loaded into UCAxRXBUF before the prior Character has been read. [ ]
A) Framing   B) Parity

C) Receive over run   D) break

24. When UCPAR =0, _____parity is selected [ ]
A) Odd   B) Even

C) No parity   D) None

25. UCxSIMO, UCxSOMI, UCxCLK, and UCxSTE signals are in____ communication [ ]
A) UART   B) I2C

C) SPI   D) None

26. The number of bits transmitted or received per second is defined as
[ ]
A) Transmission rate   B) Reception rate

C) Baud rate   D) Transceiver rate

27. The serial communication is [ ] A) Cheaper communication B) Slow process of communication

C) Requires less number of conductors D) all the above

28. The serial communication is used for [ ]

A) Short distance communication

B) Long distance communication

C) Short and Long distance communication

D) Communication for certain distance

29. Which of the following data communication methods is used to transmit the data over a serial communication link   [ ]
A) Simplex   B) Half-duplex

C) Full-duplex   D) Both (B) & (C)

30. SPI is often called as___ many interface   [ ]
A) two-wire   B) four-wire

C) one-wire   D) five-wire

31. I2C is often called as___ many interface   [ ]
A) two-wire   B) four-wire

C) one-wire   D) five-wire

32. Maximum number of masters in UART is   [ ]
A) 1   B) 2

C) 3   D) 4

33. I2C interface is developed by which of the following company [ ] A) Motorola   B) Philips

C) Sony   D) Intel

34. SPI interface is developed by which of the following company [ ] A) Motorola   B) Philips

C) Sony   D) Intel

35. No of clock sources required to set baud rate of USCI_A module [ ]
A) 1   B) 2

C) 3   D) 4

36. A Low-Power Battery-Less Wireless Temperature and Humidity Sensor application consist of 4 phases namely charge, downlink, recharge and _____   [ ]
A) up-link   B) error

C) testing   D) None

37. The current consumption of MSP430F2274 is _____ during standby mode (LPM3) [ ]

A) 0.7 mA   B) 0.5mA

C) 0.2mA   D) None

38. The TMS37157 PaLFI is a passive RFID product that communicates via the RF and the [ ]

A) SPI   B) I2C

C) UART   D) None

39. The _____ pin is used to wake up the PaLFI from standby mode s [ ]

A) PUSH   B) POP

C) CLK   D) None

40. The _____pin indicates the readiness of the TMS37157 to receive the next data byte [ ]

A) BUSY   B) POP

C) CLK   D) None

UNIT –V

ESSAY QUESTIONS

1. a) Give in brief overview of Internet of Things(IOT).

b) Explain IOT architecture with help of a diagram.

2. Draw and Explain the block diagram of Simple-Link Wi-Fi C3200 Internet-on-a-chip wireless microcontroller (MCU).

3. Explain about Simple-Link Wi-Fi CC3100 Internet-on-a-chip wireless network processor.

4. a) Write about the various wireless and network protocols.

b) Describe the User APIs for network and wireless applications.

5. Elaborate the Concept of Embedded Wi-Fi in detail.

6. Explain the concept of adding Wi-Fi capability to any microcontroller.

7. Design an IOT application using CC3100 for connecting sensor

8. Implement smart Electric meter using Wi-Fi connecting of MSP430.

9. Implement an Email application using CC3100 of MSP430.

10. Write a program of CC3100 network processor based any IOT application.

UNIT –V

2 MARK QUESTIONS

1. What is IOT?

2. Mention six applications of IOT

. 3. Write about the application layer of IOT.

4. What are the three major blocks of any IOT application?.

5. Write a short note about embedded Wi-Fi

6. What is the need of API?

7. Write about any one of the wireless devices.

8. What is Device API?

9. What is WLAN API?

10. What is NetApp API?

11. What is NetCfg API?

12. What is File System API?

13. Sketch the block diagram of Email application using CC3100.

14. Sketch connection Diagram for CC3100 and MSP430F5529 via SPI interface.

15. Sketch the block diagram of any IOT application based on CC3100.

16. What are the blocks present in Embedded Wi-Fi.

17. What are the blocks present in Embedded internet.

18. Draw Flowchart to Configure CC3100 as LAN Station to Send Email over SMTP

19. Sketch the block diagram of Smart electric meter application using CC3100

20. Write a short note on wired and wireless networks. .

UNIT-V

OBJECTIVE TYPE

1. Sensor is used as ....device [ ]

A) input   B)output

C)I/O   D) none

2. Actuator is used as ....device   [ ]

A) input   B)output

C)I/O   D) none

3. .... Connects the IoT devices and end-user applications to the edge services.   [ ]

A) IoT gateway   B) interfaces

C)sensor   D)actuator

4. .... Provides network capability to deliver content through the Internet   [ ]

A)Process management   B)API management

C)Edge services   D)none

5. .... Manages the process workflow.   [ ]

A) API management   B)Process management

C) timer   D)watch dog timer

6. Person or automated system that makes use of one or more end-user applications in IOT is known as...............   [ ]

