

2008 年度

|   |  |  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
|---|--|--|--------------|-------------|---------|-------|-------------|----------|------|---------|--------|--------|---------------|---------------|------------|-------|--|---------------|------------|-------|--|--|----|-------|-------------------|--|--|-------------------|-------|-------------|-----------|--|---------------|-------|------------|----------|--|----------|----------|-----------|--|--|----|-------|------------------|--|--|----------|-------|------------|-------|--------|-----------------|--------|-------|--|--|-----|--------|-------------------|--|--|---------------|-------|-------------|--|--|-----|--------|-----|--|--|---------------|-----|----------------------|--|--|-----|--------|--------|--|--|-----|-----------|--------------------|--|--|-------------|--------|--------|-------|--|-------------|--------|-------|--------|--|-----------------|--------|----------|----------|--|-----------------|---------|----------|-------|--|-----------------|----------------|------|------|--|-----------------|-----------|--------|--|--|-------------------|--------|-------------|--|--|-----|-------|-------|--|--|---------------|--------|----------|--|--|-----|---------|----------|--|--|---------------|-------|------|------|--|-----------------|-------------|--------------|-----|--|-----------------|-----|--------------|--------------|--|
| <p>科目名</p> <p style="text-align: center;">現代科学論</p>   | <p>対象学科・学年<br/>教育教福2回生</p>                                   | <p>担当者</p> <p style="text-align: center;">中野 長久</p>        |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| <p>授業テーマ<br/> <b>神秘の世界</b>（地球は生きている）－森羅万象を映像で伝えるとともに、地球における生命体を科学的に探求する－</p>  |  |  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| <p>授業の概要と目標</p> <p>20世紀の科学技術は驚異的な発展を遂げ、私たちの生活はかつて予想もできなかったほど豊かになりました。しかし、一方では環境破壊や資源枯渇等が地球全体へと拡大してきました。21世紀において人類が他の生物と共生でき、安全で快適な生活を維持するためには、今日物質文明がどのようにしてもたらされたかをよく理解することが大切です。地球の誕生、その地球でおこった諸々の現象をよく理解し、『地球にやさしい科学とは』をよく考えましょう。講義は主にレーザーディスクで行います。</p>   |  |  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| <p>評価方法</p> <p>成績の評価は出席状況（60%）とレポート（本講義はレーザーディスクを使用しますので、その内容の要約あるいは簡単な感想文による評価40%）を総合して評価します。</p>  |  |  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| <p>テキスト</p>   | <p>著者</p>  | <p>出版社</p>   |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| <p>参考書</p> <p style="text-align: center;">自然科学概論<br/>生命体の科学－地球生命の探求－</p>  | <p>著者</p> <p style="text-align: center;">香月裕彦著<br/>賀来章輔著</p> | <p>出版社</p> <p style="text-align: center;">講談社<br/>共立出版</p> |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| <p>授業スケジュール・内容</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 33%;">1. 広大な宇宙</td> <td>①夜空に輝く星</td> <td>②太陽系の惑星</td> <td>③彗星とは</td> <td>④エネルギーの源・太陽</td> </tr> <tr> <td>2. 