

Last Name: _____ First Name _____ Network-ID _____

Writing Lab Section: _____ Writing Lab TA Name: _____

Turn off your cell phone and put it out of sight.

Calculators cannot be used.

This is a closed book exam. You have 180 minutes to complete it.

1. Use a #2 pencil. Do not use a mechanical pencil or pen. Darken each circle completely, but stay within the boundary. If you decide to change an answer, erase vigorously; the scanner sometimes registers incompletely erased marks as intended answers; this can adversely affect your grade. Light marks or marks extending outside the circle may be read improperly by the scanner. Be especially careful that your mark covers the **center** of its circle.
2. **This Exam Booklet is Version A.** Mark the **A** circle in the **TEST FORM** box near the middle of your answer sheet. **DO THIS NOW!**
3. Print your **NETWORK ID** in the designated spaces at the *right* side of the answer sheet, starting in the left most column, then **mark the corresponding circle** below each character. If there is a letter "o" in your NetID, be sure to mark the "o" circle and not the circle for the digit zero. If and only if there is a hyphen "-" in your NetID, mark the hyphen circle at the bottom of the column. When you have finished marking the circles corresponding to your NetID, check particularly that you have not marked two circles in any one of the columns.
4. Print **YOUR LAST NAME** in the designated spaces at the *left* side of the answer sheet, then mark the corresponding circle below each letter. Do the same for your **FIRST NAME INITIAL**.
5. Do not write in or mark the circles in any of the other boxes (STUDENT NUMBER, DATE, SECTION, SCORES, SPECIAL CODE).
6. Sign your name (**DO NOT PRINT**) on the **STUDENT SIGNATURE line**.
7. On the **SECTION line**, print your **Writing Lab Section**. You need not fill in the COURSE or INSTRUCTOR lines.

Before starting work, check to make sure that your test booklet is complete. You should have 19 numbered pages.

Academic Integrity—Giving assistance to or receiving assistance from another student or using unauthorized materials during a University Examination can be grounds for disciplinary action, up to and including dismissal from the University.

Exam Grading Policy—

The exam is composed of 120 questions, there are 5 different types of questions.

Rules for different problem types and partial credit:

A) Problems with multiple correct answer: *multiple-choice-five (or four)-answer questions, each worth six (or four) points.*

There will be no partial credit for problems with multiple correct answers. **These problems are marked as multiple correct answer problems and all correct answers need to be marked correctly on the answer sheet in order to obtain credit.**

B) MC5: *multiple-choice-five-answer questions, each worth 6 points.*
Partial credit will be granted as follows.

- (a) If you mark only one answer and it is the correct answer, you earn **6** points.
- (b) If you mark *two* answers, one of which is the correct answer, you earn **3** points.
- (c) If you mark *three* answers, one of which is the correct answer, you earn **2** points.
- (d) If you mark no answers or the wrong answer, or more than *three*, you earn **0** points.

C) MC4: *multiple-choice-four-answer questions, each worth 4 points.*
Partial credit will be granted as follows.

- (a) If you mark only one answer and it is the correct answer, you earn **4** points.
- (b) If you mark *two* answers, one of which is the correct answer, you earn **2** points.
- (c) If you mark a wrong answer or no answers or more than two, you earn **0** points.

D) MC3: *multiple-choice-three-answer questions, each worth 3 points.*
No partial credit.

- (a) If you mark only one answer and it is the correct answer, you earn **3** points.
- (b) If you mark a wrong answer or no answers, you earn **0** points.

E) MC2: *multiple-choice-two-answer questions, each worth 2 points.*
No partial credit.

- (a) If you mark only one answer and it is the correct answer, you earn **2** points.
- (b) If you mark the wrong answer or neither answer, you earn **0** points

A. Nuclear Physics

1) Some fissile nuclides *are not* nuclear explosive

- A. True
- B. False

2) What fundamental force provides the energy released in chemical reactions?

- A. Weak nuclear force
- B. Strong nuclear force
- C. Electromagnetic force
- D. Gravitational force

3) What fundamental force must be overcome in fusion but not fission?

- A. Weak nuclear force
- B. Strong nuclear force
- C. Electromagnetic force
- D. Gravitational force

4) What Fundamental force provides the mechanism for radioactivity?

- A. Weak nuclear force
- B. Electromagnetic force
- C. Gravitational force

5) Nuclear binding energies are how many times larger than atomic binding energies?

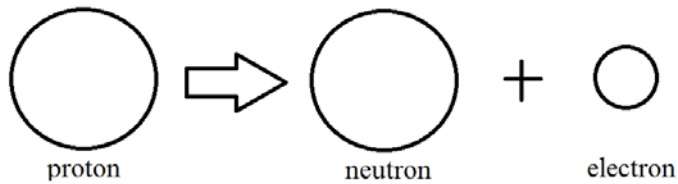
- | | |
|------------|--------------|
| A. 100 | C. 1,000 |
| B. 100,000 | D. 1,000,000 |

6) During alpha decay, a parent nucleus releases what?

