1) What are device drivers ?

A Device driver is a special kind of software program that controls a specific hardware device attached to a computer. Device drivers are essential for a computer to work properly.

A driver provides a software interface to hardware devices enabling operating systems and other computer programs to access hardware functions without needing to known precise details about the hardware being used.

The main purpose of device drivers is to provide abstraction by acting as a translator between a hardware device and the applications or operating systems that use it.

2) Differences between General purpose system and Embedded systems ?

S.NO	Embedded systems	General purpose system
1)	Embedded systems are computer systems that carry out a small no. of tasks	A General purpose is a computer system that can be programmed to perform large no. of tasks.
2)	Designed to do some specific set of tasks	Can perform multiple tasks
3)	Not programmable end user	Programmable by end user
4)	Low power consumption	Generally high power consumption
5)	Fixed time constraints	Do not have fixed time constraints
6)	Task specific that's why more economical	Generally costly than task specific system.

7	May not contain operating system	contain operating system.
8	It is a deterministic behaviour	need not to be deterministic
9	Key factor - performance Power requirements Memory usage	Key factor - performance
10	Response time is critical	Response time is not critical

3. How can hardware understand the code we write in embedded systems (.c file to .exe file)?

Transistor is a component that has two states are on-1 and off-0. The any code written in any language can be converted into machine instructions through a compile system

Source code → Compilation system → Machine Instructions

The source code is saved as .c extension and we use gcc compiler to the compile program.

The characters in the program are converted into ASCII values thery then converted into binary values

* The source code is fed to Pre-Processor and saves as .i extension and then it given to a compiler. the compiler converts source code into an assembly code as .s extension. then assembly code (.s) is passed thugh Assembler. The Assembler converts the assembly code into machine instructions. then it is saved as .o file extension

Then it is passed through a linker. then link the OBJ file with RING.O file that gives the .exe (executable file)

4) write about Real time operating system and General purpose operating system?

Ans Real time operating systems are used for real time applications and has a time boundary. Tasks are designed to handle multiple processes at one time. Memory location is more critical in an real time operating system than in other operating system.

Real time operating systems are event driven and preemptive, meaning the O.S can monitor the relevant priority of competing tasks and make changes to the task priority. Event driven systems switch between the tasks based on their priorities. while time-sharing systems switch the task based on clock interrupts.

Ex: Airline traffic control, command control systems, Robot etc

Generally purpose operating systems usually do not allow user programs to mask (disable) interrupts because the user program could control the CPU as long as it is made to some modern CPUs do not allow user mode code to disable interrupts as such control is considered a key operating system resource. It is used for systems and applications that are not time critical. some general purpose operating systems are windows, linux, unix etc.