INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal, Hyderabad - 500 043

ELECTRONICS AND COMMUNICATION ENGINEERING

TUTORIAL QUESTION BANK

Course Name	:	EMBEDDED C
Course Code	:	BES001
Class	:	I - M. Tech
Branch	:	EMBEDDED C
Year	:	2016 – 2017
Course Coordinator	:	Dr G Manisha
Course Faculty	:	Anusha.N Assistant professor

OBJECTIVES

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

Unit-I PROGRAMMING EMBEDDED SYSTEMS IN C		
Group – A (Short Answer Questions)		
S. No	**Questions**	**Blooms Taxonomy Level**	**Course Outcome**

S. No	Questions	Blooms Taxonomy Level	Course Outcome
1	What is an embedded system	Knowledge	
2	What is the processor and operating system should we use for embedded C p	Knowledge	
3	What is the programming language is used? why	Apply	
4	How do you develop embedded software	Create	
5	What are the External interface of the standard 8051	Knowledge	
6	What is the clock frequency and performance of 8051	Knowledge	
7	What are the memory issues and I\O pins of 8051	Apply	
8	What the timers, interrupts and serial interface	Apply	
9	What is the power consumption of 8051	Create	

Group - B (Long Answer Questions)		
S. No	**Questions**	**Blooms Taxonomy Level**	**Course Outcome**

1	What is an Embedded system, how do you develop embedded software, explain in detail.	Knowledge	
2	What is interrupt? Explain interrupt concept in 8051 microcontroller	Knowledge	
3	Explain how to identify a suitable programming language for embedded system.	Knowledge	
4	Explain the external interface of the standard 8051.	Knowledge	
5	Explain some of the important issues linked to oscillator frequency and performance	Knowledge	
6	Define an Embedded system. give any two real time applications	Create	
7	Which type of the processors are used in embedded systems, Explain in detail	Create	
8	Explain about 8051 micro controller (i) I/O pins, (ii) interrupts, (iii) power consumptions (iv), memory issues of 8051 micro controller	Knowledge	
9	Define Embedded system and explain its importance in present generations	Apply	
10	List out the different programming languages used in different embedded system with	Apply	

Unit-II SWITCHES			
Group – A (Short Answer Questions)			
S. No	**Questions**	**Blooms Taxonomy Level**	**Course Outcome**
1	What are the basic techniques for reading from port pins	Knowled	
2	Write examples for reading and writing bytes (simple version)	Create	
3	Write examples for reading and writing bytes (generic version)	Create	
4	What are the need for pullup resistor	Apply	
5	What is the method dealing with switch bounce	Knowledge	
6	Write a basic code for reading switch input	Knowledge	
7	Write an example for counting roats	Create	

Group - B (Long Answer Questions)			
S. No	**Questions**	**Blooms Taxonomy Level**	**Course Outcome**
1	Explain about (a) Reading and Writing bytes (b) Reading and writing bits in simple version	Knowledge	
2	Explain reconstructing (a) Hello Embedded world (b) Goat-counting example	Knowledge	
3	Write assembly level program for reading and writingbits	Create	
4	Write assembly level program for Counting goats	Create	
5	Explain in detail about The Project Header with example	Knowledge	

6	Explain the need of pull up resistors.	Knowledge	
7	Explain the Switch bounce behaviour with the help of waveforms.	Knowledge	
8	Explain a) Reading and writing bits(simple version) b) Reading and writing bits(generic version)	Knowledge	
9	What are basic techniques fir reading from port pins	Knowledge	

Unit-III ADDING STRUCTURE TO THE CODE		
Group - A (Short Answer Questions)		

S. No	Questions	Blooms Taxonomy Level	Course Outcome
1	Develop an embedded C program for the project header (main.h)?	Create	
2	Develop an embedded C program for restructuring the goat-counting example?	Create	
3	Describe port header (port.h) with a schematic representation?	Knowledge	
4	Develop an embedded C program for the port header (port.h)?	Create	
5	Discuss about file based C class?	Knowledge	
6	What are the technical issues concerned to embedded c?	Knowledge	
7	Discuss about the Oscillator frequency and oscillations per instruction in main.h?	Knowledge	
8	Explain the both strengths and weaknesses of c++ program version?	Understand	
9	Illustrate is it possible to create 'file based-classes' in C without imposing a significant memory or CPU load, with an example?	Apply	
10			

Group - B (Long Answer Questions)		
S. No	Questions	Blooms Taxonomy Level	Course Outcome
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1	Develop an embedded C program for file based C class using 8051 microcontroller?	Create	
2	Describe the key aspects of hardware environment using header file with a schematic representation?	Knowledge	
3	Construct the block diagram of project header file and discuss various components available in it and mention their applications?	Apply	
4	Develop an embedded C program for restructuring the goat-counting example?	Create	
5	Design and Develop an embedded C program for restructuring the 'Hello, embedded world'?	Apply	
6	Discuss about the process of port access from the embedded system using port file?	Knowledge	
7	Explain about the schematic representation of the port header file with the explanation of reliability and safety?	Understand	

