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| 1. Which of the following is a type of model that is key to virtually every management science application?

|  |  |  |
| --- | --- | --- |
|   | a.  | Heuristic model |
|   | b.  | Queuing model |
|   | c.  | Mathematical model |
|   | d.  | Regression model |

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| --- | --- |
| *ANSWER:* | c |
| *POINTS:* | 1 |

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| 2. Which of the following is *not* one of advantages of mathematical models?

|  |  |  |
| --- | --- | --- |
|   | a.  | Mathematical models enable managers to understand the problem better |
|   | b.  | Mathematical models allow analysts to employ a variety of mathematical solution procedures |
|   | c.  | The mathematical modeling process itself, if done correctly, often helps "sell" the solution |
|   | d.  | Mathematical models help reduce the cost of obtaining a solution |

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| *ANSWER:* | d |
| *POINTS:* | 1 |

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| 3. Before trusting the answers to what-if scenarios from a spreadsheet model, a manager should attempt to:

|  |  |  |
| --- | --- | --- |
|   | a.  | validate the model |
|   | b.  | make sure all possible scenarios have been investigated |
|   | c.  | check the mathematics in the model |
|   | d.  | sense-check the model |

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| --- | --- |
| *ANSWER:* | a |
| *POINTS:* | 1 |

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| 4. Optimization models are useful for determining:

|  |  |  |
| --- | --- | --- |
|   | a.  | sensitivity to inputs |
|   | b.  | whether the inputs are valid or not |
|   | c.  | what the manager should do |
|   | d.  | the value of the output under the current conditions |

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| *ANSWER:* | c |
| *POINTS:* | 1 |

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| 5. Management science has often been taught as a collection of:

|  |  |  |
| --- | --- | --- |
|   | a.  | theories |
|   | b.  | problems |
|   | c.  | models |
|   | d.  | topics |

|  |  |
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| *ANSWER:* | c |
| *POINTS:* | 1 |

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| 6. The modeling process discussed in *Practical Management Science* is a

|  |  |  |
| --- | --- | --- |
|   | a.  | seven-step process |
|   | b.  | six-step process |
|   | c.  | five-step process |
|   | d.  | four-step process |

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| *ANSWER:* | a |
| *POINTS:* | 1 |

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| 7. Defining an organization's problem includes:

|  |  |  |
| --- | --- | --- |
|   | a.  | specifying the organization's objectives |
|   | b.  | collecting the organization's historical data |
|   | c.  | defining the model of the problem |
|   | d.  | sensitivity analysis |

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| *ANSWER:* | a |
| *POINTS:* | 1 |

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| 8. Which of the following type of model is used when an appropriate equation or system of equations can be developed to represent the system?

|  |  |  |
| --- | --- | --- |
|   | a.  | Simulation model |
|   | b.  | Analytical model |
|   | c.  | Heuristic model |
|   | d.  | Spreadsheet model |

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| *ANSWER:* | b |
| *POINTS:* | 1 |

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| 9. A first step in determining how well a model fits reality is to:

|  |  |  |
| --- | --- | --- |
|   | a.  | check whether the inputs are correct |
|   | b.  | see if the sensitivity analysis is correct |
|   | c.  | check whether the model is valid for the current situation |
|   | d.  | try some what-if scenarios to see if the model is able to obtain solutions |

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| *ANSWER:* | c |
| *POINTS:* | 1 |

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| 10. Which of the following is *not* necessarily a property of a good model?

|  |  |  |
| --- | --- | --- |
|   | a.  | The model represents the client's real problem accurately |
|   | b.  | The model is as simple as possible |
|   | c.  | The model is based on a well-known algorithm |
|   | d.  | The model is one the client can understand |

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| *ANSWER:* | c |
| *POINTS:* | 1 |

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| 11. Which of the following is a possible cause if a model's outputs for certain inputs are not as expected?

|  |  |  |
| --- | --- | --- |
|   | a.  | The certain inputs may not be correct |
|   | b.  | The model could be too detailed of an approximation of the actual situation |
|   | c.  | The mathematics in the model are inadequate |
|   | d.  | The analyst's expectations are not correct |

