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Operator Licensing
Examination

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**U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination**

Applicant Information

Name:	Region:	III
Date:	Facility/Unit:	D.C. COOK / U1,U2
License Level: RO	Reactor Type:	W
Start Time:	Finish Time:	

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected five hours after the examination starts.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

Applicant's Signature

Results

Examination Value	___ 99.00 ___	Points
Applicant's Score	_____	Points
Applicant's Grade	_____	Percent

ANSWER SHEET

Circle or X your choice. If you put a letter in the blank, it will be the graded answer.

- | | | |
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| 001 a b c d ____ | 021 a b c d ____ | 041 a b c d ____ |
| 002 a b c d ____ | 022 a b c d ____ | 042 a b c d ____ |
| 003 a b c d ____ | 023 a b c d ____ | 043 a b c d ____ |
| 004 a b c d ____ | 024 a b c d ____ | 044 a b c d ____ |
| 005 a b c d ____ | 025 a b c d ____ | 045 a b c d ____ |
| 006 a b c d ____ | 026 a b c d ____ | 046 a b c d ____ |
| 007 a b c d ____ | 027 a b c d ____ | 047 a b c d ____ |
| 008 a b c d ____ | 028 a b c d ____ | 048 a b c d ____ |
| 009 a b c d ____ | 029 a b c d ____ | 049 a b c d ____ |
| 010 a b c d ____ | 030 a b c d ____ | 050 a b c d ____ |
| 011 a b c d ____ | 031 a b c d ____ | 051 a b c d ____ |
| 012 a b c d ____ | 032 a b c d ____ | 052 a b c d ____ |
| 013 a b c d ____ | 033 a b c d ____ | 053 a b c d ____ |
| 014 a b c d ____ | 034 a b c d ____ | 054 a b c d ____ |
| 015 a b c d ____ | 035 a b c d ____ | 055 a b c d ____ |
| 016 a b c d ____ | 036 a b c d ____ | 056 a b c d ____ |
| 017 a b c d ____ | 037 a b c d ____ | 057 a b c d ____ |
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| 078 a b c d ___ | 099 a b c d ___ |
| 079 a b c d ___ | 100 a b c d ___ |
| 080 a b c d ___ | |

(***** END OF EXAMINATION *****)

1. Cheating on any part of the examination will result in a denial of your application and/or action against your license.
2. If you have any questions concerning the administration of any part of the examination, do not hesitate asking them before starting that part of the test.
3. After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.
4. To pass the examination, you must achieve a grade of 80.00 percent or greater; grades will not be rounded up to achieve a passing score. Every question is worth one point.
5. For an initial examination, the time limit for completing the examination is five hours.
6. You may bring pens, pencils, and calculators into the examination room. Use black ink to ensure legible copies; dark pencil should be used only if necessary to facilitate machine grading.
7. Print your name in the blank provided on the examination cover sheet and the answer sheet. You may be asked to provide the examiner with some form of positive identification.
8. Mark your answers on the answer sheet provided and do not leave any question blank. If you are using ink and decide to change your original answer, enter the desired answer in the blank provided. If a letter is found in the blank, it will be assumed it is your answer.
9. If you have any questions concerning the intent or the initial conditions of a question, do *not* hesitate asking them before answering the question. Ask questions of the NRC examiner or the designated facility instructor *only*. When answering a question, do *not* make assumptions regarding conditions that are not specified in the question unless they occur as a consequence of other conditions that are stated in the question. For example, you should not assume that any alarm has activated unless the question so states or the alarm is expected to activate as a result of the conditions that are stated in the question.
10. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.
11. When you complete the examination, bring your cover sheet and answer sheets to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. Leave all other examination materials at your table.

12. After you have turned in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied or revoked.
13. Do you have any questions?

QUESTION: 001 (1.00)

The plant was at 80% power and stable at EOL. A fault caused a continuous rod withdrawal until all rods were fully withdrawn. The reactor did not trip and the steam dumps did not operate.

What were the final effects of the fuel temperature and moderator temperature coefficients when the plant had stabilized?

- a. The fuel temperature and moderator temperature coefficients have added positive reactivity.
- b. The fuel temperature and moderator temperature coefficients have added negative reactivity.
- c. The fuel temperature coefficient added negative reactivity and moderator temperature coefficient have added positive reactivity.
- d. The fuel temperature coefficient added positive reactivity and moderator temperature coefficient have added negative reactivity.

QUESTION: 002 (1.00)

A stuck rod is discovered in Control Bank "C". The rod selector switch is selected to "CBC".

Which of the following flow paths allows the rod to receive a signal to move?

- a. Rod control switch--Motion Control Relays--Pulser/Oscillator--Supervisory--Bank Overlap Unit
- b. Rod control switch--Motion Control Relays--Supervisory--Pulser/Oscillator--Master Cyclor
- c. Rod control switch--Motion Control Relays--Supervisory--Master Cyclor
- d. Rod control switch--Motion Control Relays--Pulser/Oscillator--Bank Overlap Unit

QUESTION: 003 (1.00)

The reactor is at the point of adding heat and the following alarms have come in:

Panel 207

- Drop 14 "RCP 1 Seal 1 Outlet Temp High"
- Drop 13 "RCP 1 Seal 1 Leak Off Flow Low"

Based on the plant conditions, which one of the following is the appropriate action?

