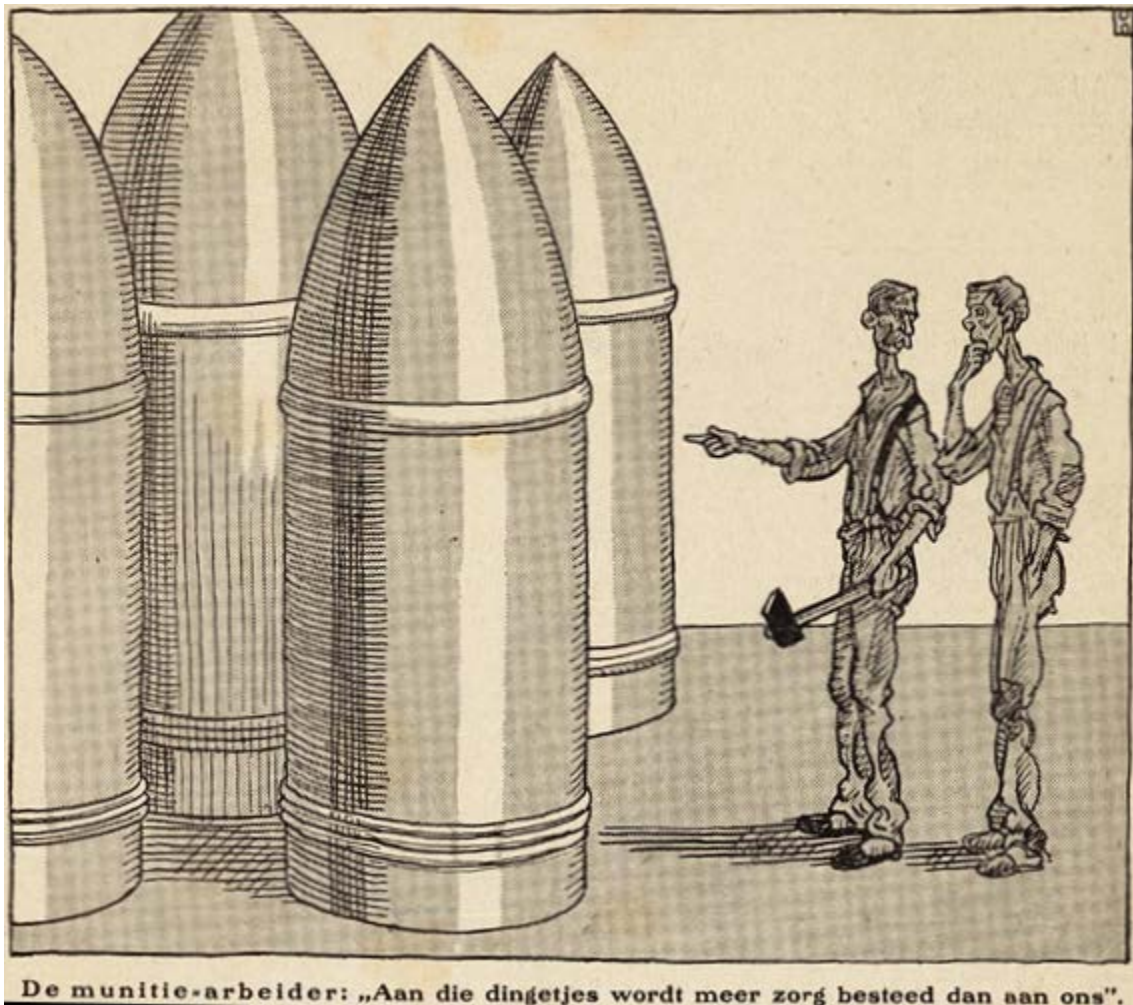


2016 Exam

MULTIPLE CHOICE QUESTIONS

1. Below you see a cartoon by Dutch cartoonist Albert Hahn, published 1916. Translation text: "The munition worker: "These little things are treated with more care than we are". Which typical Age of Crisis characteristic does the cartoon refer to?
 - A. The skills workers needed in production were increasing.
 - B. The use of weapons was more important than their production.
 - C. Weapon production was more important than worker conditions.
 - D. Workers received low payment for their work.