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| *ANSWER:* | d |
| *POINTS:* | 1 |

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| 12. Which of the following is *not* one of the guiding principles for a heuristic?

|  |  |  |
| --- | --- | --- |
|   | a.  | Common sense |
|   | b.  | Intuition |
|   | c.  | Trial and error |
|   | d.  | Optimality |

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| *ANSWER:* | d |
| *POINTS:* | 1 |

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| 13. Which of the following is *not* one of the desired conditions for a successful model implementation?

|  |  |  |
| --- | --- | --- |
|   | a.  | The people who will run the model understand how to enter appropriate inputs |
|   | b.  | The people who will run the model are able to run what-if analysis |
|   | c.  | The people who will run the model are able to modify it |
|   | d.  | The people who will run the model are able to interpret the model's outputs correctly |

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| *ANSWER:* | c |
| *POINTS:* | 1 |

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| 14. The most frequent cause of a failed implementation of a model is:

|  |  |  |
| --- | --- | --- |
|   | a.  | the model is incorrect |
|   | b.  | the analyst fails to communicate how to use the model |
|   | c.  | the data for the model is unavailable |
|   | d.  | the model is too complex |

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| *ANSWER:* | b |
| *POINTS:* | 1 |

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| 15. Which of the following is *not* one of the reasons for the new-found relevance of management science models?

|  |  |  |
| --- | --- | --- |
|   | a.  | Modeling is an important way to think about problems in general |
|   | b.  | Modeling is often now a legal requirement |
|   | c.  | The business world is increasingly driven by numbers |
|   | d.  | Modeling helps develop intuition for problems |

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| *ANSWER:* | b |
| *POINTS:* | 1 |

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| 16. Models that suggest a desirable course of action are called descriptive models

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | False |
| *POINTS:* | 1 |

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| 17. In modeling situations where it is not possible to write an equation for an output in terms of the inputs, there may still be a mathematical procedure for calculating outputs from inputs.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | True |
| *POINTS:* | 1 |

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| 18. In a descriptive model, the manager first wants to build a model that reflects the current situation.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | True |
| *POINTS:* | 1 |

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| 19. One of the advantages of spreadsheet models is that they allow managers to ask what-if questions.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | True |
| *POINTS:* | 1 |

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| 20. One of the arguments that management science practitioners have used to criticize the emphasis on specific models is that they do not provide the correct answer.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | False |
| *POINTS:* | 1 |

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| 21. The overall modeling process typically done in practice always requires seven steps: define the problem, collect and summarize data, develop a model, verify the model, select one or more suitable decisions, present the results to the organization, and finally implement the model and update it through time.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | False |
| *POINTS:* | 1 |

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| 22. Modeling is a process where the essence of a theoretical problem is extracted into a model, spreadsheet or otherwise.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| --- | --- |
| *ANSWER:* | False |
| *POINTS:* | 1 |

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| 23. In some applications, an analyst might present several alternative solutions from a model, and let the organization choose the best one.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | True |
| *POINTS:* | 1 |

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| 24. A management science model is typically initiated when an organization believes it has a problem.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| --- | --- |
| *ANSWER:* | True |
| *POINTS:* | 1 |

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| 25. Data are often not in the required form, in which case it is the analysts' job to gather the right data and put it into an appropriate format.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | True |
| *POINTS:* | 1 |

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| 26. A good model should achieve the right balance between being too simple and too complex.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | True |
| *POINTS:* | 1 |

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| 27. Verification is typically the most difficult phase of the modeling process, from a mathematical perspective.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
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| *ANSWER:* | False |
| *POINTS:* | 1 |

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| 28. As models become larger and more complex, heuristic solutions are often adequate, even though they are not necessarily optimal solutions.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
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| *ANSWER:* | True |
| *POINTS:* | 1 |

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| 29. The best strategy for implementation of a model is to involve key people in the organization in the project when the model is ready for testing and verification.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
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| *ANSWER:* | False |
| *POINTS:* | 1 |

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| 30. A completed model typically marks the end of the modeling process.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | False |
| *POINTS:* | 1 |

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