- a. Manually trip the reactor, go to 02-OHP 4023.E-0 "REACTOR TRIP AND SAFETY INJECTION", trip the affected RCP.
- b. Trip the affected RCP, manually trip the reactor, go to 02-OHP 4023.E-0 "REACTOR TRIP AND SAFETY INJECTION".
- c. Trip the affected RCP, the reactor will automatically trip, go to 02-OHP 4023.E-0 "REACTOR TRIP AND SAFETY INJECTION".
- d. Manually trip the reactor, go to 02-OHP 4023.E-0 "REACTOR TRIP AND SAFETY INJECTION", close the No. 1 seal leakoff valve, trip the affected RCP.

QUESTION: 004 (1.00)

The plant has experienced an ATWS without an SI. If pressure is above 2335 psig you are to reduce pressure to 2135 psig.

What is the reason for performing this pressure reduction?

- a. Ensure sufficient charging flow into the RCS.
- b. Prevent automatic operation of the PORV.
- c. Ensure RCS integrity is maintained during the ATWS.
- d. Prevent challenging the pressurizer safety valves.

QUESTION: 005 (1.00)

The plant is at 20% power. Turbine load is dropping off and condenser vacuum is degrading. Condenser vacuum is 20.3 inches of mercury vacuum and Annunciator 212 Drop 8, "Condenser A Vacuum Trip" has illuminated.

What are your immediate actions?

- a. Trip the reactor and turbine and investigate probable causes.
- b. Begin a power reduction and then investigate probable causes.
- c. Begin investigations of probable causes a power reduction may not be required.
- d. Trip the turbine, reduce reactor power and investigate probable causes.

QUESTION: 006 (1.00)

Unit 1 and 2 East ESW pumps are in run and the West ESW pumps are in "Auto". Unit 2 East ESW pressure, WPA-708, indicates 35 psig and decreasing.

What is the final condition of the ESW system if WMO-702 fails to open?

- a. The Unit 1 West ESW pump will start and ESW pressure will increase to normal.
- b. The Unit 2 West ESW pump will start and ESW pressure will increase to normal.
- c. The Unit 1 West ESW pump will start and ESW pressure will continue to decrease.
- d. The Unit 2 West ESW pump will start and ESW pressure will continue to decrease.

QUESTION: 007 (1.00)

The following core conditions exist:

- RCS pressure is 405 psig
- Core exit thermocouples read 500°F
- RVLIS 52% with no RCPs running

Using a copy of the steam table, what is the condition of the fluid at the top of the core?

- a. superheated by 50.6°F
- b. superheated by 57.9°F
- c. saturated at 449.4°F
- d. saturated at 442.1°F

QUESTION: 008 (1.00)

A safety injection has occurred and RCS pressure is 1500 psig and still decreasing. Pressurizer level initially dropped and is now increasing. All of the reactor coolant pumps are in operations. Which one of the following is the correct leak location?

A weld failure on the . . .

- a. accumulator #4 check valve
- b. pressurizer post accident vent valve
- c. pressurizer liquid space sample isolation valve
- d. loop #3 cold leg temperature instrument isolation valve

QUESTION: 009 (1.00)

While performing FR-P.1 (Response to Imminent Pressurized Thermal Shock Conditions), you were told to start reactor coolant pump 4 using SUP. 10. CCW cooling had been lost to the reactor cooling pumps. Thermal barrier cooling water temperature peaked at 134°F and is now 97°F and #1 seal outlet temperature peaked at 197°F and is now 153°F.

Based on the plant conditions, which one of the following is correct?

- a. You can establish CCW flow and start the RCP
- b. You can establish seal injection and start the RCP
- c. You can establish CCW flow and seal injection and start the RCP
- d. You can not start the RCP

QUESTION: 010 (1.00)

The plant is in Mode 4 on RHR. NPS-121 is de-energized for maintenance. During a control board walkdown you discovered that Panel 206 Drop 36 "RHR open to Hi RCS Hot Leg Pressure" was illuminated.

What would cause this condition?

- a. RHR valve 2-IMO-128 (RHR pump suction from Loop 2 hot leg) is open, reactor coolant system pressure is 491.25 psig and increasing
- b. RHR valve 2-IMO-128 (RHR pump suction from Loop 2 hot leg) is closed, reactor coolant system pressure is 491.25 psig and decreasing
- c. RHR valve 2-ICM-129 (RHR pump suction from Loop 2 hot leg) is open, reactor coolant system pressure is 491.25 psig and increasing
- d. RHR valve 2-ICM-129 (RHR pump suction from Loop 2 hot leg) is closed, reactor coolant system pressure is 491.25 psig and increasing

QUESTION: 011 (1.00)

The plant has experienced a loss of 250 VDC bus AB and CD. You have been instructed to start diesel generator AB.

Which one of the following valve manipulations is necessary to start the diesel?