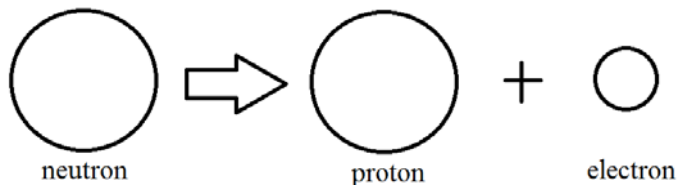
- A. Li-7 nucleus
- B. He-4 nucleus
- C. Deuterium nucleus
- D. Proton
- E. Positron

7) Which process best describes beta minus decay?

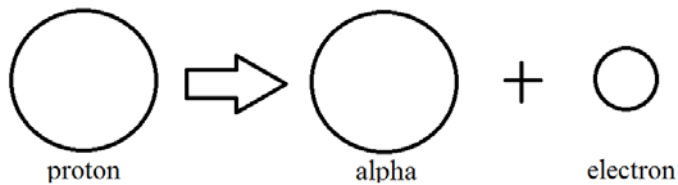
A. A proton decays into a neutron and electron



B. A neutron decays into a proton and electron



C. A proton decays into an alpha particle and electron



8) A nuclide that can become fissile by absorbing a neutron is:

- A. Fissile
- B. Fissionable but not fissile
- C. Fertile

9) A nuclide that fissions only with neutrons of sufficient energy is:

- A. Fissile
- B. Fissionable but not fissile
- C. Fertile

10) A nuclide that fissions after absorbing a neutron is:

- A. Fissile
- B. fissionable but not fissile
- C. Fertile

B. Nuclear weapons

11) The minimum amount of highly enriched Plutonium needed to make a nuclear bomb has about the same volume as:

- A. A marble
- B. A softball
- C. A basketball
- D. A large beach ball
- E. A pea

12-16) Match the following:

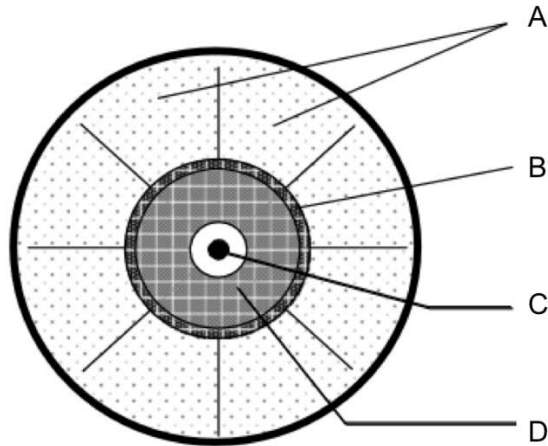
The following table will be used for questions 12-16. The table lists 5 categories of nuclear explosive materials. Each row in the table corresponds to one question, 12-16. The 1st column lists for each questions the name of category of nuclear explosive materials. The 2nd column contains the required percentage of the material for that category. On your answer sheet bubble for each question the matching answer key from the 2nd column. [2 points each]

12. LEU	A. <80% Pu239
13. Weapons grade HEU	B. >93% Pu239
14. Weapons grade Plutonium	C. <20% U235
15. Reactor grade Plutonium	D. 80-93% Pu239
16. Fuel grade Plutonium	E. >80% U235

17) Plutonium with substantial quantities of Pu-238, Pu-240, Pu-241, Pu-242 is called “**low burn-up**” or “**reactor-grade**” plutonium.

- A. True
- B. False

18) Given below is a diagram of an implosion type weapon. A, B, C, D correspond to different parts of the weapon. Pick all answers that correctly match components in the drawing with their description. [Note: More than one correct answer. Mark all correct answers]



- | | |
|------------------------|--------------------|
| A. A=Initiator, | D=fissile material |
| B. B=tamper/reflector, | D=fissile material |
| C. A=Chemical HE lens, | C=initiator |
| D. B=Chemical HE lens, | C=fissile material |

19) Why do gun-type weapons use U-235 for fuel?

- A. The critical mass for U-235 is smaller than that of Pu-239
- B. U-235 is easier to obtain than Pu-239
- C. U-235 has a slow rate of spontaneous fission and decay
- D. conventional explosives are only compatible with U-235

20) What is the maximum yield of a typical fission weapon?

- | | |
|-----------------------|----------------|
| A. 100 kilotons | C. 5 Megatons |
| B. about 0.5 Megatons | D. 10 Megatons |

C. Nuclear Explosions

21) In a few seconds, a small (10-kiloton) nuclear device that is detonated in a city would destroy _____ square kilometers and kill _____ people.