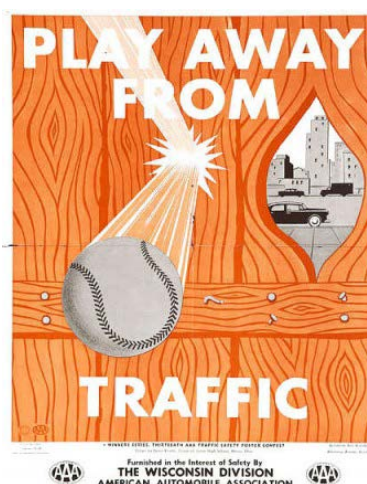


2. The discipline of civil engineering was established in the Age of Promise. Before that:
 - A. there had not been any engineers
 - B. there had only been industrial engineers
 - C. there had only been military engineers
 - D. there had only been research engineers

3. According to the USEbase history reader, *Engineers in a Changing World*, what is the typical technology built by the minimal state during the Age of Promise?
 - A. Canals and waterways
 - B. Hospitals
 - C. Housing
 - D. Schools and orphanages
4. Which of the following elements does NOT belong to F.W. Taylor's dream *Principles of Scientific Management* (1911)?
 - A. Ending inequality between male and female workers
 - B. Ending labor conflicts between managers and workers
 - C. Increasing productivity for entrepreneurs
 - D. Increasing salaries for workers
5. In the Age of Promise, Thomas Edison invented the kinetoscope, an early film camera. Edison believed his invention would be used in the business community. However, it failed to find a market, because:
 - A. company workers as 'professional users', protested successfully against the introduction of this technology.
 - B. Edison's 'projected user' did not correspond to the market of 'real users'.
 - C. the technology did not work properly.
 - D. the technology was too complex for 'user-consumers'.
6. Below you see three Road Safety poster from Germany (1930), United States (1950s) and Great-Brittain (1966).

Which of the three posters best corresponds with the changing responsibility of users in mobility during the Age of Crisis?

 - A. Poster 1 – "Kraftfahrer! Obacht!" (Motorist! Be careful!)
 - B. Poster 2 – "Play away from Traffic"
 - C. Poster 3 – "Make Sure They're Safe"



7. During the World Wars, many leading scientists and engineers (such as Nobel Prize winners Fritz Haber and Victor Grignard):
 - A. refused to work for the military, because technology should be politically neutral.
 - B. refused to work for the military, because this would turn technology into a means of killing, and turn their technological ambition into a nightmare.
 - C. worked for the military, because military employers offered higher wages than civil employers.
 - D. worked for the military, because technology would shorten wars and reduce human suffering.
8. Today, user communities make huge contributions to the development of apps and games. From an innovation perspective, this type of user activity corresponds most closely to:
 - A. The role of users in developing the telephone in the Age of Promise.
 - B. The role of users in developing wind turbines in the Age of Promise.
 - C. The role of users in developing worker-friendly textile industries in the Age of Promise.
 - D. The role of users in urban planning in the Age of Promise.
9. In the Age of Technocracy, engineering education increasingly focused on:
 - A. establishing the engineering community
 - B. practical lessons
 - C. technical science theory
 - D. a mix of the above
10. A few years ago, the Philips research laboratory complex Natlab was transformed into the High Tech Campus Eindhoven, "an R&D ecosystem (...) with more than 100 companies and institutions, comprising over 8,000 R&D-staff and entrepreneurs, and 50 nationalities." The High Tech Campus is an example of:
 - A. open innovation
 - B. participation-by-delegation
 - C. participation-by-invitation
 - D. user-centered design
11. Read the following quote from *Ill Fares the Land* from the British historian Tony Judt, 2010:

"In [railway stations] the private sector has its place: there is no reason why newsstands or coffee bars should be run by the state. (...) But you cannot run trains competitively. Railways (...) are at one and the same time an economic activity and an essential public good. (...) If we abandon the railways, or hand them over to the private sector and evade collective responsibility for their fate, we shall have lost a valuable practical asset whose replacement or recovery would be intolerably expensive."

