

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIRST SEMESTER M. TECH DEGREE EXAMINATION**

**Electronics & Communication Engineering**  
**(VLSI & Embedded systems)**

**04EC6507—Design with ARM Microcontroller**

Max. Marks : 60

Duration: 3 Hours

**PART A**

*Answer All Questions*

*Each question carries 3 marks*

1. Draw the general block diagram of a microcontroller and explain.
2. Why do we need an H bridge?
3. What is an ISP.
4. Discuss about the operating modes of ARM and its switching.
5. Explain procedure call.
6. Differentiate between arithmetic shift right and logical shift right instructions.
7. Explain the operation of a timer and list the registers associated with the timer of LPC2148
8. Write a program to generate an asymmetrical square wave at the lower four pins of port1.

**PART B**

*Each question carries 6 marks*

9. Explain embedded system design and development life cycle model.  
OR
10. Explain embedded system architecture and discuss about its importance.
11. Explain how a stepper motor can be interfaced to an 8051 microcontroller.  
OR
12. Describe about the working of a dynamic seven segment display based on 8051.
13. Explain the significance of cross-assembling and cross-compilation in the generation of executable file.  
OR
14. Give a detailed account of the various steps involved in building a project
15. Explain AMBA.  
OR
16. What are the important features of ARM?
17. Write an assembly language program which find the sum of 10 numbers stored in ROM and store the result in read/write memory.  
OR
18. Write an assembly language program which performs division using repeated subtraction.
19. Draw the block diagram of the UART port of an LPC2148 microcontroller and explain the functionalities of the registers associated with UART.  
OR
20. Write a program which generates PWM output of period 5ms and 25% duty cycle at the PWM channel 1 of LPC2148.