- a. Manually operate MSAV-AB (manual starting air valve) to provide air through SV-1, 2, & 3 (3-way solenoid-operated valves) in the normal position
- b. Manually operate MSAV-AB (manual starting air valve) to provide air through SV-1, 2, & 3 (3-way solenoid-operated valves) in the failed position
- c. Manually operate POV-1, 2, & 3 (pressure-operated valves) to provide air through SV-1, 2, & 3 (3-way solenoid-operated valves) in the failed position
- d. Manually operate POV-1, 2, & 3 (pressure-operated valves) to provide air through SV-1, 2, & 3 (3-way solenoid-operated valves) in the normal position

QUESTION: 012 (1.00)

The plant is at 100% power. As you are walking down the control boards you notice that PZR level instrument NLP-153 is indicating higher than NLP-151 and NLP-152.

The reason for the higher indication is that there is a break on the . . .

- a. wet reference leg and the DP cell DP is higher
- b. wet reference leg and the DP cell DP is lower
- c. variable leg and the DP cell DP is higher
- d. variable leg and the DP cell DP is lower

QUESTION: 013 (1.00)

The plant has experienced a loss of off site power with no SI signal. When the emergency diesel generators start and load, which of the following is the correct sequence for the given loads under these plant conditions?

- a. Component cooling water, essential service water, charging pumps, 600 VAC
- b. Essential service water, charging pumps, auxiliary feedwater pumps, 480 VAC
- c. Component cooling water, essential service water, auxiliary feedwater pumps, 600 VAC
- d. Component cooling water, essential service water, auxiliary feedwater pumps, 480 VAC

QUESTION: 014 (1.00)

Which one of the following actions are taken while recovering a dropped rod while at 50% power if another rod drops?

- a. Manually trip the reactor if an automatic reactor trip did not occur.
- b. Perform a flux map to verify the dropped rod's position, then declare the rods inoperable.
- c. Position control rods as necessary to maintain T_{AVE} / T_{REF} deviation less than 1°F.
- d. Perform a shutdown margin calculation every 12 hours from the time the rod dropped until the rod is declared operable.

QUESTION: 015 (1.00)

A steamline break has occurred on Unit 2. After the break is isolated the following plant conditions exist:

- Pressurizer pressure = 1800 psig and stable
- Pressurizer level = 24% and stable
- RCS temperature (T_{AVE}) = 538°F and stable
- Containment pressure = 0.1 psi
- S/G levels (NR) 32%(A), 23%(B), 30%(C), 30%(D)
- S/G pressures (psig) 970(A), 885(B), 960(C), 960(D) and stable

Which one of the following is the correct ECCS lineup for plant recovery?

- a. All RHR, SI, and Charging pumps running
- b. Stop both RHR pumps and one charging pump, but keep both SI pumps running
- c. Stop both RHR pumps, but keep both charging pumps and both SI pumps running
- d. Stop one charging pump, both SI pumps, and both RHR pumps

QUESTION: 016 (1.00)

A plant trip has just occurred and 2 control rods are stuck out of the core. An emergency boration has been initiated by the reactor operator in accordance with 01-OHP 4023 ES-0.1 (Reactor Trip Recovery).

Which one of the following is the minimum amount of boric acid required to be added?

- a. 150 ppm
- b. 200 ppm
- c. 300 ppm
- d. 400 ppm

QUESTION: 017 (1.00)

Unit 2 was operating at full power when it experienced a main steamline break. Because of difficulties in closing the MSIVs, the two affected SGs have blown dry. The following plant conditions exist:

- RCS T_{HOT} is 282°F and lowering.
- RCS T_{COLDS} are 267°F and lowering.
- Step 3 of 2-OHP.4023.E-2, Faulted Steam Generator Isolation, is in progress.
- SI flow is still being supplied to the RCS
- AFW is being supplied to the intact SGs at 180K PPH each.
- All RCPs have been stopped.
- Indicated subcooling is 285°F and rising.

Which one of the following is correct?

- a. The loss of thermal driving head in the SGs will stop natural circulation flow due to stagnation of the coolant loops.
- b. A loss of heat sink has occurred due to two SGs being dry.
- c. Injection of ECCS accumulator nitrogen into the RCS will occur and cause a loss of heat sink.
- d. Pressurized thermal shock has occurred and RCS pressure is to be minimized.

QUESTION: 018 (1.00)

A fast spreading fire exists in the Unit 1 turbine lube oil system reservoir. Which one of the following automatic fire suppression system will deploy?

- a. Halon system
- b. Pressurized fire retardant fluid
- c. Deluge sprinkler system
- d. CO₂ fire suppression system

QUESTION: 019 (1.00)

Pressure switch 2-PPP-301 (Lower Containment Pressure Hi-Hi) was in test with a trip signal present when a second signal was generated on 2 PPP-303 (Lower Containment Pressure Hi-Hi) by electrical noise.

Which one of the following will be the plant status?