- A. 1 / 1,000
- B. 30 / 30,000
- C. 30 / 100,000
- D. 300 / 1,000,000

22) In a few seconds, a large (1-megaton) nuclear device that is detonated in a city would destroy _____ square kilometers and kill _____ people.

- A. 1 / 1,000
- B. 30 / 30,000
- C. 30 / 100,000
- D. 300 / 1,000,000

23) This nuclear weapons effect is most militarily significant when a device is detonated in the atmosphere.

- A. Blast wave
- B. EMP
- C. Prompt radiation
- D. Fallout

24) A 1-megaton airburst would heavily damage commercial-type buildings up to how many miles from ground zero?

- A. 0.5 miles
- B. 1 mile
- C. 4 miles
- D. 10 miles

25) Which produces the most fallout?

- A. Air burst
- B. Surface burst
- C. Space burst

26) *Mark each* factor that determines the seriousness of a burn injury after a nuclear explosion.

[**Note: More than one correct answer. Mark all correct answers**]

- A. Total energy released
- B. Transparency of atmosphere
- C. Whether the person is inside a building or not
- D. The slant distance of the burst to the person
- E. What the person is wearing

27) The correct order in which the effects from a large air burst are felt are:

- A. EMP, blast wave, thermal radiation, fallout
- B. fallout, blast wave, thermal radiation, EMP
- C. EMP, thermal radiation, blast wave, fallout
- D. EMP, blast wave, fallout, thermal radiation
- E. Thermal radiation, EMP, blast wave, fallout

28) Which nuclear weapon effect would cause the most damage to satellites in a space detonation?

- A. EMP
- B. Blast wave
- C. Fallout
- D. Neutrino pulse
- E. Thermal radiation

29) A 1-megaton air burst can cause winds speeds of _____ 4 miles away from ground zero.

- A. 25 mph
- B. 50 mph
- C. 150 mph
- D. 500 mph

30) There is no theoretical limit to the yield of a thermonuclear weapon.

- A. True
- B. False

D. Terrorism

31) True or False: During war a missile accidentally veers off course and kills 10 civilians of the enemy's country. This incident does not fit the definition of war terrorism.

- A. True
- B. False

32) Which of the following is one of Richardson's six basic rules for containing terrorism?

- A. The enemy never sleeps
- B. Strategic engagement on all levels is key
- C. Attempt to eradicate terrorism regionally to prevent its spread
- D. Have a defensible and achievable goal

33) Which of the following is the "lethal cocktail" of factors that Richardson argues produce terrorism?

- A. A radicalized community, a fundamentalist ideology, a polarized political environment
- B. Ineffective governmental control, a fundamentalist religious authority, a disaffected individual
- C. Disjointed military-political relations, hardline social objectives, unbridled enthusiasm
- D. A disaffected individual, a legitimizing ideology, an enabling community
- E. A post-colonial society, an authoritarian regime, ideological repression

34) According to Richardson, when terrorists act, they are seeking 3 immediate objectives (the "3 Rs"), which are:

- A. Revenge, Renown, Reaction
- B. Relevance, Retribution, Reconciliation
- C. Righteousness, Redress, Redemption
- D. Revenge, Retribution, Reaction

35) In Nuclear Terrorism, Allison also lists seven “Yes’s” that he argues must be accomplished to achieve his three “No’s”. Which of the below is NOT one of his seven “Yes’s”?

- A. Making the prevention of nuclear terrorism an absolute national priority
- B. Dealing with dirty bombs
- C. Building a global alliance against nuclear terrorism
- D. Conducting a forceful and proactive foreign policy

36) What are the three (3) standard phases in an inexperienced society's reaction to terrorism?

- A. Backlash against Intelligence Community, military buildup, massive retaliation
- B. Draconian response, unification of political institutions, reasoned reflection
- C. Societal confusion and disorder, nationalistic grassroots movement, coordinated military response
- D. Draconian response, polarization of politics, reasoned reflection
- E. Chaos, confusion, disorder

36) True or False: A terrorist group seeking to create a nuclear weapon would most readily be able to create a gun-type weapon using plutonium.

- A. True
- B. False

37) A difficulty in screening for nuclear bombs is that some common innocuous substances are radioactive and cause false alarms. What is one such substance that we discussed in class?

- A. Mackinaw Peaches
- B. Kitty litter
- C. Chalk
- D. Marble Rye

38) Richardson argues that the declaration of a “global war on terror” — has been a mistake and is likely to fail. What is the “different approach” for which she argues?

- A. Deprive them of what they need and appreciate the factors driving the terrorists
- B. Eliminate their base of support and retaliate using overwhelming military force
- C. Pursue strategy of isolation

39) Richardson argues that with optimal measures in place we can completely curb the terrorist threat.

