1. "IF the infection is primary-bactemia
AND the site of the culture is one of the sterile sites
AND the suspected portal of entry is the gastrointestinal tract
THEN there is suggestive evidence (0.7) that infection is bacteroid"
The above rule may be found in the rule base of which of the following expert systems?

a. PROSPECTOR
b. MOLGEN
c. ARTIFACT
d. EMYCIN
e. XCON

2. I am an expert system, and I perform real-time control tasks and therefore look very much like an agent. Who am I?

a. ARCHON
b. SOPHIE
c. PRICE-STRAT
d. MOLGEN
e. None of the above

3. Based on the number of rules in the rule base, expert systems may be classified as small, medium, and large. A medium system may consist of up to ..... rules in its rule base.

a. 5000
b. 10000
c. 20000
d. 25000
e. 30000

4. For the ES developer to have full control over the type of output code generated he has to use which of these languages?

I. LISP
II. Prolog
III. C
IV. Pascal

a. I & IV only
b. II & IV only
c. II & III only
d. III & IV only
e. I,II, III & IV

5. The practical limitation of many expert systems today is lack of causal ..... That is, the expert systems do not really have an understanding of the underlying causes and effects in a system.

a. Data
b. Stuff
c. Information
d. Material
e. None of the above

6. ."Heuristic" is a Greek word which means "to ....."
a. Guess
b. Assimilate
c. Discover
d. Propound
e. deduce

7. .An expert system is usually designed to have the following general characteristics:
I. high performance
II. adequate response time
III. good reliability
IV. flexibility
a. I, II & III only
b. II,III & IV only
c. I, III & IV only
d. I, II,III & IV
e. III & IV only

8. . A ..... is essentially a meta-explanation that explains the expert system's explanation of its reasoning.
a. Meta-rule
b. Syllogism
c. Warrant
d. Deduction
e. Premise

9. As compared to ES, conventional software development technology deals with knowledge which access and maintain structured data. This statement is .....
a. True
b. False

10. . Quite often in the expert systems literature warnings are given against becoming one's own expert. In fact, one of the most highly touted expert system, and one that is in actual use is the ..... system for the configuration of VAX computers at the DEC. The initial prototype of this system was developed primarily by a knowledge engineer.
a. MYCIN
b. PROSPECTOR
c. MOLGEN
d. XCON
e. ARTIFACT

11. . It is a belief (based on rather substantial empirical evidence) that it takes approximately 15 years to become an expert in a particular domain. This statement is .....
a. True
b. False

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12. Some firms have recorded a certain amount of success in training domain experts to develop small-to-modest sized rule bases, but have had these set backs
    I. The time and funds required to train the domain expert .
    II. The likelihood that any domain expert, so trained, will tend to *solve* any and all problems through expert systems even when far more appropriate, effective, and efficient means exist.
    III. Whether the domain expert will maintain his/her initial commitment to his/her job over the years
    IV. Whether the domain expert will live long enough for him/her to be of enough benefit to the company.
    a. I,II III only
    b. II, III IV only
    c. III,IV only
    d. II,IV only
    e. I,II III, IV

13. Each of these drawbacks above may be alleviated to some degree, by providing access to an in-house or external group of .....
    a. Domain experts
    b. Users
    c. Subject matter experts
    d. Knowledge engineers
    e. Computer programmers

14. The process of developing an expert system has an ..... benefit also since the knowledge of human experts must be put into an explicit form for entering into the computer. The knowledge may then have to be adjusted or re-examined, which improves the quality of the knowledge
    I. Tangible
    II. Direct
    III. Intangible
    IV. Indirect
    a. I & II only
    b. II & III only
    c. III & IV only
    d. II & IV only
    e. I & IV only

16. Expert systems are not good at recognizing when no answer exists or when the problem is outside their area of expertise. We regard this set back as .....
    a. Degradation
    b. Poor performance
    c. Wrong knowledge base
    d. System malfunction
    e. Poor inferencing

17. I am an Expert System. I am designed for the analysis of lung function tests. Who am I?
a. DENDRAL
b. INTERNIST
c. MASCYMA
d. MYCIN
e. PUFF

18. Speech recognition allows a computer to respond to ..... input. The goal of speech recognition research is to simplify the process of interactive communication between human and computers.