- a. A Containment Phase B and SI will occur
- b. A Containment Phase B and containment vent isolation will occur
- c. A Containment Phase B will occur and the steam line isolation valves will close
- d. All valves will remain in their current position because the logic is 2-out-of-3 when one channel is in test

QUESTION: 020 (1.00)

A liquid radwaste discharge is in progress from monitor tank #3. The south monitor tank pump is running. The alarm for the effluent discharge monitor (RRS-1000) sounds in Unit 1 Control Room.

Which one of the following actions will automatically occur?

- a. RRV-284 (Effluent Discharge Regulating Valve) closes and the south monitor tank pump stops
- b. RRV-285 (Effluent Discharge Valve) closes and the south monitor tank pump stops
- c. RRV-284 (Effluent Discharge Regulating Valve) closes and the south monitor tank pump continues to run on recirculation
- d. RRV-285 (Effluent Discharge Valve) closes and the south monitor tank pump continues to run on recirculation

QUESTION: 021 (1.00)

Given the following conditions on Unit 1:

- Leakage into #13 steam generator is determined to be 0.5 gpm
- No leakage is detectable into the other steam generators
- Other leakage whose source can not be identified is determined to be 0.7 gpm
- Leakage from known sources other than steam generator leakage is determined to be 4.0 gpm
- Pressure isolation valve leakage is determined to be 0.1 gpm

Which one of the operational limitations has been exceeded?

- a. steam generator leakage
- b. unidentified leakage
- c. pressure isolation valve leakage
- d. identified leakage

QUESTION: 022 (1.00)

Unit 2 was operating at 100% power when the Power Range channel N42 rapidly failed HIGH. Rod Control was in automatic.

Which one of the following describes the expected response of the rod control system?

- a. Rods will move IN due to a power mismatch, then STOP when the power mismatch signal decays away
- b. Rods will move IN due to a power mismatch, then move back OUT as the temperature error develops and power mismatch decays away
- c. Rods will move OUT due to a power mismatch, then STOP when the power mismatch signal decays away
- d. Rods will move OUT due to a power mismatch, then move back OUT as the temperature error develops and power mismatch decays away

QUESTION: 023 (1.00)

The following plant conditions exist:

- A Unit 1 startup is in progress after 100 days of continuous operation
- Reactor power is 2% power and steady
- Steam dumps are in steam pressure control
- Charging and letdown are matched
- Rod control is in manual

Letdown temperature control valve CRV-470 (CCW to letdown heat exchanger), cycles full OPEN from 30% throttled OPEN.

Which one of the following describes the plant response to this event?

- a. SUR is negative and reactor power decreases
- b. SUR is positive and reactor power increases
- c. SUR is 0 and reactor power remains constant
- d. SUR is negative and reactor power increase

QUESTION: 024 (1.00)

Twenty-five minutes ago a turbine runback resulted in rod insertion with control rods in AUTOMATIC and annunciator "ROD BANK LOW-LOW" (Panel 110, Drop 39) energized.

- The plant stabilized at 85% power
- A boration was started and pressurizer backup heaters were energized

The above conditions ensure that:

- a. pressurizer boron concentration is equalized with RCS by increasing normal spray flow
- b. pressurizer cooldown due to the level increase caused by the change in power level is counteracted
- c. loss of pressurizer level is prevented by increasing the volume of fluid maintained in the pressurizer
- d. adequate subcooling margin is guaranteed by raising the saturation temperature of the pressurizer

QUESTION: 025 (1.00)

The following plant conditions exist:

- Steam generator #2 (NR) level is 10% and decreasing
- Steam generator #2 pressure is 350 psig and lowering
- Containment pressure is 2.1 psi and lowering
- CRID-1 had lost power.

What is the status of the ECCS equipment?

- a. All ECCS equipment is operating
- b. Only train "A" ECCS equipment is operating
- c. Only train "B" ECCS equipment is operating
- d. None of the ECCS equipment is operating

QUESTION: 026 (1.00)

You are in procedure 02-OHP 4023 FR-P.1 with 4 RCPs running. Which one of the following actions is correct in order to avoid, or limit, thermal shock or pressurized thermal shock to the reactor pressure vessel?

- a. Isolate the accumulators
- b. Stop all 4 reactor coolant pumps
- c. Cooldown at maximum rate using the steam generators
- d. Depressurize the RCS and maintain ECCS flow to provide core cooling

QUESTION: 027 (1.00)

Which one of the following is used as the reactor power input to the rod insertion limit (RIL) computer?

- a. First stage impulse pressure
- b. Calculated Thermal Power
- c. Auctioneered High DT
- d. Calculated Steam Flow

QUESTION: 028 (1.00)

During the performance of an NIS power range heat balance at 100% power, an operator uses a feedwater temperature 30°F lower than actual. Would the calculated value of power be HIGHER or LOWER than actual power, and would an adjustment of the NIS power range channels, based on this value, be CONSERVATIVE or NON-CONSERVATIVE with respect to protection setpoints?

- a. Higher/conservative
- b. Higher/non-conservative
- c. Lower/conservative
- d. Lower/non-conservative

QUESTION: 029 (1.00)

Loss of which ventilation system will result in a Phase 'B' isolation signal in about 15 minutes due to rising temperatures in the containment?