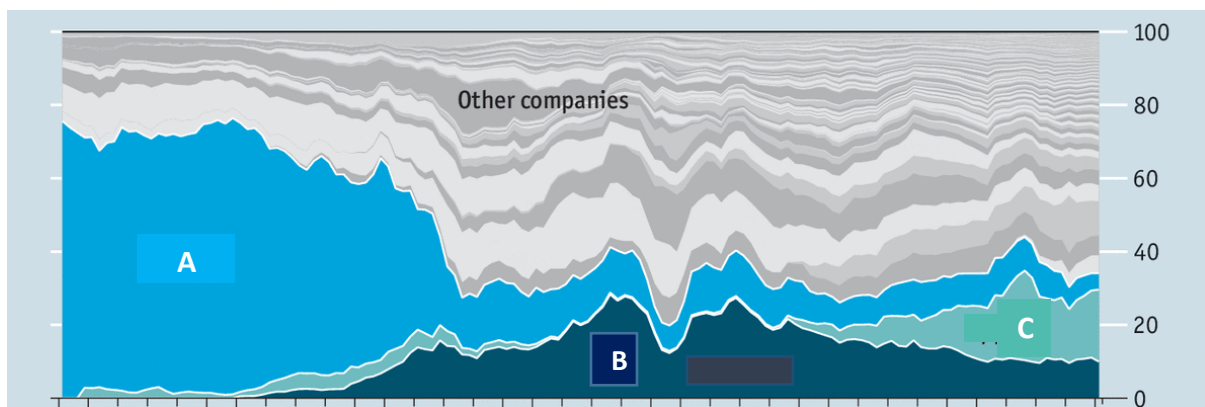
This quote can best be interpreted as criticism of which form of participation?

 - A. open innovation
 - B. participation-by-delegation
 - C. participation-by-invitation
 - D. user-centered design

12. 'Sexting' means sending and receiving sexually explicit messages, primarily between mobile phones. The most popular applications for this use are Snapchat and WhatsApp. In some cases young people blackmail their sexual partners and former partners by threatening to release private images of them.

In such as case blackmailing by 'Sexting' can be seen as:

- A. A problem of user-centered design, in which businesses work together with users.
 - B. An unintended consequence of smartphone possibilities.
 - C. Opportunity seeking entrepreneurs of Snapchat and WhatsApp, that should be held accountable.
 - D. The problem of privacy infringement of big data technologies in which the state (society) should take action.
13. Underneath, you see a graph representing US technology sector market value.
x-axis: Timeline we have removed the years.
y-axis: Share of 106 technological companies in total market value of US technology sector (in%) (Company A, Company B, etc.)
 The graph shows a market structure change from dominance of one company A to a structure of many smaller firms. It depicts a phase of considerable change. To which period does it correspond?
- A. The Age of Crisis
 - B. The Age of Participation
 - C. The Age of Promise
 - D. The Age of Technocracy



14. In 1995, the Pugwash Conferences on Science and World Affairs were awarded the Nobel Peace Prize. In this international non-governmental organization, founded during the Cold War, scientists from East and West worked together on nuclear disarmament. In USE base terms, this is an example of:
- A. Citizen-users addressing USE problems in engineering through international collaboration.
 - B. Enterprise engineers addressing USE problems in engineering through international collaboration.
 - C. Experts addressing USE problems in engineering through international collaboration.
 - D. User-activist, protesting against the peaceful application of nuclear energy.