- A. True
- B. False

40) Richardson argues that the early response to the 9/11 terrorist attacks was marked by two significant mistakes and two major opportunities. According to her, which of the following is NOT one of those mistakes or missed opportunities?

- A. The opportunity to mobilize the international community behind the U.S. in a transnational campaign against transnational terrorists
- B. Conflation of the threat posed by al-Qaeda with the threat posed by Saddam Hussein
- C. The opportunity to educate the American public to the realities of terrorism and the costs of U.S. sole superpower status
- D. Declaration of a “global war on terror”
- E. The opportunity to deploy military forces in a phased manner for maximum effectiveness

D. Nuclear Weapon Delivery Methods

41) What were the three legs of the Cold War nuclear “Triad”?

- A. Surface-ship-launched ballistic missiles, land-based ICBMs, bombers
- B. Submarine-launched ballistic missiles, land-based ICBMs, Sea based cruise missiles
- C. Submarine-launched ballistic missiles, land-based ICBMs, bombers
- D. Surface-ship-launched ballistic missiles, land-based ICBMs, cruise missiles

42-46) Match the following:

The following table will be used for questions 42-46. The table lists 5 categories of ballistic missiles based on their ranges. Each row in the table corresponds to one question, 42-46. The 1st column lists for each question the name of category of ballistic missiles based on their ranges. The 2nd column contains the range of the missile in kilometers for that category. On your answer sheet bubble for each question the matching answer key from the 2nd column. **[2 points each]**

42. SRBM	A. 1000-3000 km
43. Limited range ICBM	B. >8000 km
44. IRBM	C. 3000-5500km
45. MRBM	D. 5500-8000km
46. Full range ICBM	E. <1000km

47) Which of the following description of ballistic missile systems is incorrect?

- A. Tactical ballistic missiles are mainly for battlefield use
- B. Theater ballistic missiles are for use in an extended theater of war
- C. Strategic ballistic missiles are used to attack the homeland of the adversary
- D. Theater ballistic missiles have shorter range than tactical ballistic missiles.
- E. Strategic ballistic missiles may have intercontinental ranges.

48) Which one of the following technologies was not crucial in developing militarily useful cruise missiles?

- A. Light carbon fiber materials for the airframes
- B. More efficient engines
- C. Much smaller and more capable computers
- D. GPS and other methods for more accurate guidance
- E. "Stealth" technologies to make them harder to detect

49) Ballistic missiles generally carry fuel and oxidizer.

- A. True
- B. False

50) Which one of the following strategic nuclear delivery vehicles can be recalled after launch?

- A. Submarine-launched ballistic missiles
- B. Land-based intercontinental ballistic missiles
- C. Land-based intercontinental bombers

E. Arsenals I

51) About how many *total* nuclear weapons are there currently?

- A. 2,000
- B. 17,000
- C. 33,000
- D. 70,000

52) How many *total* nuclear weapons were there at their peak?

- A. 17,000
- B. 33,000
- C. 70,000
- D. 112,000

- 53) About how many *tactical* weapons does Russia currently have in its nuclear arsenal?
- A. 20
 - B. 200
 - C. 2,000
- 54) About how many total weapons are there in the current American nuclear stockpile?
- A. 300
 - B. 2,000
 - C. 8,000
- 55) During the next decade, U.S. spending on nuclear weapons and delivery systems is expected to:
- A. decrease substantially
 - B. stay about the same
 - C. increase substantially
- 56) What best describes the nuclear arsenal of the United Kingdom?
- A. The U.K. maintains a full nuclear triad.
 - B. The U.K. only maintains submarine launched ballistic missiles.
 - C. The U.K. only maintains land-based ballistic missiles.
 - D. The U.K. has given up its nuclear arsenal.
- 57) About how many weapons does China have in its nuclear arsenal?
- A. 90
 - B. 240
 - C. 2,400
 - D. 7,700
- 58) Which statement best describes the strategy behind the Chinese nuclear program?
- A. China wishes to build a program on par with the programs of the US and Russia
 - B. China is de-emphasizing its nuclear program.
 - C. China is primarily concerned with internal threats.
 - D. China is mostly concerned with maintaining a second strike capability.