- a. Upper containment ventilation
- b. Lower containment ventilation
- c. CRDM ventilation
- d. Pressurizer compartment ventilation

QUESTION: 030 (1.00)

The following plant conditions exist:

- Pressurizer level is 25% and decreasing
- Containment pressure is 2.0 psi and rising
- RCS pressure is 2000 psig and decreasing
- Steam generator level and pressure are normal

Which one of the following plant conditions will exist?

- a. Reactor trip, NESW standby pump starts, main glycol recirculation containment isolation valves close, feedwater isolation valves close
- b. Containment vent isolation occurs, ESW standby pumps start, main glycol recirculation valves open, feedwater isolation valves close
- c. Reactor trip, main steam isolation valves are closed, main glycol recirculation containment isolation valves close, feedwater isolation valves close
- d. Containment phase 'B' occurs, main steam isolation valves are closed, main glycol recirculation containment isolation valves close, feedwater isolation valves close

QUESTION: 031 (1.00)

After a LOCA in which containment pressure reached 9 psi, you noted the following indications:

- Containment pressure, 6 psi and lowering slowly
- Spray Additive Tank level LOW - LOW alarm actuated
- Refueling Water Storage Tank (RWST) level, 35% and lowering slowly

WHAT containment spray system status should the operator observe?

	IMO 215/225 CTS Pump Suction Valve	IMO-212/222 Eductor Supply Valve	IMO-202/204 Spray Additive Tank Valve	CTS Pumps
a.	Closed	Closed	Open	Tripped
b.	Open	Open	Open	Running
c.	Closed	Open	Closed	Tripped
d.	Open	Closed	Closed	Running

QUESTION: 032 (1.00)

On receipt of an SI signal, which of the following represents a complete feedwater system isolation from the steam generators?

- a. main feedwater pump trips, main feedwater isolation valves close, high pressure heater inlet isolation valves close, main steam stop valves close
- b. main feedwater pump discharge valves close, main feedwater isolation valves close, high pressure heater bypass valve closes, feed regulating valves close
- c. main feedwater pump discharge valves close, main feedwater isolation valves close, main feedwater pump trips, main steam stop valves close
- d. main feedwater pump trips, main feedwater pump discharge valves close, main feedwater isolation valves close, feed regulating valves close

QUESTION: 033 (1.00)

Given the following conditions on Unit 1:

- Reactor trip
- Turbine trip
- RCP 12 and 13 are tripped
- RCP 11 and 14 have no breaker position indication
- All Train B containment isolation valves position indication has been lost
- All MFW regulating valves position indication has been lost
- Pressurizer PORVs NRV-151/152 position has been lost
- Train A ECCS has actuated
- Containment Isolation Phase A has actuated

Which one of the following failures is the cause?

- a. RCP 1A bus de-energized.
- b. 600V AC Bus 11A de-energized.
- c. Loss of ALL power to 250V DC Bus 1AB.
- d. ABT 5 failed to transfer.

QUESTION: 034 (1.00)

What are the principal fission products that would be found in the liquid waste disposal system?

- a. Xenon and cobalt
- b. Iodine and cobalt
- c. Xenon and cesium
- d. Iodine and cesium

QUESTION: 035 (1.00)

The in-service gas decay tank is being switched to another tank. In the control room you receive the following alarm, Panel 128 Drop 28 "AUTO GAS ANALYZER ALARM." A few minutes later you receive the following two alarms:

- Panel 128 Drop 10 "WASTE GAS ANALYZER OXYGEN HIGH"
- Panel 128 Drop 15 "WASTE GAS ANALYZER O₂ EXT HIGH"

Why have these alarms occurred in this order?

- a. Drop 28 occurred during the GDT tank transfer and Drop 15 & Drop 10, the O₂ alarms, occurred because there is high O₂ in the inservice tank
- b. Drop 28 occurred because the analyzer is removed from service before the tanks are switched and Drop 15 & Drop 10, the O₂ alarms, occurred when the analyzer was placed back in service
- c. Drop 28 occurred during the GDT tank transfer and Drop 15 & Drop 10, the O₂ alarms, occurred when the analyzer was placed back in service
- d. Drop 28 occurred because the analyzer is removed from service before the tanks are switched Drop 15 & Drop 10, the O₂ alarms, occurred because there is high O₂ in the inservice tank

QUESTION: 036 (1.00)

Unit 1 is in mode 6 and the fuel is being moved to the spent fuel pool. You are on the manipulator crane when a high radiation alarm sounds on the manipulator crane area radiation monitor.

Which is the correct list of initial actions to be taken?