a. Verbal
b. Sign
c. Voice
d. Mimick
e. Microphone

19. Because of the great potential for harm, an expert system must be able to justify its conclusions. Thus, a/an ..... facility provides an understandable check of the reasoning.
a. Explanation
b. Confidence
c. Inferencing
d. Scratchpad
e. programming

20. An Expert System may be highly interactive (directly asking the user questions) or ..... where all input comes from another program.
a. In-built
b. off-line
c. embedded
d. functional
e. encapsulated

21. Expert Systems software can be developed for any problem that involves a selection from among a definable group of choices where the decision is based on ..... steps. Any area where a person or group has special expertise needed by others is a possible area for an expert system.
a. Programmable
b. Sequential
c. Algorithmic
d. Logical
e. Ordered

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Human Reasoning involves .....

I. The use of specific rules, a priori rules
II. The use of Heuristics --- "rules of thumb"
III. The use of past experience --- "cases"
IV. The use of "Expectations"

a. I, II & IV only
b. II, III, IV only
c. I, III, IV only
d. III & IV only
e. I,II,III & IV

23. Human cognitive thinking involves the gathering of input data and the manipulation of symbols, the manipulation of symbols take place through mental models. Machine thinking does an admirable emulation of the ..... process.

a. Cognitive
b. Mental
c. Thinking
d. Thought
e. overall

24. Associative thinking consists of the concepts of vertical and lateral thinking. There are two basic thinking styles, vertical and .....

a. Horizontal
b. Lateral
c. Perpendicular
d. Flat
e. Down

25. Expert Systems contain the facts and procedures representing the rule of thumb decision-making processes of an expert. That collection is kept in a ..... that is separate from a control program.

a. Database
b. Knowledge base
c. Workspace
d. Scratchpad
e. Blackboard

26. Natural language processing is divided into two sub-branches: Understanding and ..... Natural language understanding explores methods of computer comprehension of human language stimuli. Natural language ..... is the ability of computer to communicate verbally with a human.

a. Input
b. Talking
c. Silence
d. Output
e. Interpretation

27. ..... is the process of using examples to develop a neural network that associates the input pattern with the correct answer. A set of examples with known outputs is repeatedly fed into the network.

a. Training
b. Networking
c. Positioning
d. Grouping
e. Feeding

28. Knowledge representation is a method used to ..... the knowledge for use by the expert system, and putting the knowledge into rules or cases or other representations.

a. Decode
b. Interpret
c. Explain
d. Encode
e. Decipher

29. Which of the following statements may be found in a production system?

I. IF Saturday OR Sunday THEN gone to cinema
II. IF NOT (Saturday OR Sunday) THEN gone to work
III. IF gone to cinema THEN gone outside
IV. IF gone to work AND NOT at work THEN gone outside

a. I,II & III only
b. II, III only
c. II, III & IV only
d. I,III & IV only
e. I,II,III & IV

30. A true ..... system is a computer application program which could learn from its experience and remember what it learned.

a. natural intelligent
b. transaction processing
c. decision support
d. object-oriented
e. None of the above

31. A computer system whose behavior is determined by rules obtained from a HUMAN EXPERT is called a/an .....

(i) expert system
(ii) rule-based system
(iii) knowledge based system
(iv) intelligent system

a. (i) , (ii) & (iv) only
b. (i) , (iii) & (iv) only
c. (iii) & (iv) only
d. (ii) & (iii) only
e. None of the above

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32. Expert systems can replace human decision makers because the rules abstracted from the human experts can capture everything. This statement is .....

a. True
b. False

33. The expert .....

(i) becomes a component of the overall decision making process, in other wards, a decision support system.
(ii) is also known as the knowledge engineer
(iii) may ask another expert to join him in the making of decisions.