F. Arsenals – II

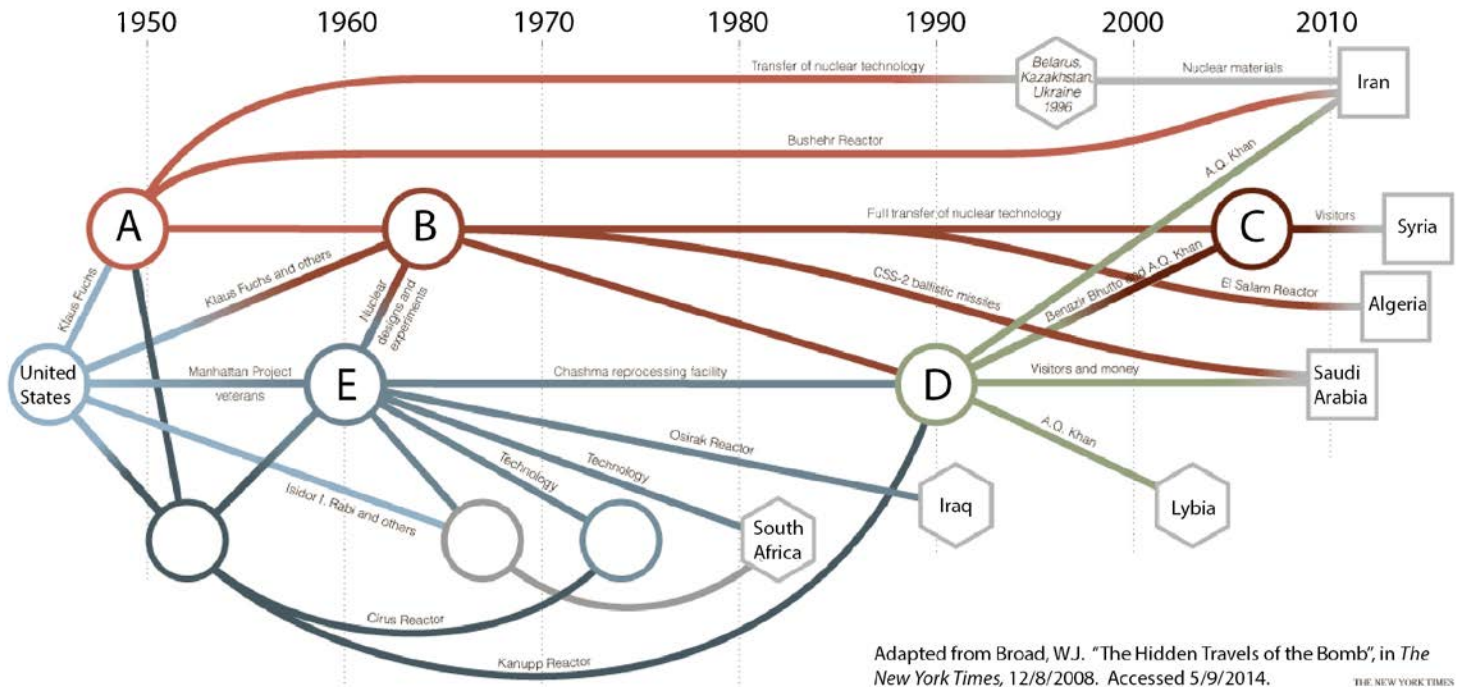
Use the graphic below and your knowledge to answer questions 59-62.

The place of each circle on the timeline represents the year of the country's first nuclear test.

“Circles” represent states with known nuclear weapons capabilities.

“Squares” represent states thought to be developing nuclear weapons.

“Hexagons” represent states with abandoned nuclear weapons programs.



59) Which country is represented by circle “A”?

- | | |
|----------------|-------------|
| A. North Korea | C. USSR |
| B. China | D. Pakistan |

60) Which statements describe the country represented by circle “D”? [Note: Multiple correct answers. Mark all correct answers.]

- A. It is North Korea.
- B. It is Pakistan.
- C. It shared Uranium centrifuge technology with many other countries.
- D. It shared ballistic missile technology with many other countries.
- E. It is an NPT weapons state.

- 61) Which country is represented by circle “C”?
- A. North Korea
 - B. China
 - C. Russia/USSR
 - D. Pakistan
- 62) Which statement best describes the relationship between country “A” and “B”?
- A. Spies from the United States gave nuclear secrets to China.
 - B. Pakistan shared centrifuge technology with India.
 - C. North Korea shared missile technology with Pakistan.
 - D. The USSR helped France develop its nuclear program.
 - E. The USSR helped China develop its nuclear program.
- 63) Which delivery methods are employed in the Indian nuclear arsenal? [**Note: Multiple correct answers. Mark all correct answers.**]
- A. Submarine launched ballistic missiles.
 - B. Bomber launched weapons.
 - C. Land-based short and/or medium range ballistic missiles.
 - D. Land-based intercontinental ballistic missiles.
 - E. Space-based intercontinental ballistic missiles
- 64) About how many weapons does India have in its nuclear arsenal?
- A. 90
 - B. 240
 - C. 900
 - D. 7,700
- 65) What statement best describes the motivation behind India’s 1998 nuclear test?
- A. It was the first demonstration of India’s nuclear capability.
 - B. It was a response to Pakistan’s development of nuclear weapons.
 - C. It was a response to increased tensions with China.
 - D. It was a test of new technological developments in India’s arsenal.
 - E. It was an announced joint exercise with Russia.
- 66) What fissile material is used in most of Pakistan’s nuclear weapons?
- A. Uranium
 - B. Plutonium

67) True or False: North Korea has successfully tested a missile that could reach the United States?