- a. Notify the Control Room, verify the monitor alarm and then evacuate containment and the spent fuel pool area, then close both upper and lower airlock doors
- b. Notify the Control Room, visually verify there is fuel damage, evacuate containment, secure spent fuel pool side fuel handling operations, then close both upper and lower airlock doors
- c. Notify the Control Room, evacuate non-essential personnel from containment, secure spent fuel pool side fuel handling operations, then close both upper and lower airlock doors
- d. Notify the Control Room, secure spent fuel pool side fuel handling operations, evacuate all personnel from containment, then close both upper and lower airlock doors

QUESTION: 037 (1.00)

The following plant conditions exist:

- RCS pressure 1950 psig
- PZR level 12%
- Containment pressure 0.5 psi
- S/G pressures (psig) 1 = 1005, 2 = 1000, 3 = 400, 4 = 1005
- Steam generator levels (NR) 1 = 4%, 2 = 8%, 3 = 18%, 4 = 6%
- VCC 1-AZV-A is de-energized prior to SI signal

Which one of the following is the correct valve line-up for this condition? (Use the attached bus diagram)

Valve	Name
IMO-910 & IMO-911	RWST supply to CCP suction
ICM-250 & ICM-251	BIT outlet
IMO-255 & IMO-256	BIT inlet
QMO-200 & QMO-201	CCP To Regenerator Heat Exchanger

- a. IMO-910, 911, 255, and 256, ICM-250 and 251 are OPEN and QMO-200 and 201 are CLOSED
- b. IMO-910, 911, 255, and 256, ICM-250 and 251 are CLOSED and QMO-200 and 201 are OPEN
- c. IMO-910 and 255, ICM-250 and QMO-201 are OPEN and IMO-911 and 256, ICM-251 and QMO-200 are CLOSED
- d. IMO-910 and 255, ICM-250 and QMO-201 are CLOSED and IMO- 911 and 256, ICM-251 and QMO-200 are OPEN

QUESTION: 038 (1.00)

RCS pressure is 1975 psig and decreasing. You notice that NRV-163 (PZR spray) is partially OPEN. When placed in manual the valve will NOT close. What is the proper course of action to stop the pressure decrease?

- a. Allow the reactor to automatically trip; go to 02-OHP 4023.E-0 "REACTOR TRIP AND SAFETY INJECTION"; trip RCP 3 in accordance with E-0.
- b. Trip RCP 3; the reactor will automatically trip; go to 02-OHP 4023.E-0 "REACTOR TRIP AND SAFETY INJECTION".
- c. Manually trip the reactor; go to 02-OHP 4023.E-0 "REACTOR TRIP AND SAFETY INJECTION"; cooldown and depressurize until RHR can be started.
- d. Manually trip the reactor; go to 02-OHP 4023.E-0 "REACTOR TRIP AND SAFETY INJECTION"; trip RCP 3.

QUESTION: 039 (1.00)

Unit 2 is performing a reactor shutdown. During the shutdown MPC-253 (turbine first stage pressure channel) sticks at 57 psig. Which one of the following is a concern during the shutdown?

- a. Loss of 2 reactor coolant pumps are required to cause a reactor trip
- b. Removing the main turbine from service will cause a reactor trip
- c. Source range nuclear instruments will have to be manually unblocked
- d. Power range channel low setpoint high neutron flux level will not unblock

QUESTION: 040 (1.00)

An operator in Unit 2 notes the following conditions:

- Reactor Power is 24%.
- (NR) Level in S/Gs 1, 2, 3 , are 27%, 25% 29% respectively, and stable.
- (NR) Level in S/G 4 is 21% and lowering slowly.
- Power escalation is in progress.
- One main feedwater pump is in service with speed and DP controllers in auto.

Based on current plant conditions, what automatic response would occur?

- a. One MDAFP would automatically start
- b. TDAFP would automatically start
- c. Both MDAFPs would be running and Feedwater Conservation would activate.
- d. TDAFP would be running but Feedwater Conservation would NOT activate.

QUESTION: 041 (1.00)

During refueling operations, the divider barrier and missile blocks between the reactor well and refueling canal are removed. As a result of this removal, higher flow rates in the containment purge exhaust system will . . .

- a. allow shutdown of the containment pressure relief system.
- b. prevent the formation of vapor clouds on the water.
- c. clear the interlock for containment purge supply fan operation.
- d. minimize the formation of stagnant air pockets that may contain hydrogen.

QUESTION: 042 (1.00)

Unit 2 north spent fuel pool cooling pump was removed from service for a mechanical seal replacement that will take 24 hours. A leak developed on the south heat exchanger (HE-16S) and the heat exchanger had to be isolated. It will require 20 hours to repair.

Which one of the following statements is correct?

- a. Cross-tying of the south pump to the north heat exchanger will provide sufficient cooling until the repairs are complete
- b. Cross-tying of the south pump to the north heat exchanger will not provide sufficient cooling without makeup water flow
- c. Sufficient cooling will be provided by the evaporation and makeup water flow maintaining level; the cooling system will not be required until repaired
- d. Spent fuel pool cooling can be provided by makeup water flow and spilling into the building floor drains; the cooling system will not be required until repairs are completed

QUESTION: 043 (1.00)

Unit 2 is being ramped to full power following a refueling outage. During core on-load, a new fuel element that did not have a required burnable poison rod inserted was inadvertently loaded into the core.

Which one of the following parameters would be an indicator of the problem?