S. No	Questions	Blooms Taxonomy Level	Course Outcome
8	Explain how a monolithic program is turned into object-oriented C program by using functions?	Understand	
9	List out programming languages in embedded c according to different generations?	Knowledge	
10			

Unit-IV MEETING REAL-TIME CONSTRAINTS			
Group – A (Short Answer Questions)			
S. No	Questions	Blooms Taxonomy Level	Course Outcome
1	Describe and differentiate TCON Special function Register and TMOD Special function register?	Knowledge	
2	Identify the potential problem using simple switch interface code?	Knowledge	
3	Develop a program for 15ms hardware delay for 12MHz 8051 microcontroller?	Create	
4	Differentiate between the loop timeout and the hardware timeout?	Understand	
5	List out the features of THx and TLx registers and compare with other special function registers?	Knowledge	
6	Elaborate the process of creating a portable hardware delay and summarize its applications?	Understand	
7	Identify the suitable programming language for creating hardware delay?	Understand	
8	Develop an embedded C program for a more reliable switch interface?	Create	
9	Illustrate the process of testing loop timeouts with an example?	Apply	
10	Discuss applications of portable hardware delay?	Knowledge	

Group – B (Long Answer Questions)			
S. No	Questions	Blooms Taxonomy Level	Course Outcome
1	Construct the block diagram of simple autopilot system? Describe in detail individual blocks in it? Develop a program for identifying problems with simple switch interface?	Apply	
2	Elaborate the process of creating a portable hardware delay and design an embedded C program?	Understand	
3	Describe and differentiate the loop timeout and the hardware timeout with suitable examples? Mention the merits and de-merits of loop timeout and hardware timeout?	Knowledge	
4	Develop an embedded C program for testing a hardware timeout? Explain why we cannot use Timer 2 for generating delays in 8051?	Create	
5	Explain how can we create and test a loop time outs with the help of simple c programs?	Understand	
6	Design and develop a C Code for a more reliable switch interface by applying the loop timeout code to the problem of switch de bouncing of 10 sec?	Apply	

S. No	Questions	Blooms Taxonomy Level	Course Outcome
7	Discuss the creation of hardware timeouts along with the portable and easy usage delay code for the 8051 family?	Knowledge	
8	Describe the Testing of hardware timeout loop using incomplete list to avoid undue repetition?	Knowledge	
9	Explain the code used in Philips 8Xc552 Extended 8051 device with a number of on-chip peripherals and also discuss the hang out conditions in Philips 8Xc552?	Understand	

Unit-V
CASE STUDY: INTRUDER ALARM SYSTEM

Group – A (Short Answer Questions)

S. No	Questions	Blooms Taxonomy Level	Course Outcome
1	Explain the simple operation of intruder alarm system?	Understand	
2	Mention different operating states of control panel for alarm system?	Knowledge	
3	Design and discuss in detail the software architecture of intruder alarm system with a neat sketch?	Apply	
4	Discuss about keypad block in an intruder alarm system?	Knowledge	
5	Design a simple c program for creating Keypad.H file?	Apply	
6	Discuss about PC_O_T1.H and PC_O_T1.C files?	Knowledge	
7	Define embedded operating system(EOS) in detail?	Knowledge	
8	Design a simple c program for creating Keypad.C file?	Apply	
9	Discuss about PC_O.H and PC_O.C files?	Knowledge	
10	Explain about the hardware issues related to embedded C?	Understand	

Group – B (Long Answer Questions)

S. No	Questions	Blooms Taxonomy Level	Course Outcome
1	Discuss the working principle of main control panel for alarm system along with a block diagram and simple program?	Knowledge	
2	Describe in detail the key software components used in intruder alarm system and also Mention its usages in intruder alarm system?	Knowledge	
3	Develop an embedded C program for keypad block and intruder block in an intruder alarm system using 8051 microcontroller?	Create	
4	Explain the working principle of main control panel for alarm system with a block diagram? Develop an embedded C program for project header file and port header file of an intruder alarm system using 8051 microcontroller?	Understand	
5	Design an intruder alarm system using a small art gallery which contains three statues?	Apply	
6	List out the key software components used in intruder alarm system along with its applications in an intruder alarm system?	Knowledge	
7	Design the software program for creating project header file and also port header file for intruder alarm system by listing all associated files for the project?	Apply	
8	Design an intruder alarm system software program for Simple_EOS.H and Simple_EOS.C by using embedded operating system?	Apply	
9	Design the software program for creating project main.C and intruder.H file for intruder alarm system by listing all associated files for the project?	Apply	

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