- A. True B. False

68) North Korea tested a nuclear weapon in.... [Note: Multiple correct answers. Mark all correct answers.]

- A. 2001
B. 2003
C. 2006
D. 2009
E. 2013

69) Why does Iran say that it needs uranium enriched to 20% U-235?

- A. For civilian/energy uses.
B. To protect against the Israeli nuclear threat.
C. To develop a nuclear weapons program.
D. To sell to nuclear weapons states without natural Uranium resources.

70) Fill in the blank: All other things being equal, the effort required to go from 20% U-235 to weapons grade Uranium is _____ the effort required to go from natural Uranium to 20% U-235.

- A. much less than B. about the same as C. much greater than

H. Defense

71) An ICBM launch from North Korea targeting the continental US would be towards which cardinal direction?

- A. East B. North C. South D. West

72) Which countermeasures could be used to defeat midcourse-intercept systems? [**Multiple Correct Answers. All correct answers need to be marked.**]

- A. Smart Rocks
- B. Decoy
- C. Brilliant Pebbles
- D. Chaff

73) The U.S.-based midcourse-intercept defense system is intended to defend against what type of threats? [**Multiple Correct Answers. All correct answers need to be marked.**]

- A. Nuclear armed ICBM launched in North Korea towards North America
- B. Nuclear armed MRBM launched in Iran towards Europe
- C. Nuclear armed MRBM launched in North Korea towards Australia
- D. Nuclear armed MRBM launched in North Korea towards Japan

74) Tests of the U.S.-based midcourse system have been carried out under scripted test conditions. Under this favorable conditions, what is the percentage of tests that have been declared successful?

- A. 70% B. 50% C. 60% D. 25%

75) In what country would boost-phase intercept systems most likely need to be placed to defend against an ICBM missile launch by Iran?

- A. Azerbaijan
- B. Georgia
- C. Armenia
- D. Iran
- E. Turkey

76) Which administration deployed a first ballistic missile system?

- A. Reagan
- B. Ford
- C. Clinton
- D. Reagan
- E. Nixon

77) Have any of the Ballistic Missile Defense systems that the United States has tested or deployed shown to be effective under battle conditions?

- A. Yes
- B. No

78) What were the three “Nitze Criteria” an anti-ballistic missile defense system needed to full fill before deployment? [**Multiple correct answers. All correct answers need to be marked**]

- A. The system must be effective
- B. The system must be able to survive attack
- C. The systems interceptor rockets must reach 6.5 km/s or more
- D. The system must be cost effective at the margin
- E. The systems X-Band radar must be capable distinguishing RVs from decoys

79) Obama’s proposed European midcourse missile defense system is aimed to defend a possible attack from

- A. Pakistan
- B. Syria
- C. Iran
- D. Lybia

80) Obama’s European-based midcourse defense system will initially rely primarily on

- A. Ground-based interceptor rockets
- B. Ship-based lasers
- C. Ship-based interceptor rockets
- D. Airborne lasers

81) Which of the following ranges describes best the federal funding level of the Missile Defense Agency in fiscal years 2010-2013?

- A. \$1-3 Billion / year
- B. \$5-8 Billion / year
- C. \$8-11 Billion/year
- D. \$13-16 Billion/year

82) Which issue does the term “Shortfall Management Problem” refer to in context of Ballistic Missile Defense?

- A. Shortfall of resources from under-funding the federal Missile Defense Agency
- B. RVs travelling on after their rocket has been destroyed by a boost phase defense system
- C. Impact ICBM failures under battle conditions have on credibility of nuclear deterrent

83) Which of the following are possible countermeasures to protect an ICBM during launch from an Airborne Laser boost defense system? [**Multiple correct answers. All correct answers need to be marked**]

- A. Attacking the airframe of the ABL
- B. Rotating the ICBM with respect to its longitudinal axis
- C. Adding a fourth rocket stage to the ICBM
- D. Covering the ICBM with ablative coating
- E. Covering the ICBM with reflective coating

84) During the first Gulf War: about how many confirmed intercepts were achieved by the PATRIOT interceptors?

- A. 30 B. 5 C. 0

85) On March 9th 2012, Israel was attacked with over 300 rockets from Gaza. It has been estimated that 177 rockets hit targets in Israel. The Iron Dome missile defense system engaged 71 rocket that were identified as potentially harmful. Reportedly, how many of the 71 rockets targeted were successfully intercepted?

- A. 56 or about 80% B. 43 or about 60% C. 36 or about 50%

86) What is the principal reason for the high success rate for the Iron Dome missile defense system compared to the PATRIOT system during the first Gulf War?