15. A few years ago, the president of the AAAS (American Association for the Advancement of Science), one of the world's largest scientific societies, pleaded for more investment in science and technology to solve today's problems. This argument is an example of:
- A. Participation by delegation
 - B. Participation by invitation
 - C. Technocratic thinking – the linear model
 - D. Technocratic thinking – utilitarianism
16. "Many great engineering works had already been planned, but were cancelled due to public protests." This observation is most true for:
- A. The Age of Crisis
 - B. The Age of Participation
 - C. The Age of Promise
 - D. The Age of Technocracy
17. The public esteem of engineers decreased in:
- A. The Age of Crisis and the Age of Participation
 - B. The Age of Promise and the Age of Participation
 - C. The Age of Promise and the Age of Technocracy
 - D. The Age of Technocracy and the Age of Participation
18. Which of the following elements is *necessary* in order for a person to be morally responsible for a bad consequence of his or her action?
- A. The individual chose to do nothing, and his or her inaction led to the bad consequence.
 - B. The individual knew, or should have known, that the bad consequence was a possible outcome of his or her conduct.
 - C. The individual violated an advisory code of conduct.
 - D. The individual was forced to act in such a way that the consequence was brought about.
19. Which of the following statements is a good definition of *Corporate Social Responsibility*?
- A. The responsibility of companies to fulfill their obligations according to the spirit of the law, and not just the letter of the law.
 - B. The responsibility of companies to maximize monetary value for shareholders and also for society.
 - C. The responsibility of companies to provide society with superior products, services, and innovations.
 - D. The responsibility of companies towards stakeholders and to society at large, beyond merely obeying the law and serving shareholders.

20. Suppose that for fun, Janssen purposely hacks information from the email account of a colleague without permission. Which of the following conditions of passive moral responsibility is Janssen *missing* in such a case?
- A. The causal contribution condition
 - B. The foreseeability condition
 - C. The wrongdoing condition
 - D. None of the above: all of the conditions of passive moral responsibility are met
21. Which of the following values all appear frequently in professional codes of conduct?
- A. Happiness, integrity, and loyalty
 - B. Integrity, loyalty, and confidentiality
 - C. Integrity, profitability, and confidentiality
 - D. Loyalty, anonymity, and confidentiality
22. Which of the following is a correct statement about the concept of a *profession*?
- A. A profession requires that people who meet the standards of the profession have a *monopoly* on doing certain kinds of work.
 - B. The general public must have the right to assess whether professional work has been done competently, without needing to consult with other professional peers.
 - C. The profession must have its own normative standards, that are distinct from ethical standards.
 - D. There was no development of the concept of an engineering profession until the early Twentieth Century during the Age of Promise.
23. Consider the following statement: "If engineers disclose confidential information concerning the business affairs or technical processes of any present or former client or employer, they may be sanctioned by losing their job or their license to practice."
- This statement is an example of:
- A. a corporate code of conduct
 - B. a disciplinary code of conduct
 - C. an advisory code of conduct
 - D. an aspirational code of conduct
24. One of the main ethical theories discussed in USE Base holds that we should focus primarily on happiness, and that it is impossible to formulate a precise rule for judging moral behavior. Which ethical theory is this?
- A. Bentham's utilitarianism
 - B. Kantianism
 - C. Mill's utilitarianism
 - D. Virtue Ethics

