第 1 章 コンピュータの基礎知識

P13 問 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a | b | c | d | e | f | g | h |  |  |  |  |  |  |  |
| ア | ウ | イ | エ | ウ | ウ | ア | エ |  |  |  |  |  |  |  |

P29

問 1 エ 問 2 イ

第 2 章 数値の表現

P35

|  |  |  |  |
| --- | --- | --- | --- |
| a | (41)10 | b | (532)10 |
| c | (700)10 | d | (0.3125)10 |
| e | (0.8125)10 | f | (0.921875)10 |
| g | (11.625)10 | h | (213.34375)10 |
| i | (245.65625)10 |  |  |

P37

|  |  |  |  |
| --- | --- | --- | --- |
| a | (10101)2 | b | (173)8 |
| c | (BA)16 | d | (0.011)2 |
| e | (0.56)8 | f | (0.2C)16 |
| g | (11.01)2 | h | (265.34)8 |
| i | (AB.C)16 |  |  |

P40

|  |  |  |  |
| --- | --- | --- | --- |
| a | (346.32)8 | b | (10110111.0011)2 |
| c | (5F.B8)16 | d | (11100.1110111)2 |
| e | (1F3.DC)8 | f | (1253.736)8 |
| g | ・ ・  (0.1100)2 |  |  |

P42

|  |  |  |  |
| --- | --- | --- | --- |
| a | (11 1001)2 | b | (10 0010)2 |
| c | (10011)2 | d | (59)10 |
| e | (400)8 | f | (320)10 |
| g | (EC)16 | h | (0.34)8 |

数値の表現、ゾーン 10 進、パック 10 進

P45

問 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a | b | c | d | e | f |  |  |  |  |  |  |  |  |  |
| ケ | ア | コ | イ | カ | エ |  |  |  |  |  |  |  |  |  |
| P49  問 1 |  |  |  |  |  |  | | | | | | | | |
| a | b | c | d | e | f |  |  |  |  |  |  |  |  |  |
| ウ | エ | ク | コ | ウ | エ |  |  |  |  |  |  |  |  |  |

第 2 章 4 節 固定小数点

P50

問 1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |

▲固定小数点位置

P51 問 2

|  |  |  |  |
| --- | --- | --- | --- |
| a | (106)10 | b | (165)10 |

P52 問 3

|  |  |  |  |
| --- | --- | --- | --- |
| a | 0 | b | 31 |
| c | 32 | d | (00000)2 |
| e | (11111)2 | f | (13)10 |
| g | (29)10 | h | (01100)2 |
| i | (11001)2 |  |  |

P53

問 4

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| 問 5 | ※問 1 の 2 の補数が答えになる。 | | | | | |  |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |

▲固定小数点位置問 6

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a |  | (106)10 | |  |  | | | |  | |  | | |  | | | |
| P55 問 7 | |  | |  |  | | | | | |  | | |  | | | |
| a |  | (-53)10 | |  |  | | | | b |  | (-86)10 | | |  | | | |
| P58  問 8 | |  | |  |  | | | | |  |  | | |  | | | |
| a | | b | c | d | e |  |  |  | |  |  |  |  |  |  |  |  |
| エ | | ク | ク | ケ | イ |  |  |  | |  |  |  |  |  |  |  |  |

P59 問 9

|  |  |  |  |
| --- | --- | --- | --- |
| a | (0141)16 ※16bit と指定あり | b | (FEBF)16 |
| c | (442)10 | d | (-292)10 |
| e | (-32768)10 | f | (32767)10 |
| g | (7FFF)16 | h | (8000)16 |

問 10

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a | b | c | d | e |  |  |  |  |  |  |  |  |  |  |
| シ | カ | サ | エ | ク |  |  |  |  |  |  |  |  |  |  |

第 2 章 5 節 浮動小数点表現

P61 問 1

|  |  |  |  |
| --- | --- | --- | --- |
| a | 0 | b | 0 |
| c | 0 |  |  |

問 2

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a |  | |  | ( | | | | | |  | b | |  | ( | | | | |  |
| c |  | |  | ( | | | | | |  |  | |  |  | | | | |  |
| P64 問 3 | | |  |  | | | | | |  | | |  |  | | | | |  |
| a |  | |  | 0001 1101 0100 0000 | | | | | |  | b | |  | 1001 1101 0100 0000 | | | | |  |
| c |  | |  | 0111 0100 0000 0000 | | | | | |  | c | |  | 1111 0100 0000 0000 | | | | |  |
| P68  問 4 | | |  | |  | |  |  |  |  | | |  |  |  |  |  | | |
| a | |  | b |  | c | d |  |  |  |  | |  |  |  |  |  |  |  |  |
| ウ | |  | ク |  | エ | ケ |  |  |  |  | |  |  |  |  |  |  |  |  |
| 第 2 章  P71 問 1 | | | 6 節 | | シフ | ト演算 |  |  |  |  | | |  |  |  |  |  | | |
| a | |  | b |  | c | d | e | f |  |  | |  |  |  |  |  |  |  |  |
| イ | |  | ア |  | キ | ケ | ウ | カ |  |  | |  |  |  |  |  |  |  |  |
| P75 問 2 | | |  | |  |  |  |  |  |  | | |  |  |  |  |  | | |
| a | |  | b |  | c | d | e | f | g | h | |  | i | j | k | l |  |  |  |
| ケ | |  | イ |  | エ | オ | ケ | ケ | カ | オ | |  | ア | オ | ウ | ク |  |  |  |