A) multiuser   B) single user

C)both A) & B)   D)IOT user

7. ....is the third-party cloud system that provides services to bring data and capabilities to the IoT platform.   [ ]

A) Peer cloud   B) IOT user

C) end user   D)none

8. .... Advertises the available service endpoints.   [ ]

A) API management   B)Process management

C) timer   D)watch dog timer

9. .... Stores data from the IoT devices so the data can be integrated with processes and applications that are part of the IoT System.   [ ]

A) Device data store   B) device registry

C) memory   D) capacitor

10. .... Provides an efficient way to manage and connect devices securely and reliably to the cloud platform.   [ ]

A) API management   B)Process management

C) Device management   D)watch dog timer

11. .... Stores information about devices that the IoT system may read, communicate or manage.   [ ]

A) Device data store   B) device registry

C) memory   D) capacitor

12. .... are the Applications that accomplish business goals and objectives and that may interact with cloud services   [ ]

A)user applications   B) Enterprise data

C) Enterprise user directory   D) Enterprise applications

13. .... is the Systems of record and metadata about the data for enterprise applications   . [ ]

A)user applications   B) Enterprise data

 C) Enterprise user directory   D) Enterprise applications

14. .... Provides storage for and access to user information to support authentication   [ ]

A)user applications   B) Enterprise data

 C) Enterprise user directory   D) Enterprise applications

15. .... provides User data privacy and identity management.   [ ]

A)security   B) scalability

 C)fadility   D)encryption

16. Number of concurrent devices and users connecting to the IoT platform is known as ....   [ ]

A)security   B) scalability

C)fadility   D)encryption

 17.Security is a ....requirement.   [ ]

A) functional   B) non functional

C) both A) & B)   D)none

18. IEEE 802.11 is also known as ....   [ ]

A)Bluetooth   B) Zigbee

C) IrDa   D)wi-fi

19. IOT architecture consists of ....layers   [ ]

 A)5   B) 4

C)3   D)6

20. Edge layer consists of .... [ ]

 A) sensor networks　　　　　　　　B) embedded systems

C) RFID tags　　　　　　　　　　D) all above

21. RFID tags provides .... [ ]

 A)storage　　　　　　　　　　B) identification

C)tracking　　　　　　　　　　D)none

 22. embedded edge processors provides .... [ ]

A)storage　　　　　　　　　　　B) identification

C)tracking　　　　　　　　　　　D) information processing

 23. The first stage of data handling happens in ....Layer [ ]

 A) Access gateway layer　　　　　B)edge

C)middleware　　　　　　　　　D)application

 24. Access gateway layer takes care of........................... [ ]

 A) message routing　　　　　B) publishing

C)subscribing　　　　　　　D) all above

25................................... layers operates in bidirectional mode . [ ]

 A) Access gateway layer　　　　B)edge layer

C)middleware layer　　　　　　D)application layer

 26. ....acts as an interface between the hardware layer and application layer. [ ]

 A) Access gateway layer　　　　B)edge layer

 C)middleware layer　　　　　　D)application layer

27...............................layer is responsible for delivery of various applications to different users in IoT.   [ ]

 A) Access gateway layer   B)edge layer

C)middleware layer   D)Application layer

28......................is the critical layer of IOT.   [ ]

 A) Access gateway layer   B)edge layer

 C)middleware layer   D)Application layer

29. For the SimpleLink Wi-Fi transceiver................. is used.   [ ]

A) CC3100   B)CC2100

C)CC4100   D) CC5100

30. The CC3100 device integrates all protocols for .... and ....   [ ]

A) Wi-Fi   B) Internet

C) both A) & B)   D) none

31. The MSP430 analog front end consists of the ....ADC [ ]
A)delta sigma   B) SAR

C) both A) & B)   D) none

32. The analog front end consists of............................. for voltage.   [ ]

A) SVS   B) SVM

 C)battery   D)spike protection varistors

33. The analog front end consists of a RC low-pass filter that acts as ....filter [ ]

 A)reconstruction   B) anti-alias

C)HPF   D)BPF

34. The RTC_C is a module that is configured to give .... [ ]

A) interrupts   B) POR

C) reset   D) BOR

35. The F677x family has up to.............. independent sigma delta data
converters.   [ ]

A) five   B)three

C) two   D) seven

36. The LCD controller on the MSP430F677X can support up
to.................. displays.   [ ]

A) 8-mux   B)4-mux

C)2-mux   D)16-mux

37. The PRELOAD is used to provide the .... [ ]
A)debugging   B)phase compensation

C) PUC   D)BOR

38.Wi-Fi operates at ....of radio frequency spectrum. [ ]
A)7GHz   B)2.4GHz

C)9GHz   D) 4GHz

39. Bluetooth supports a datarate of upto .... [ ]

A) 1KBPS   B)500MBPS

C)1MBPS   D) 1GBPS

40.The range supported by the Wi-Fi is.............................. [ ]

A)100-300feet   B)30 feet

C) up to 100kms   D) up to 500kms