- a. Actual boron less than calculate
- b. Core AFD will be positive
- c. Quadrant power tilt ratio calculation will indicate high tilt condition
- d. Incore flux map with a power peak

QUESTION: 044 (1.00)

Which one of the following describes the location of the radiation monitors used to detect Unit 1 Main Steam System contamination?

- a. On the safety valve outlets.
- b. On the line downstream of the PORVs.
- c. On the line downstream of the MSIVs.
- d. On the main steam equalizing header.

QUESTION: 045 (1.00)

Unit 2 was at 75% power with rods in auto. The steam dumps were in T_{ave} mode and the plant was at steady state when MPC-254 failed low. With no operator action, what will be the condition of the steam dumps after 5 minutes?

- a. Groups 1, 2, and 3 are armed and the dumps will not open because T_{ref} is the same as T_{ave}
- b. Groups 1 and 2 are armed and the dumps will not open because T_{ref} is the same as T_{ave}
- c. T_{ref} fails to 547 but the dumps do not open because groups 1, 2, and 3 are not armed
- d. T_{ref} fails to 547 but the dumps do not open because groups 1 and 2 are not armed

QUESTION: 046 (1.00)

Unit 1 was at 100% power with all SJAEs in service (with both elements in service). A small leak was identified on the #1 SJAE and the SJAE was removed from service. The operator who removed the #1 SJAE out-of-service, closed LPD-150-1 (#1 element Inter-Condenser Drain), but left open LPD-149-1 (the second #1 Element Inter-Condenser Drain).

What effect (if any) will this valve configuration have on the plant?

- a. No effect
- b. will cause a loss of condenser vacuum
- c. will cause an increase in vent stack condensation
- d. will cause the after condenser loop seal to blowout and spray water on the condensate booster pumps

QUESTION: 047 (1.00)

The following plant conditions exist:

- 100% power.
- No equipment out of service.
- The Unit Auxiliary Transformers are supplying all plant equipment.

An operator noted that the closed light for 1A7, Normal Feed Breaker to Bus 1A, was NOT lit. The light bulb was verified as good.

Which one of the following statements describes the condition for this breaker?

- a. An overload condition will cause breaker 1A7 to trip open.
- b. A generator trip will cause breaker 1A7 to trip open.
- c. Breaker 1A7 cannot be remotely opened with the control switch.
- d. Breaker 1A7 cannot be locally tripped.

QUESTION: 048 (1.00)

The following plant conditions exist in Unit-1:

- Reactor power is 75%
- Letdown flow is 120 gpm
- 'W' CCP is running
- The operator acknowledges R17B, WEST CCW HEADER electro-alarm (CRA-425).

Which one of the following valve closures should be verified?

- a. CCR-460, CCW to excess Letdown HX outlet valve
- b. CCM-454, CCW to RCP Cooler return valve
- c. CRV-470, CCW to letdown HX outlet valve
- d. CRV-412, CCW Surge Tank vent valve

QUESTION: 049 (1.00)

Which one of the following describes the signals that will directly cause an automatic start of the ESW pumps in Auto?

- a. Low Header Flow at 1700 gpm, Safety Injection, High Strainer Delta-P on operating pump.
- b. Low Header Flow at 1700 gpm, Opposite Unit Safety Injection, Containment Spray Signal.
- c. Low Header Pressure at 40 psig, Opposite Unit Safety Injection, Blackout Sequence.
- d. Low Header Pressure at 40 psig, Blackout Sequence, Containment Spray Signal.

QUESTION: 050 (1.00)

The following plant conditions exist:

- RCS pressure is 500 psig
- ICM-305 "East RHR pump containment sump supply" is closed
- IMO-330 "East RHR pump discharge to containment spray" is closed
- IMO-340 "East RHR pump discharge to CCP" is closed
- IMO-310 "East RHR pump suction" is closed
- IMO-340 "East heat exchanger to centrifugal charging pump suction" is closed
- IMO-215 "East CTS pump Suction" is open
- ICM-129 "RHR pump suction from Loop 2 hot leg" is closed

Which one of the following valves can be opened?

- a. ICM-305
- b. IMO-310
- c. ICM-129
- d. IMO-340

QUESTION: 051 (1.00)

Given the following plant conditions:

- Unit 2 was in cold shutdown with the RCS drained to mid-loop.
- Filling and venting is in progress.
- Pressurizer level is 100% and the RCS is aligned to vent via the PRT to the instrument purge exhaust or lower containment purge exhaust.
- A nitrogen blanket is on the PRT; PRT level is at 5%.
- The gaseous waste disposal system is aligned to support a bubble.
- The PZR heaters are energized.

Prior to drawing a bubble in the pressurizer which one of the following must be accomplished?