教 P76～P77

1︓情報落ち 2︓桁落ち 3︓丸め誤差確認テスト

P78

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 1 | 問 2 | 問 3 | 問 4 | 問 5 |
| イ | ウ | ア | ウ | ア |
| P79 |  |  |  |  |
| 問 6 | 問 7 | 問 8 | 問 9 | 問 10 |
| イ | エ | ウ | ア | イ |
| P80 |  |  |  |  |
| 問 11 | 問 12 | 問 13 | 問 14 |  |
| ア | イ | ウ | ウ |  |
| P81 |  |  |  |  |
| 問 15 | 問 16 | 問 17 |  |  |
| ア | エ | ア |  |  |
| P82 |  |  |  |  |
| 問 18 | 問 19 | 問 20 |  |  |
| ウ | ウ | イ |  |  |

第 3 章 コンピュータ構成要素第 1 節 プロセッサ

教 P86

|  |  |  |  |
| --- | --- | --- | --- |
| (1) | 102 | (2) | 104 |
| (3) | 105 | (4) | 107 |
| (5) | 105 | (6) | 100 |
| (7) | 107 |  |  |

教 P92

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| (2) | | 命令解読(デコード) | (3) | | 実行アドレス計算 |
| (4) | | オペランド読み出し |  | |  |
| 問 1 | |  |  | |  |
| a |  | 4,000 | b |  | 25 |
| c |  | 20 |  |  |  |
| P93 問 2 | |  |  | |  |
| a |  | 20 | b |  | 400 |
| c |  | 20 |  |  | 1.25 |

P94

教:平均命令実行時間の計算

|  |  |  |  |
| --- | --- | --- | --- |
| 命令の種類 | 実行時間(ns︓10-9) | 出現頻度 | 実行時間×出現頻度 |
| 演算命令 | 80 ナノ秒(ns) | 0.2 | 80 × 0.2 = 16 |
| 移動命令 | 20 ナノ秒(ns) | 0.5 | 20 × 0.5 = 10 |
| 比較命令 | 40 ナノ秒(ns) | 0.2 | 40 × 0.2 = 8 |
| その他の命令 | 60 ナノ秒(ns) | 0.1 | 60 × 0.1 = 6 |
|  |  | 合計 | 40 |

平均命令実行時間 = 40 ns ・・・ MIPS 値 25 MIPS 教︓CPI を利用した計算

教:平均命令実行時間の計算

|  |  |  |  |
| --- | --- | --- | --- |
| 命令の種類 | CPI | 出現頻度 | CPI × 基本動作時間 × 出現頻度 |
| 演算命令 | 10 | 0.3 | 1 |
| 比較命令 | 6 | 0.5 | 6 × 20 × 0.5 = 60 |
| 比較/分岐命令 | 5 | 0.2 | 5 × 20 × 0.2 = 6 |
|  |  | 合計 | 140 |

平均命令実行時間 = 140 ns ・・・ MIPS 値 7 MIPS

P95 問 3

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a | b | c | d |  |  |  |  |  |  |  |  |  |  |  |
| エ | ア | イ | イ |  |  |  |  |  |  |  |  |  |  |  |

P96︓プロセッサの高速化教︓

|  |  |
| --- | --- |
| 1 | パイプライン方式 |

教︓P97︓命令アーキテクチャ

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | RISC (リスク) | 2 | CISC (シスク) |

教︓P98

|  |  |
| --- | --- |
| 1 | CMOS (シーモス) |

P110 キャッシュメモリ

|  |  |  |  |
| --- | --- | --- | --- |
|  | アクセス時間 | アクセス頻度 | 実アクセス時間 |
| キャッシュメモリ | 10 ns | 0.8 | 10 × 0.8 = 8 (ns) |
| 主記憶装置 | 90 ns | 1.0 – 0.8 = 0.2 | 9 |
|  |  |  | 26 (ns) |

P111 問 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a | b |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ウ | キ |  |  |  |  |  |  |  |  |  |  |  |  |  |

章末問題

P126

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 1 | 問 2 | 問 3 |  |  |
| ア | エ | ウ |  |  |
| P127 |  |  |  |  |
| 問 4 | 問 5 | 問 6 |  |  |
| ウ | イ | ウ |  |  |
| P128 |  |  |  |  |
| 問 7 | 問 8 | 問 9 |  |  |
| ウ | ア | ウ |  |  |
| P129 |  |  |  |  |
| 問 10 | 問 11 |  |  |  |
| イ | イ |  |  |  |
| P130 |  |  |  |  |
| 問 12 |  |  |  |  |
| ウ |  |  |  |  |
| P131 |  |  |  |  |
| 問 13 | 問 14 |  |  |  |
| ア | ウ |  |  |  |
| P132 |  |  |  |  |
| 問 15 | 問 16 |  |  |  |
| ウ | ア |  |  |  |
| P133 |  |  |  |  |
| 問 17 | 問 18 | 問 19 | 問 20 |  |
| ウ | ウ | エ | エ |  |

