**COAL THEORY (ASSIGNMENT#05)**

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**Section: H**

**Question#01:**

1. **XOR VAR32, 7979FF01h**

81 00 110 110 01FF7979 => 8136 01FF7979h

1. **AND ECX, [EBX]**

23 00 001 111 => 230Fh

1. **ADD DWORD PTR[EBX+EDI+70080h], EDX**

01 10 010 001 800007 => 0191 800007h

1. **MUL EBX**

F7 00 100 110 => F7E3h

1. **DIV VAR32**

F7 00 110 110 => F736h

1. **OR DX, 818F**

63 81+010 <- 8F81 => 63 83 8F81h

1. **MOV [EBX+13146528h], 79765612h**

C7 10 000 111 28651413 12567679 => C7 87 28651413 12567679h

1. **CMP DL, DH**

38 11 110 010 => 38F2h

1. **PUSH 90876044**

90876044 => 56AA88Ch

68 8CA86A05h

1. **INC ESI**

40 + 110 => 46h

**Question#02:**

1. **sll $v0,$v1,20**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **Opcode** | **RS** | **RT** | **RD** | **SHAMT** | **FUNCT** |
| **B** | 000000 | 0 | 00011 | 00010 | 10100 | 000000 |
| **D** | 0 | 0 | 3 | 2 | 20 | 0 |
| **H** | 0 | 0 | 3 | 2 | 14 | 0 |

1. **nor $s0,$s5, $t9**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **Opcode** | **RS** | **RT** | **RD** | **SHAMT** | **FUNCT** |
| **B** | 000000 | 10101 | 11001 | 10000 | 0 | 100111 |
| **D** | 0 | 21 | 25 | 16 | 0 | 39 |
| **H** | 0 | 15 | 19 | 10 | 0 | 27 |

1. **sra $a1, $a2, 12**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **Opcode** | **RS** | **RT** | **RD** | **SHAMT** | **FUNCT** |
| **B** | 000000 | 0 | 00110 | 00101 | 01100 | 000011 |
| **D** | 0 | 0 | 6 | 5 | 12 | 3 |
| **H** | 0 | 0 | 6 | 5 | C | 3 |

1. **addiu $s1, $s2, 260**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Opcode** | **RS** | **RT** | **Immediate** |
| **B** | 001001 | 10010 | 10001 | 0000000100000100 |
| **D** | 9 | 18 | 17 | 260 |
| **H** | 9 | 12 | 11 | 104 |

1. **sb $t9, 100($s6)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Opcode** | **RS** | **RT** | **Immediate** |
| **B** | 101000 | 10110 | 11001 | 0000000001100100 |
| **D** | 40 | 22 | 25 | 100 |
| **H** | 28 | 16 | 19 | 64 |

1. **lh $s3, ($t8)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Opcode** | **RS** | **RT** | **Immediate** |
| **B** | 100001 | 11000 | 10011 | 0 |
| **D** | 33 | 24 | 19 | 0 |
| **H** | 21 | 18 | 13 | 0 |

1. **lui $s0, 0980**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Opcode** | **RS** | **RT** | **Immediate** |
| **B** | 001111 | 0 | 10000 | 0000001111010100 |
| **D** | 15 | 0 | 16 | 0980 |
| **H** | F | 0 | 10 | 3D4 |

1. **andi $t3, $t4, 9087**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Opcode** | **RS** | **RT** | **Immediate** |
| **B** | 001100 | 01100 | 01011 | 0010001101111111 |
| **D** | 12 | 12 | 11 | 9087 |
| **H** | C | C | B | 237F |

1. **div $t3, $v1**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **Opcode** | **RS** | **RT** | **RD** | **SHAMT** | **FUNCT** |
| **B** | 000000 | 01011 | 00011 | 0 | 0 | 011010 |
| **D** | 0 | 11 | 3 | 0 | 0 | 26 |
| **H** | 0 | B | 3 | 0 | 0 | 1A |

1. **multu $v1, $a2**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **Opcode** | **RS** | **RT** | **RD** | **SHAMT** | **FUNCT** |
| **B** | 000000 | 00011 | 00110 | 0 | 0 | 011001 |
| **D** | 0 | 3 | 6 | 0 | 0 | 25 |
| **H** | 0 | 3 | 6 | 0 | 0 | 19 |