宇宙への夢</td> <td>①望遠鏡</td> <td>②宇宙への挑戦</td> <td>③月面の征服</td> <td>④宇宙探査機</td> </tr> <tr> <td>3. 一つの生命体・地球Ⅰ</td> <td>①地球のしくみと生命の誕生</td> <td>②地球の生命の源、海</td> <td>③大気現象</td> <td></td> </tr> <tr> <td>4. 一つの生命体・地球Ⅱ</td> <td>①地震はなぜ起こるか</td> <td>②火山とは</td> <td></td> <td></td> </tr> <tr> <td>5.</td> <td>③氷河とは</td> <td>④南極の構造や生物、人類との関わり</td> <td></td> <td></td> </tr> <tr> <td>6. 物質の世界Ⅰ 世界を動かす力</td> <td>①力と運動</td> <td>②ニュートンの運動法則</td> <td>③宇宙を支配する力</td> <td></td> </tr> <tr> <td>7. 物質の世界Ⅱ 光と水</td> <td>①光の性質</td> <td>②物質による光の吸収</td> <td>③地球は水の惑星</td> <td></td> </tr> <tr> <td>8. エネルギー</td> <td>①エネルギーとは</td> <td>②石油の生成と役割</td> <td></td> <td></td> </tr> <tr> <td>9.</td> <td>③電気とは</td> <td>④核エネルギー（核分裂、核融合）</td> <td></td> <td></td> </tr> <tr> <td>10. 生物資源</td> <td>①動物資源</td> <td>②植物資源（農産物）</td> <td>③森林資源</td> <td>④遺伝子資源</td> </tr> <tr> <td>11. 生物／人間 生命の起源</td> <td>①生命の誕生</td> <td>②種の起源</td> <td></td> <td></td> </tr> <tr> <td>12.</td> <td>③人類の進化</td> <td>④ヒトの性と生殖～受精から誕生まで</td> <td></td> <td></td> </tr> <tr> <td>13. 生物の構造と機能Ⅰ</td> <td>①細胞とは</td> <td>②DNAのしくみと働き</td> <td></td> <td></td> </tr> <tr> <td>14.</td> <td>③血液と血管</td> <td>④呼吸</td> <td></td> <td></td> </tr> <tr> <td>15. 生物の構造と機能Ⅱ</td> <td>①視覚</td> <td>②食物と栄養（生物に必要な栄養素と働き）</td> <td></td> <td></td> </tr> <tr> <td>16.</td> <td>③食物と健康</td> <td>④食品添加物</td> <td></td> <td></td> </tr> <tr> <td>17.</td> <td>⑤脳の仕組みと働き</td> <td>⑥ウイルスとの闘い（ウイルスと病気）</td> <td></td> <td></td> </tr> <tr> <td>18. 生き物の世界Ⅰ</td> <td>①植物の営み</td> <td>②昆虫の世界</td> <td>③蜂の社会</td> <td></td> </tr> <tr> <td>19. 生き物の世界Ⅱ</td> <td>①動物の王国</td> <td>②海の生物</td> <td>③熱帯の生物</td> <td></td> </tr> <tr> <td>20. 知られざる世界－海－Ⅰ</td> <td>①深海の生物</td> <td>②深海の食物連鎖</td> <td>③湧昇流と命の輪</td> <td></td> </tr> <tr> <td>21. 知られざる世界－海－Ⅱ</td> <td>①眠る巨大資源</td> <td>②海洋資源の利用</td> <td>③生物資源</td> <td></td> </tr> <tr> <td>22. 知られざる世界－海－Ⅲ</td> <td>①奇跡のバランスが崩れるとき</td> <td>②温暖化</td> <td>③寒冷化</td> <td></td> </tr> <tr> <td>23. 知られざる世界－海－Ⅳ</td> <td>①波・脅威のパワー</td> <td>②津波の襲来</td> <td></td> <td></td> </tr> <tr> <td>24. 文明 人間社会の発展と環境</td> <td>①文明の発展</td> <td>②20世紀の科学と技術</td> <td></td> <td></td> </tr> <tr> <td>25.</td> <td>③環境破壊</td> <td>④大気汚染</td> <td></td> <td></td> </tr> <tr> <td>26. 交通システムの発達</td> <td>①交通の発達</td> <td>②陸上交通の発達</td> <td></td> <td></td> </tr> <tr> <td>27.</td> <td>③航空機の発達</td> <td>④水上交通の発達</td> <td></td> <td></td> </tr> <tr> <td>28. 乗り物とそのしくみ</td> <td>①エンジン</td> <td>②自動車</td> <td>③飛行機</td> <td></td> </tr> <tr> <td>29. 人間の文化とその歴史Ⅰ</td> <td>①文字の起源と印刷技術</td> <td>②スポーツ（歴史と役割）</td> <td>③写真</td> <td></td> </tr> <tr> <td>30. 人間の文化とその歴史Ⅱ</td> <td>①映画</td> <td>②テレビ（しくみと役割）</td> <td>③人工衛星（歴史と利用）</td> <td></td> </tr> </table> |  |  | 1. 広大な宇宙     | ①夜空に輝く星     | ②太陽系の惑星 | ③彗星とは | ④エネルギーの源・太陽 | 2. 宇宙への夢 | ①望遠鏡 | ②宇宙への挑戦 | ③月面の征服 | ④宇宙探査機 | 3. 