- A. Technological progress with battle control systems
- B. Technological progress with interceptor rockets
- C. The fact that Hamas SRBMs travel 500 m/s, less than a Mach 2 jet

87) In which situation might an Iron Dome defense system be useful? [**Multiple correct answers. All correct answers need to be marked.**]

- A. Defend against single ICBM attack from North Korea on US base in the Pacific
- B. Defend Seoul against attack with artillery from North Korea
- C. Defend Seoul against attack with rocket launchers from North Korea
- D. Defend Washington DC against SRBM attack from forward naval platform
- E. Defend Washington DC against SLCM attack from forward naval platform

88) The flight of a ballistic missile is separated into the boost phase, mid-course phase and terminal phase. Which of the following options characterizes best the length of these three sections of ballistic missile flight?

- A. Boost Phase: 30-40 sec. - Mid-Course: ~20 min. - Terminal phase: 1-4 min.
- B. Boost Phase: ~5 min. - Mid-Course: ~15 min. - Terminal phase: ~5 min.
- C. Boost Phase: 1-4 min. - Mid-Course: ~20 min. - Terminal phase: 30-40 sec.

89) MARV stands for **M**ultiple **A**dvanced **R**e-entry **V**ehicles.

- A. True
- B. False

90) Nixon's Safeguard program was a

- A. Boost phase missile defense program
- B. Mid-course defense program
- C. Terminal phase defense program

G. Arms Control

91) Which of the following is the most complete list of nuclear weapon states not recognized as such by the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)?

- A. North Korea
- B. Israel, North Korea
- C. China, India, North Korea, and Pakistan
- D. India, Israel, North Korea, and Pakistan

92) Define horizontal proliferation

- A. The spread of nuclear weapons to additional states or non-state actors
- B. The increase in range of ballistic missiles
- C. The increased likelihood of proliferation through the black market or stealing
- D. Strategic positioning of nuclear weapons throughout large states, such as Russia

- 93) Define vertical proliferation.
- A. More powerful nuclear weapons
 - B. Increase in the number and/or capability of the NWs of states that already have them
 - C. The sharing of nuclear weapons technology with developing countries
 - D. The existence of two clear leaders in the arms race, Russia and the U.S.
- 94) How many sea based SM-3 interceptors will be deployed as part of President Obama's European-based missile defense program by 2018?
- A. 200
 - B. 400
 - C. 300
 - D. more than 500
- 95) During what stage of treaty negotiations does a country first become bound by the terms of a treaty?
- A. After concluding negotiations
 - B. After signing it
 - C. After ratifying it
- 96) Almost all of the southern hemisphere is covered by nuclear weapon free zones.
- A. True
 - B. False
- 97) Which treaty was the first to require actual reductions of strategic nuclear forces?
- A. Comprehensive Nuclear Test Ban Treaty (CTBT)
 - B. Treaty on the Non-Proliferation of Nuclear Weapons (NPT)
 - C. The Strategic Arms Reduction Treaty (START)
 - D. The Limited Test Ban Treaty (LTBT)
 - E. Strategic Arms Limitation Treaty (SALT-I)
- 98) Which of the following is not true of the 1992 Lisbon Protocol?
- A. Russia, Belarus, Kazakhstan, Ukraine and US are signatories
 - B. Russia became the successor nuclear weapon state under NPT
 - C. Belarus, Kazakhstan and Ukraine to sign NPT as non-nuclear states
 - D. Russia bound by START-I obligations
 - E. Half of Soviet weapons were given to Russia and the other half were eliminated

- 99) Our guest via Skype, Dr. Kerry Kartchner from the Bureau of International Security and Nonproliferation in the US State Department, outlined three points to the Prague Agenda announced by President Obama in 2009. Which of the following is not one of those points?
- A. The US will sign a treaty with existing NW states to reduce weapons by 50% by 2025
 - B. The US will take concrete steps towards a world free of nuclear weapons
 - C. The US will strengthen the Nuclear Non-Proliferation Treaty
 - D. The US will ensure that a terrorist never acquires a nuclear weapon
- 100) The current arms control treaty in force between the US and Russia is...
- A. Strategic Offensive Reductions Treaty (SORT)
 - B. START I
 - C. START II
 - D. New START
- 101) Which of the following is a false statement regarding the CTBT and the US?
- A. The US has signed it
 - B. The US has ratified it
 - C. The US is bound by it
- 102) Treaties in the late 1960's and early 1970's dictated where nuclear weapons tests can occur. Which of the following has not been declared a nuclear weapons free zone?
- A. Outer space
 - B. Underground
 - C. Oceans
- 103) Which treaty initially was aimed at arms control and ended up mostly as a way to protect the environment?
- A. Comprehensive Nuclear Test Ban Treaty (CTBT)
 - B. Treaty on the Non-Proliferation of Nuclear Weapons (NPT)
 - C. The Strategic Arms Reduction Treaty (START)
 - D. The Limited Test Ban Treaty (LTBT)
 - E. Strategic Arms Limitation Treaty (SALT-I)

104) Which most accurately depicts the scope of the International Atomic Energy Agency (IAEA)?