Which of these statements are TRUE?

a. (i) & (iii) only
b. (i) & (ii) only
c. (ii) & (iii) only
d. (i) ,(ii) & (iii)
e. None of the above answers

34. Consider a system that can follow these three statements (rules).

(i) If you are hungry, you should eat.
(ii) If you are not hungry and you have homework, you should do your home work.
(iii) If you are not hungry, and do not have homework, you should go and watch a movie
(iv) If you are not hungry, and do not have homework, and would not like to go to watch a movie, you should sleep

Which of the above statements reflect the fundamental features of all computerized expert systems?

a. (i), (ii) & (iii) only
b. (ii), (iii) & (iv) only
c. (i), (iii) & (iv) only
d. (iii) & (iv) only
e. None of the above

35. Which of these PRINCIPLES govern the four rules stated in Qu. 34?

(i) Someone must determine the objectives of the system, its concepts and the rules that apply to its decisions.
(ii) The rules are general, and do not describe a specific situation.
(iii) In a specific situation, you will have or be able to get the facts you need in order to apply the rules.

a. (i) & (ii) only
b. (i) & (iii) only
c. (ii) & (iii) only
d. (iii), (ii) & (i)
e. None of the above answers

36. Which of the following statements apply to an expert system
    (i) The Domain Expert is also called the Subject Matter Expert
    (ii) The Knowledge Base is also known as the Rule Base.
    (iii) The User is the only one who has an interface to the system.
    a. (i) & (ii) only
    b. (i) & (iii) only
    c. (ii) & (iii) only
    d. (i), (ii) & (iii)
    e. None of the answers above

37. I am an Expert System, a very prominent one. I am designed to identify organic compounds from mass spectrometer data. I am widely used by research chemists. Who am I?
    A. DENDRAL
    B. INTERNIST
    C. MASCYMA
    D. MYCIN
    E. PUFF

38. I am a backward–chaining artificial intelligent language and come in several flavours, the latest being visual. I provide possible integration with other visual programming languages. Who am I?
    a. ECLIPSE
    b. PROLOG
    c. OPS5
    d. CLIPS
    e. JESS

39. The best way to model the expert system architecture is to use a specialized tool. One such tool is the .....
    a. INGRESS
    b. JAVA SERVER PAGES (JSP)
    c. VB.NET
    d. UNIFIED MODELLING LANGUAGE (UML)
    e. OBJECT ORIENTED MODELING (OOM)

40. I am a component of an expert system and contain some of the data of interest to the system. I may be connected to an on-line company and a human user may be considered as my replacement. Who am I?
    a. Database
    b. Inference engine
    c. User
    d. Knowledge base
    e. Working storage

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41. Expertise is a large amount of ..... in a particular domain
a. Data
b. Stuff
c. Information
d. Material
e. None of the above

42. Intelligence allows you to use your ..... that is to apply the expertise.
a. Data
b. Stuff
c. Information
d. Material
e. None of the above

43. The following are three rules found in the rule base of an ES. Which of these rules will be "fired" when a user is trying to find out what to do when "it is cold?"

I. IF it is cold
THEN wear a coat
II. IF it is cold
THEN stay at home
III. IF it is cold
THEN turn on the heat

a. I only
b. I & II only
c. II & III only
d. I &III only
e. None of the above

44. In the case of a medical diagnosis system, which of these people may be considered to be end-users of the system?

I. The Doctor
II. The Nurse
III. An individual who has a complaint that they wish to diagnose.
IV. The Midwife

a. I & II only
b. II & III only
c. I & III only
d. III & IV only
e. I & IV only

45. The following components may form the "core" of an expert system.

I. Inference engine
II. Explanation system
III. Knowledge base
IV. User interface

a. I, II, III only
b. II, III & IV only
c. I, III & IV only
d. I & II only
e. None of the above

46. The knowledge-base editor is usually used by these
I. An End-user
II. The Domain expert
III. The Knowledge engineer
IV. An Intruder to the system
a. I & II only
b. II & III only
c. I, II & III only
d. II, III & IV only
e. I, II, III & IV

47. Using rule based representation may have the following advantages over other forms of knowledge representation.
I. Rules represent a particularly natural mode of knowledge representation. Consequently, the time required to learn how to develop rule bases is minimized.
II. The learning curve for rule-based expert systems is much shallow than for any alternative mode of representation.
III. Rules are transparent, and are certainly far more transparent than the modes of knowledge representation employed by its two major competitors.
IV. Rule bases can be relatively easily modified. In particular, additions, deletions, and revisions to rule bases are relatively straightforward processes.
a. I,II & III only
b. II,III & IV only
c. I,III & IV only
d. I,II,III & IV
e. III & IV only

49. For some problems in ES, there simply may not be an expert. One example is that of .....
a. investing in the stock market.
b. lottery forcasting
c. teaching
d. dancing
e. driving a sport car