25. *Question removed from exam after analysis*
26. In order to respond to an important criticism of Kant's theory, William David Ross distinguishes between *prima facie norms* and *self-evident norms*. Which criticism does this distinction help respond to?
- A. "Kant does not pay any attention to the rationality of ethics and assumes too easily that moral action is a matter of intuitive feeling."
 - B. "Kant has no solution for the fact that two moral norms, both of which can be derived from the categorical imperative, may come into conflict with each other. According to Kant, they must both be followed, since the categorical imperative is an absolute duty."
 - C. "Kant incorrectly maintains that people must go through a process of moral reasoning before they act. Some moral principles are self-evident and we can follow those without having to reflect or reason."
 - D. "Kant pays no attention to the question how the acting person can shape him or herself into a fully-fledged moral individual."
27. Which of the following is one of the main disadvantages of the *thresholds* approach to the analysis of values in technology?
- A. If all you need to do is meet a value threshold, then you might be achieving the value to a lesser degree than is realistically possible.
 - B. It attempts to express all relevant values in monetary terms.
 - C. It requires too much individual judgment by the designer.
 - D. It treats values as commensurable with one another.
28. *Question removed from exam after analysis*

29. Which of the following statements correctly describes the relation between utilitarianism and incommensurability?
- A. According to some forms of utilitarianism that use an ordinal scale of value, all the different values that are important to utilitarianism are commensurable.
 - B. Utilitarianism implies that all values are commensurable with one another.
 - C. Utilitarianism implies that all values are incommensurable with one another.
 - D. Utilitarianism implies that risks are incommensurable with known future harms.
30. Which of the following is the best definition of risk assessment?
- A. A systematic study linking risk agents with possible unwanted consequences, expressed quantitatively.
 - B. The application of legal criteria to establish maximum acceptable risk for a given area of technology.
 - C. The evaluation of risk using ethical criteria.
 - D. The identification of ways in which different stakeholders perceive a given risk.
31. Is it ethically more acceptable to impose a risk on someone if that person has given his or her informed consent? Which of the following is a well-grounded response from the *Kantian* perspective?
- A. No; in practice, the negative impact of any risk remains the same regardless of whether one has consented to it or not.
 - B. No; it is unlikely that a person can rationally consent to being put at risk.
 - C. Yes; by requiring informed consent, you ensure that someone is treated not only as a means, but also as an end.
 - D. Yes; if a person gives her informed consent to a risky course of action, the pain or suffering incurred does not count when evaluating the outcome.
32. Which of the following is a plausible utilitarian objection to legal limits on risk?
- A. It can be very expensive to reduce risk to comply with a legal limit, and these resources can often be used to reduce risk more effectively somewhere else.
 - B. Legal limits are based on what risks are perceived by regulators, whereas what matters is the actual level of risks according to experts.
 - C. Legal limits on risk only affect personal risks, whereas collective risks are more important for overall utility.
 - D. Some people voluntarily choose to have a higher level of risk than what is legally allowed, and this is an important expression of their autonomy.

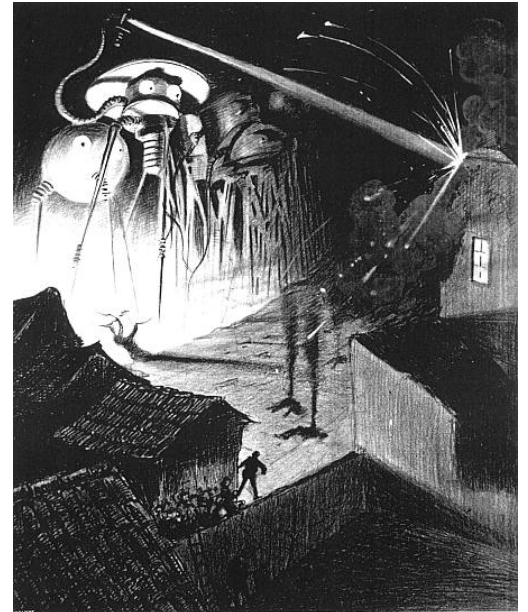
33. Which of the following statements best defines the *problem of many hands*?
- A. It is a practical problem in complex organizations, in which we cannot prove who was responsible for what, after a bad event happens.
 - B. It is a situation in which different people within a group are responsible for different parts of the outcome caused by the group.
 - C. It is a situation in which several different individuals collectively cause a given outcome, but no single individual caused the outcome by themselves.
 - D. It is a situation in which the collective can reasonably be held morally responsible for an outcome, but none of the individuals can be held responsible for that outcome.
34. In the design of the CitiCorp building, there was a structural deficiency that led to a dangerously vulnerable building, in which high winds could lead to a total collapse. The structural deficiency was caused when the contractor changed from welded to bolted joints, and this was approved without the consultation of the chief engineer. If we assume the hierarchical responsibility model, who should be blamed in this situation?
- A. Each individual should be blamed according to their contribution to the problem.
 - B. The contractor should be blamed.
 - C. The top level of personnel at the organization in charge should be blamed, assuming there is such a level.
 - D. The whole collective, consisting of the contractor, the approver, and the chief engineer, should be blamed.
35. Suppose individual cars emit concentrations of greenhouse gases that are — considered in isolation — completely reasonable and harmless, whereas all cars together cause a significant harm to future generations. Is this an example of the problem of many hands, and why or why not?
- A. No, because neither individual drivers nor the collective can reasonably be held morally responsible for harms to future generations.
 - B. No, because the individual drivers satisfy the conditions on moral responsibility, and the collective does as well.
 - C. Yes, because both individual drivers and the collective can reasonably be held morally responsible for causing harm to future generations.
 - D. Yes, because the individual drivers do not satisfy the conditions on moral responsibility, whereas the collective can reasonably be held morally responsible.