P134

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 21 | 問 22 | 問 23 |  |  |
| ウ | ア | エ |  |  |
| P135 |  |  |  |  |
| 問 24 | 問 25 | 問 26 |  |  |
| イ | ウ | イ |  |  |
| P136 |  |  |  |  |
| 問 27 | 問 28 | 問 29 | 問 30 |  |
| ア | エ | イ | ウ |  |
| P137 |  |  |  |  |
| 問 31 | 問 32 |  |  |  |
| イ | ア |  |  |  |

応用数学

P141　問１

|  |  |  |  |
| --- | --- | --- | --- |
| a | 210 | b | 56 |
| C | 251 |  |  |

P143　問2

|  |  |  |  |
| --- | --- | --- | --- |
| a | 1  4 | b | 1  19 |
| C | 15  38 | d | 17  38 |

P141　問１

|  |  |  |  |
| --- | --- | --- | --- |
| 平均 | 5.2 | メジアン | 5.5 |
| モード | 6 | レンジ | 6 |

符号理論　P148-149

(１)　ハミング符号 (２)　ランレングス符号化 (３)ハフマン符号

P150　逆ポーランド表記法

|  |  |  |  |
| --- | --- | --- | --- |
| a | ABC\*+DEF/-\* | b | A-(B\*C+D) |

第３章　計測・制御に関する理論

P151

2. シーケンス制御 4.フィードバック制御

第４章演習問題(基礎理論)

P152

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 1 | 問 2 | 問 3 | 問４ |  |
| ア | エ | ウ | エ |  |

P153

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 5 | 問 6 | 問 7 | 問8 |  |
| ウ | エ | ウ | ウ |  |

P154

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 9 | 問 10 |  |  |  |
| ア | ア |  |  |  |

第５章　ソフトウェア　■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■

P156 ジョブ管理　 (2)　スプーリング

P157 タスク管理 (2)　タイムスライシング

P158 (5)　割り込み ①　外部割り込み

②　内部割り込み

P160 3.データ管理 (１)　排他制御

P161 (３)　フラグメンテーション

(５)　デバイスドライバ

P162 記憶管理 (２)　仮想記憶システム

P164 ①　FIFO方式

②　LRU方式

P165 (5)　メモリリーク

P167 7．　ミドルウェア

8．　API

P171 (5)　カレントディレクトリ

(6)　ホームディレクトリ

第5章　演習問題(ソフトウェア)

P176

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 1 | 問 2 | 問3 | 問4 |  |
| イ | ア | ウ | イ |  |

P177-178

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 5 | 問 6 | 問7 | 問8 | 問9 |
| ウ | イ | ウ | エ | ウ |

第6章　システム構成要素　■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■

P181 (2)　デュプレックスシステム

P182 (3)　デュアルシステム

(4)　マルチプロセッサシステム

P183 3．クライアントサーバシステム

P185 6.　RPC

P188 (1)　フェールセーフ

P189 (2)　フェースソフト

(3)　フェールプルーフ

P190 (1)　スループット

(2)　ターンアラウンドタイム

(3)　レスポンスタイム

P193　問1

|  |  |  |  |
| --- | --- | --- | --- |
| a | 4,500 | b | 5 |
| c | 900 | d | 105 |
| e | 21 | f | 0.98 |

P195　問2

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a | b | c | d | e |  |  |  |  |  |  |  |  |  |  |
| ア | ク | イ | カ | エ |  |  |  |  |  |  |  |  |  |  |

P198　問3

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a | b | c |  |  |  |  |  |  |  |  |  |  |  |  |
| エ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

P200　問4

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a | b |  |  |  |  |  |  |  |  |  |  |  |  |  |
| エ | カ |  |  |  |  |  |  |  |  |  |  |  |  |  |

P204　問5

|  |  |  |  |
| --- | --- | --- | --- |
| a | 8 | b | 3,000 |
| c | 2 | d | 24 |
| e | 26 |  |  |

P206　問6　　　32

第6章　演習問題(システム構成要素)

P207

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 1 | 問 2 | 問3 |  |  |
| ア | ア | ウ |  |  |

P208

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 4 | 問 5 | 問6 |  |  |
| ア | ア | ア |  |  |

P209

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 7 | 問 8 | 問9 |  |  |
| ウ | ア | イ |  |  |

P210

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 10 | 問 11 | 問12 |  |  |
| エ | エ | ア |  |  |

P211

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 問 13 | 問 14 | 問15 | 問16 |  |
| エ | ウ | イ | エ |  |