50. During ES development, the domain should be relatively ..... In particular. dramatic changes over the period of the development effort should not be foreseen.
a. Strong
b. True
c. Acceptable
d. Known
e. None of the above

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51. For an ideal ES development, two knowledge engineers should be used, where at least one of these is experienced in the development and implementation of successful expert systems. This statement is .....

a. True
b. False

52. The knowledge engineer may be guided by the following principles in the selection of an expert

I. Select a domain expert whose performance is generally unacknowledged to be *above and beyond* that of most others performing the same task.
II. Select an expert with a successful *track record* over a period of time.
III. Select an expert who is both willing and able to communicate personal knowledge and who is relatively articulate in doing so.
IV. Select an expert who is both willing and able to devote the time necessary to support the development effort.

a. I,II & III only
b. II,III & IV only
c. I,II,III,& IV
d. III & IV only
e. II, IV only

53. Prior to meeting the domain expert(s), the knowledge engineer(s) should make an all out effort to familiarize themselves with the .....

I. The Problem
II. the domain
III. the terminology used within the domain
IV. some programming skills

a. I, II& III only
b. II, III& IV only
c. III & IV only
d. I,II & III only
e. I,II,III & IV

54. During a follow-up meeting with the domain expert(s) the knowledge engineer(s) should

I. Attempt to minimize the possibility of interruptions. Set aside meeting times during which the expert can devote his or her full attention to the effort.
II. Establish a formal agenda for each meeting.
III. Reestablish goals and objectives for each meeting.
IV. Once a prototype expert system has been developed, establish access to the supporting software and hardware (e.g., for prototype demonstrations and their critique

a. I,II,III only
b. II,III, & IV only
c. I,III,IV only
d. II& IV only
e. I,II&IV only

55. Which of the following statements about expert systems are true?

I. ES take heir roots in Cognitive Science
II. ES were the first successful applications of AI to real–world
III. In business, ES allow many companies to save $ millions
IV. Expert Systems (ES) are computer programs that try to replicate the knowledge and skills of human experts in some area.

a. I , II& III only
b. II , III& IV only
c. III & IV only
d. I & IV only
e. I,II,III & IV

56. In 1969 ..... which was developed by Feigenbaum and two others, was the first system that showed the importance of domain–specific knowledge (expertise).

a. DENDRAL
b. INTERNIST
c. MASCYMA
d. MYCIN
e. PUFF

57. The expert system known as R1 (aka XCON) developed by McDermott in 1982 was the first commercial ES and by 1986 it was saving ..... $40 millions p.a.).

a. IBM
b. ORACLE
c. DEC
d. VAX
e. HP

58. Let's face it, unlike computers, humans are generally not very good in dealing with numbers and precise computations. This statement is .....

a. True
b. False

59. Which of these are experts?

I. A doctor
II. Chess grand-master
III. Financial wizard
IV. A Chef

a. I , II& IV only
b. III & IV only
c. II , III& IV only
d. I & IV only
e. None of the above

60. Which of the following statements about EXPERTISE are true?

I. Expertise and intelligence are not the same things (although they are related)
II. Expertise is a large amount of knowledge (in some domain).
III. Expertise is easily recalled.
IV. Expertise enables you to find solutions much faster.

a. I , II&III only
b. II, III&IV only
c. III & IV only
d. I,,II,III & IV
e. None of the above

61. I am basically a graphical depiction of knowledge that may show hierarchical relationships between objects. Who am I?

a. First Order Logic
b. Object Attribute Value (OAV)
c. Semantic Nets
d. Predicate Calculus
e. Production Rules

62. The sentence "**Accra is the capital of Ghana**" is a proposition.

a. True
b. False
c. Not Sure
d. None of the above

63. The knowledge-base editor allows the user to edit the information that is contained specifically in the .....

a. Database
b. Inference engine
c. Knowledge base
d. Domain
e. Expert system

64. The shell is a general toolkit that can be used to build a number of different expert systems, depending on which knowledge base is added to the shell
The following are ALL examples of shells except .....
a. CLIPS
b. OPS5
c. ART
d. JESS
e. None of the above

65. In all cases, the knowledge engineer will have the freedom to choose the most appropriate expert system shell for the task at hand. This statement is .....
a. True
b. False
c. Not Sure
d. Don't Know
e. None of the above