STATEMENTS

36. According to the USEbase history reader, *Engineers in a Changing World*, the Belgian chemist Leo Baekeland, founder of the General Bakelite Company, is a typical example of an opportunity-seeking entrepreneur.

A. False
B. True

37. On the night before Halloween 1938, CBS Radio broadcast H.G. Wells' classic *The War of the Worlds* (written 1895-1897) performed by the Mercury Theater on the Air. Most listeners understood the broadcast was fiction, but perhaps over a million Americans plunged into panic, convinced that the United States were being invaded by Martians making use large tripod fighting machines equipped with heat-rays and poisonous gas (see figure). The event still counts as one of the biggest mass hysteria events in American history.



Please consider the following interpretation of the broadcast of *The War of the Worlds* and indicate if these are interpretations are true or false.

Interpretation: The broadcast resonated well with science fiction works appearing at the time, some of which expressed the fear of human enslavement by modern technology. The threat of war in Europe and the impact of the Great Depression provided the context in which the mass hysteria could take place.

A. False
B. True

38. Cornelis Lely (1854-1929), known for the construction of the Afsluitdijk dam and the introduction of the Dutch Worker Accident Insurance Act, can be classified as a liberal-progressive engineer.

A. False
B. True

39. DSM's development (and failure) of Lysine is an illustration of a technocratic innovation process.

A. False
B. True

40. Professional responsibility has been an important topic on the agenda of the United States' *National Society for Professional Engineers*. In the campaign "Are YOU a concerned engineer?", it called upon its membership to assume a role of leadership in, amongst other things, environmental issues or run the risk of being harshly criticized.
This campaign is typical for the changeover from the Age of Crisis to the Age of Technocracy, when the assumption was that engineers, through their scientific training and attitude, would best be able to come up with optimal solutions to environmental problems.
A. False
B. True
41. User-centered design is an example of a participatory way to organize business innovation.
A. False
B. True
42. In activist movements that protested against technocratic projects (such as the anti-nuclear movement) engineers were absent; citizens protested against engineers.
A. False
B. True
43. In science fiction in The Age of Crisis, engineers were mostly regarded as heroes.
A. False
B. True
44. In the 1990s and 2000s, engineers took the lead in the development policies of rapidly industrializing countries such as China, Korea, Indonesia and Brazil. This is an example of technocracy.
A. False
B. True
45. Active responsibility is linked to an active awareness of one's role and a desire to produce the best outcomes in present and future activities.
A. False
B. True
46. An *advisory* code of conduct has the main purpose of expressing the moral values of a profession or company to the outside world.
A. False
B. True
47. *Question removed from exam after analysis*

