# **OBJECTIVES:**

* To write a program to perform bit manipulations.

# **MATERIAL:**

* Atmel Studio

# **WEB SITES:**

* [www.microchip.com](http://www.microchip.com/) for Atmel Studio Software

# **ACTIVITY 1**

Write a program that copies bits 1, 2, and 3 of PIND to bits 0, 1, and 2 of port B.

# **ACTIVITY 2**

Write a program that copies bits 1 and 6 of PINC to bits 0, and 2 of port B, respectively.

# **ACTIVITY 3**

1. Write a program that inverts bit 3 of port C and sends it to bit 5 of port B.
2. Find the value in R16 after the following code.

LDI R16, $45

ROR R16

ROR R16

ROR R16

R16 = in hex

1. Find the value in R16 after the following code.

LDI R16, $45

ROL R16

ROL R16

ROL R16

R16 = in hex

1. In the absence of the "SWAP Rn" instruction, how does the operation perform?
2. Can the SWAP instruction work on any register?
3. Find the value in R2 after the following code.

CLR R2

LDI R21, $FF

EOR R2, R21

R2 = in hex

1. Find the value in A after the following code.

CLR R10

COM R10

LDI R16, $AA

EOR R10, R16

R10 = in hex