66. CLIPS provides a language for expressing rules and mainly uses forward chaining to derive conclusions from a set of facts and rules. The notation used by CLIPS is similar to that of .....
a. PROLOG
b. ECLIPSE
c. LISP
d. ART
e. JESS

67. The parts of the expert system that do not contain domain-specific or case-specific information are contained within the .....
a. Database
b. Knowledge base
c. User interface
d. Shell
e. Workspace

68. Transaction Processing Systems and Decision Support Systems work along the same basic principles of analyzing analog and digital data.
a. True
b. False
c. Not sure
d. None of the above

69. An Expert System task must involve only processing information and cognitive skills. The above assertion comes under ..... criteria.
a. Problem-related
b. Task-related
c. Expert related
d. Domain related
e. Inference related

70. A typical medical diagnosis system will have a ..... to express the concept that some conclusions may be more likely than others.
   a. Confidence Interval
   b. Database engine
   c. Inference engine
   d. Human interface
   e. Rules analyzer

71. In developing expert systems, substantial amount of time is devoted to the development of the .....
   a. Knowledge base
   b. User I/O interface
   c. Staff to maintain the system
   d. Program codes
   e. Platform

72. The Knowledge engineer's interface to an expert system is mainly use for
   (i) Inputting the rules into the ES
   (ii) Debugging the output
   (iii) Keeping track of rule traces
   The true statements from the above are .....
   a. (i) & (ii) only
   b. (ii) & (iii) only
   c. (i) & (iii) only
   d. (i), (ii) & (iii)
   e. None of the above answers

73. I am the interface through which a user can find out where they are in their reasoning process. Who am I?
   a. Knowledge Engineer interface
   b. User Input/Output interface
   c. Domain Interface
   d. Scratch pad interface
   e. Explanation Interface

74. . Some of the reasons for using expert systems are it helps.....
   I. In the preservation of knowledge
   II. If under time and pressure
   III. Build up corporate memory of an establishment
   IV. In the training of old employees
   a. I ,II &III only
   b. II,III & IV only
   c. III & IV only
   d. II & IV only
   e. I,II,III & IV only

75. When a human expert is ..... sure, he/she hedges the answer to make it appear that it is fully correct. When an expert is used, rules can be chained together.

a. 50%
b. 60%
c. 70%
d. 80%
e. 90%

76. Which is the ODD one out of these?

a. MYCIN
b. INTERNIST
c. WILLARD
d. CADUCEUS
e. DENDRAL

77. . The programming of a causal model of the human body would be an enormous task and, even if successful, the ..... of the system would probably be extremely slow because of all the information the system would have to process.

a. Response time
b. Throughput
c. Turnaround time
d. Performance
e. Efficiency

78. Robotics is concerned with engineering attempts to duplicate human ..... attributes. Robots are electromechanical machines that are programmable and perform manipulative tasks. These task range from delicate to heavy-duty.

a. Programmable
b. Delicate
c. Physical
d. Chemical
e. Work

79. Heuristics are not guaranteed to succeed in the same way that an algorithm is a guaranteed solution to a problem. Instead, heuristics are rules of thumb or ..... knowledge gained from experience that may aid in the solution but are not guaranteed to work.

a. Research
b. Historical
c. Empirical
d. Scientific
e. Diverse

80. A statement such as "The patient has a tetanus infection" in a medical diagnostic expert system may be said to be a/an ..... In a real problem there may be multiple of it just as a patient may have several diseases at once.

a. Syllogism
b. Fallacy
c. Premises
d. Hypothesis
e. Assertion

81. One can talk about " meta-rules" or "meta-data". The prefix "meta" means

I. Above
II. Before
III. About
IV. Beyond

a. I & II only
b. II & III only
c. III & IV only
d. I & IV only
e. II & IV only

82. An expert system is usually designed to have the following general characteristics:

I. High performance.
II. Adequate response time.
III. Good reliability.
IV. Understandable. .

a. I ,II & III only
b. II, III & IV only
c. I, III & IV only
d. I,II,III,IV
e. III & IV only

83. Some of the advantages of the use of an expert system are

I. Increased productivity
II. Availability of expertise
III. Can be used in dangerous environments
IV. Effective only in specific areas (areas of expertise)

a. I & II only
b. II & III only
c. III & IV only
d. I,II & IV only
e. I & IV only