48. *Question removed from exam after analysis*
49. *Question removed from exam after analysis*
50. In the case of the design of the Storm Surge Barrier in the Eastern Scheldt, the development of the technology can be described as taking place according to a linear model.
A. False
B. True
51. Design criteria are used to develop options, and they are also used to compare and choose between different concept designs.
A. False
B. True
52. Ford decided that the risk of extra deaths due to a faulty design in its Pinto model was high enough that the design had to be fixed, because the costs of the deaths were too high in its risk-cost-benefit analysis.
A. False
B. True
53. For utilitarianism, the only reason we ascribe responsibility to people is to avoid harm and to stimulate desirable outcomes.
A. False
B. True
54. In the law, backward-looking responsibility is called liability, and is often linked to the obligation to pay a fine or compensate for damages.
A. False
B. True

CASUS

Please read the press release of toy company VTech about the Baby Amaze product (see picture) and answer the questions:



New York – Today VTech announces the expansion of Baby Amaze™, its innovative baby doll line that combines classic role-play with technology and developmental learning to offer a unique, nurturing play experience. New products join the collection, which was launched in 2015 with three lead items. The line is on display at the 2016 North American International Toy Fair®.

"VTech is always looking for ways to combine traditional play with its innovative technology and a focus on learning," said William To, President, VTech Electronics North America. "Baby Amaze is a great opportunity to invigorate [= energize - in Dutch: versterken] the nurturing dolls category, offering rich, educational content and popular play patterns unmatched by competitors, at a range of affordable prices."

The dolls teach nurturing concepts, a feature parents value to help their children learn empathy and affection. The dolls also promote developmental milestones, which foster independent play, motor skills, imagination and language development among children ages 1 to 5 years. The innovative technology, educational content and baby doll role-play combine into one amazing doll line that gives parents a remarkable value and children a comprehensive, unmatched play experience.

Vtech Website - Press Release 15 Feb 2016 (www.vtech.com/en/press_release/2016/vtech-expands-innovative-baby-amaze-doll-line/)

55. The Press Release talks about Children.

In terms of the USEbase history reader, *Engineers in a Changing World*, "children" should be understood as:

- A. Non users
- B. Professional users
- C. Projected users
- D. User-tinkerers

56. The Press Release talks about "Parents". In terms of the USEbase history reader, *Engineers in a Changing World*, these should be understood as:
- A. Consumers
 - B. Non users
 - C. Professional users
 - D. Projected users
57. What is the best description of the Baby Amaze doll in terms of the USEbase history reader, *Engineers in a Changing World*:
- A. A participatory design of company VTech and education organizations
 - B. A science based business opportunity of toy company VTech
 - C. A technocratic design derived from classic role-play and developmental learning
 - D. A technology that competes with the schooling system and its societal goals
58. *Question removed from exam after analysis*
59. Which of the ethical theories studied in this course, when used to evaluate the Baby Amaze doll, would focus primarily on how it influences the relationship between the user who purchases the toy, and the end user who plays with it?
- A. Aristotelian virtue ethics
 - B. Care ethics
 - C. Kantian ethics
 - D. Mill's utilitarianism

60. Which of the following forms of argumentation about the Baby Amaze doll would best fit with the perspective of Bentham's utilitarianism?
- A. If the makers act in such a way that the motive for making the doll is one that everybody could adopt as a motive, then Baby Amaze is morally permissible.
 - B. So long as the doll does not harm other people in any way, the company should be free to develop and sell it according to the No Harm Principle.
 - C. The degree to which the doll is good is determined by how it encourages the development of intellectual and moral virtues.
 - D. The effects of the doll on children are more important than the effects on parents and people working at Vtech, because children on average have longer lives ahead of them and a greater capacity to experience joy.

*** END ***