一つの生命体・地球Ⅰ | ①地球のしくみと生命の誕生 | ②地球の生命の源、海 | ③大気現象 |  | 4. 一つの生命体・地球Ⅱ | ①地震はなぜ起こるか | ②火山とは |  |  | 5. | ③氷河とは | ④南極の構造や生物、人類との関わり |  |  | 6. 物質の世界Ⅰ 世界を動かす力 | ①力と運動 | ②ニュートンの運動法則 | ③宇宙を支配する力 |  | 7. 物質の世界Ⅱ 光と水 | ①光の性質 | ②物質による光の吸収 | ③地球は水の惑星 |  | 8. エネルギー | ①エネルギーとは | ②石油の生成と役割 |  |  | 9. | ③電気とは | ④核エネルギー（核分裂、核融合） |  |  | 10. 生物資源 | ①動物資源 | ②植物資源（農産物） | ③森林資源 | ④遺伝子資源 | 11. 生物／人間 生命の起源 | ①生命の誕生 | ②種の起源 |  |  | 12. | ③人類の進化 | ④ヒトの性と生殖～受精から誕生まで |  |  | 13. 生物の構造と機能Ⅰ | ①細胞とは | ②DNAのしくみと働き |  |  | 14. | ③血液と血管 | ④呼吸 |  |  | 15. 生物の構造と機能Ⅱ | ①視覚 | ②食物と栄養（生物に必要な栄養素と働き） |  |  | 16. | ③食物と健康 | ④食品添加物 |  |  | 17. | ⑤脳の仕組みと働き | ⑥ウイルスとの闘い（ウイルスと病気） |  |  | 18. 生き物の世界Ⅰ | ①植物の営み | ②昆虫の世界 | ③蜂の社会 |  | 19. 生き物の世界Ⅱ | ①動物の王国 | ②海の生物 | ③熱帯の生物 |  | 20. 知られざる世界－海－Ⅰ | ①深海の生物 | ②深海の食物連鎖 | ③湧昇流と命の輪 |  | 21. 知られざる世界－海－Ⅱ | ①眠る巨大資源 | ②海洋資源の利用 | ③生物資源 |  | 22. 知られざる世界－海－Ⅲ | ①奇跡のバランスが崩れるとき | ②温暖化 | ③寒冷化 |  | 23. 知られざる世界－海－Ⅳ | ①波・脅威のパワー | ②津波の襲来 |  |  | 24. 文明 人間社会の発展と環境 | ①文明の発展 | ②20世紀の科学と技術 |  |  | 25. | ③環境破壊 | ④大気汚染 |  |  | 26. 交通システムの発達 | ①交通の発達 | ②陸上交通の発達 |  |  | 27. | ③航空機の発達 | ④水上交通の発達 |  |  | 28. 乗り物とそのしくみ | ①エンジン | ②自動車 | ③飛行機 |  | 29. 人間の文化とその歴史Ⅰ | ①文字の起源と印刷技術 | ②スポーツ（歴史と役割） | ③写真 |  | 30. 人間の文化とその歴史Ⅱ | ①映画 | ②テレビ（しくみと役割） | ③人工衛星（歴史と利用） |  |
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| 2. 宇宙への夢  | ①望遠鏡   | ②宇宙への挑戦  | ③月面の征服       | ④宇宙探査機      |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 3. 一つの生命体・地球Ⅰ   | ①地球のしくみと生命の誕生  | ②地球の生命の源、海   | ③大気現象        |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 4. 一つの生命体・地球Ⅱ   | ①地震はなぜ起こるか   | ②火山とは  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 5.  | ③氷河とは  | ④南極の構造や生物、人類との関わり  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 6. 物質の世界Ⅰ 世界を動かす力   | ①力と運動  | ②ニュートンの運動法則  | ③宇宙を支配する力    |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 7. 物質の世界Ⅱ 光と水   | ①光の性質  | ②物質による光の吸収   | ③地球は水の惑星     |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 8. エネルギー  | ①エネルギーとは   | ②石油の生成と役割  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 9.  | ③電気とは  | ④核エネルギー（核分裂、核融合）   |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 10. 生物資源  | ①動物資源  | ②植物資源（農産物）   | ③森林資源        | ④遺伝子資源      |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 11. 生物／人間 生命の起源   | ①生命の誕生   | ②種の起源  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 12.   | ③人類の進化   | ④ヒトの性と生殖～受精から誕生まで  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 13. 生物の構造と機能Ⅰ   | ①細胞とは  | ②DNAのしくみと働き  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 14.   | ③血液と血管   | ④呼吸  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 15. 生物の構造と機能Ⅱ   | ①視覚  | ②食物と栄養（生物に必要な栄養素と働き）                                       |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 16.   | ③食物と健康   | ④食品添加物   |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 17.   | ⑤脳の仕組みと働き  | ⑥ウイルスとの闘い（ウイルスと病気）   |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 18. 生き物の世界Ⅰ   | ①植物の営み   | ②昆虫の世界   | ③蜂の社会        |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 19. 生き物の世界Ⅱ   | ①動物の王国   | ②海の生物  | ③熱帯の生物       |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 20. 知られざる世界－海－Ⅰ   | ①深海の生物   | ②深海の食物連鎖   | ③湧昇流と命の輪     |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 21. 知られざる世界－海－Ⅱ   | ①眠る巨大資源  | ②海洋資源の利用   | ③生物資源        |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 22. 知られざる世界－海－Ⅲ   | ①奇跡のバランスが崩れるとき   | ②温暖化   | ③寒冷化         |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 23. 知られざる世界－海－Ⅳ   | ①波・脅威のパワー  | ②津波の襲来   |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 24. 文明 人間社会の発展と環境   | ①文明の発展   | ②20世紀の科学と技術  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 25.   | ③環境破壊  | ④大気汚染  |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 26. 交通システムの発達   | ①交通の発達   | ②陸上交通の発達   |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 27.   | ③航空機の発達  | ④水上交通の発達   |              |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 28. 乗り物とそのしくみ   | ①エンジン  | ②自動車   | ③飛行機         |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 29. 人間の文化とその歴史Ⅰ   | ①文字の起源と印刷技術  | ②スポーツ（歴史と役割）   | ③写真          |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |
| 30. 人間の文化とその歴史Ⅱ   | ①映画  | ②テレビ（しくみと役割）   | ③人工衛星（歴史と利用） |             |         |       |             |          |      |         |        |        |               |               |            |       |  |               |            |       |  |  |    |       |                   |  |  |                   |       |             |           |  |               |       |            |          |  |          |          |           |  |  |    |       |                  |  |  |          |       |            |       |        |                 |        |       |  |  |     |        |                   |  |  |               |       |             |  |  |     |        |     |  |  |               |     |                      |  |  |     |        |        |  |  |     |           |                    |  |  |             |        |        |       |  |             |        |       |        |  |                 |        |          |          |  |                 |         |          |       |  |                 |                |      |      |  |                 |           |        |  |  |                   |        |             |  |  |     |       |       |  |  |               |        |          |  |  |     |         |          |  |  |               |       |      |      |  |                 |             |              |     |  |                 |     |              |              |  |