- A. Monitors 200 facilities in 40 countries
- B. Monitors 450 facilities in 65 countries
- C. Monitors 800 facilities in 100 countries
- D. Monitors 1,250 facilities in 135 countries

105) The 1972 ABM Treaty between the US and Russia is best described as...

- A. An agreement to permit nationwide ABM systems
- B. A removal of defenses around capital cities and single ICBM fields
- C. An agreement to not deploy any defensive system against cruise missiles
- D. An agreement to not deploy any defensive system against non-strategic ballistic missiles
- E. An agreement to deploy only limited defensive systems against strategic ballistic missiles

106) IAEA safeguards led to the discovery of Iraq's clandestine nuclear activities.

- A. True
- B. False

107) START limited the US and Soviet Union to 6,000 accountable war heads (AWHs). The treaty limited:

- A. The number of nuclear weapons that can be verified by the IAEA
- B. The maximum number of warheads that could be placed on ICBMs and SLBMs
- C. The number of deployed nuclear weapons
- D. The number of missile delivery systems

108) Which is a limitation of executive agreements?

- A. Future executives are not bound by the agreements
- B. The difficulty in negotiating the agreements
- C. The time it takes to establish the agreements

109) From the date it went into force, the New Start Treaty is in force for...

- A. Ten years
- B. Fifty years
- C. Indefinitely

110) What is the “supreme national interest clause” in regards to treaties?

- A. Treaties are only valid when signed by democratically elected representatives
- B. Treaties must be publicly available and not created in secret
- C. The duty of the most powerful countries to contribute the majority of resources for the implementation and enforcement of treaties
- D. The obligation to announce in advance when a country plans to withdraw from a treaty

E. Current Events

111) Negotiations between Iran and the P5+1 may fail because of which unsupportive leader?

- A. Iranian President Hassan Rouhani
- B. Iranian Deputy Foreign Minister Abbas Araqchi
- C. Supreme Leader Ayatollah Ali Khamenei
- D. Former Iranian President Mahmoud Ahmadinejad

112) How were three peace activists almost able to break into a building that holds about 400 tons of HEU in Tennessee?

- A. They drove through security checkpoints without stopping.
- B. They cut through four fences.
- C. They coordinated their attack with the assistant director of security.
- D. They used guns.

113) True or False: budget reductions within the Department of Defense will lead policymakers to cut one "arm" or the nuclear triad in the next 6-8 months.

- A. True
- B. False

114) This major problem regarding nuclear security and storage currently plagues the Hanford Nuclear Reservation:

- A. Unionized security guards refusing to work unless granted major pay increases
- B. Cheating on qualification examinations
- C. Loss of funding from the National Security Administration budget
- D. Inadequate accident prevention and response infrastructure
- E. Leaking tanks that store radioactive material

115) Three years after the Fukushima disaster, this many reactors are being screened for use by the Japanese Nuclear Regulatory Agency?

- A. One
- B. Two
- C. Three
- D. Four

116) Secretary of State John Kerry's attempt in April to exert China's influence over North Korea's nuclear program has had:

- A. Little/no effect on North Korea's nuclear activities
- B. Some effect on North Korea's nuclear activities
- C. Considerable effect on North Korea's nuclear activities

117) True or False: Under U.N. sanctions dating back to 2006, North Korea is prohibited from carrying out any launches that use ballistic missile technology.

- A. True
- B. False

118) It is believed that Japan has a "bomb in the basement" -- the material and the means to produce nuclear weapons within how many months?

- A. Two
- B. Four
- C. Six
- D. Eight

119) Three years after the Fukushima disaster led to the shutdown of all nuclear plants in Japan, which of the following best represents the Japanese governmental policy with regard to its nuclear infrastructure?

- A. Nuclear program at a standstill with no plans to put reactors back in operation.
- B. The Japanese public has embraced an expedient return to nuclear power, while Prime Minister Shinzo Abe remains cautious.
- C. Prime Minister Shinzo Abe has embraced nuclear power, calling for the restart of reactors deemed safe by regulators.

120) U.S. Defense Secretary Chuck Hagel announced that which of the following will be deployed to Japan by 2017?

- A. Two navy destroyers equipped with missile defense systems.
- B. A squadron of fast-attack submarines.
- C. MIM-104 Patriot surface-to-air missile (SAM) systems under U.S. control.
- D. An additional Marine Expeditionary Unit (MEU) to be based at Okinawa

**Check to make sure you bubbled in all your answers.
Did you bubble in your name, exam version and network-ID?**