- a. Bumping the RCPs to remove entrapped gases
- b. Filling the PRT to 80-85%
- c. Establishing 50% in the pressurizer
- d. Pressurize the RCS to 325-350 psig

QUESTION: 052 (1.00)

The following plant conditions exist on Unit 1:

- RCS pressure is 1000 psig
- Pressurizer level is empty
- Containment pressure is 3.2 psi
- Steam generator pressures and levels are equal and stable
- Bus 11A is de-energized
- All plant valve line-ups were normal prior to the incident
- West CCW Pump was running prior to the event

Which one of the following valve lineups is correct for the given conditions? (Use the attached Bus Diagram)

Valve	Description
CMO-410, 420	CCW Hx outlet valve
CCR-460, 462	CCW Excess letdown Hx isolation valve
CCM-451, 452, 453, 454	CCW Return from RCP valve

- a. CCM-453, 454, and CCR-460, 462 closed, all other valves open
- b. CCM-452, 454, and CCR-460, 462 closed, all other valves open
- c. CCM-453, 454 and CMO-410, 420 closed, all other valves open
- d. CCM-452, 454 and CMO-410, 420 closed, all other valves open

QUESTION: 053 (1.00)

Which one of the following describes operation of the NESW pumps during and following a LOOP?

- a. The pumps trip on a LOOP. After the EDGs start, the NESW pumps must be manually started.
- b. The pumps do not trip on a LOOP. The NESW pumps regain power upon re-energization of the 600V AC busses.
- c. The pumps trip on a LOOP. After the EDGs start, the NESW pumps are automatically started as part of load sequencing process.
- d. The pumps trip on a LOOP. The NESW pumps are not re-started until normal AC is regained.

QUESTION: 054 (1.00)

Which one of the following is NOT on the Control Room Operator Turnover Checklist?

- a. Open Item Log and Blocked Alarm Log
- b. Control Room Log and Plan of the Day
- c. Unit Supervisor Turnover Checklist and Temp Mod Log
- d. SRO-CA Turnover and SM Narrative Log

QUESTION: 055 (1.00)

As the RO you are about to perform the surveillance for ECCS Valve Operability Testing, 02-OHP 4030.STP.053A. Which one of the following procedures are you directed to use to obtain the IST program limits for the valve timing?

- a. IST Program Description Document.
- b. Tech Data Book.
- c. A copy of the last surveillance test.
- d. Technical Specification.

QUESTION: 056 (1.00)

During an independent verification a valve is found out of position. Which of the following is the way the component out of position shall be handled? The component shall be repositioned . . .

- a. and the supervisor notified of the discrepancy
- b. and verified by the person performing the verification
- c. after the supervisor gives the approval
- d. by the person who did the initial lineup and then verified

QUESTION: 057 (1.00)

Which one of the following is the same for Unit 1 and Unit 2?

- a. Fuel burnup conversion factor (EFPH)
- b. Steam generator pressure vs. plant power level
- c. Feedwater pressure differential pressure program
- d. MVAR vs. MW output operating curve

QUESTION: 058 (1.00)

A job must be performed in a room containing a point source that has a dose rate of 250 mRem/hour at 1 foot. The general area radiation levels are 10 mRem/hour throughout the room. Two operators are working 20 feet from the point source for 4 hours.

Which one of the following results in the TOTAL exposure received while performing the job?

- a. 40 mRem
- b. 50 mRem
- c. 85 mRem
- d. 180 mRem

QUESTION: 059 (1.00)

One of the air receivers for 1CD diesel generator is tagged for maintenance. Two hours ago the diesel was started to verify operability.

What is the minimum number of starts available on the 1CD diesel generator?

- a. 1
- b. 2
- c. 3
- d. 4

QUESTION: 060 (1.00)

After the initial notification of an ALERT, a Site Area Emergency, or a General Emergency, the Shift Manager or his designee must make updates to the Michigan State Police every . . .

- a. 15 minutes
- b. 20 minutes
- c. 25 minutes
- d. 30 minutes

QUESTION: 061 (1.00)

The plant has experienced a large break LOCA. The reactor has tripped and an SI signal is present. Which of the following best describes the automatic actions of the VCT outlet valves, QMO-451 & QMO-452.

The valves will close . . .

- a. immediately after the reactor trip signal.
- b. when the RWST valves, IMO-910 or IMO-911 start to open.
- c. immediately after the SI signal.
- d. when the RWST valves, IMO-910 or IMO-911 are fully open.

QUESTION: 062 (1.00)

Which one of the following statements is a function of the effluent discharge valve, RRV-285?

- a. The valve is located upstream of the effluent discharge monitor, RRS-100, to insure isolation of liquid discharge prior to the water entering the Circulating Water System piping.
- b. On a loss of electrical power to the valve motor, the valve must be immediately manually isolated.
- c. The valve fails closed on a loss of air, as a fail-safe measure.
- d. This fail-open, manually adjusted, air-operated valve in the liquid waste discharge line regulates flow through the effluent discharge monitor, RRS-1000.

QUESTION: 063 (1.00)

The saturation meter is selected to read T_{sat} RTD. RCS loop 3 wide range pressure is selected for input into the saturation meter. If the wide range pressure instrument fails low the indication on the meter is no longer a valid reading.

How is this problem corrected?

- a. RCS loop 1 wide range pressure instrument is automatically selected by the system
- b. RCS loop 2 wide range pressure instrument is automatically selected by the system
- c. Select RCS loop 2 wide range pressure instrument in RPC III Cabinet 11
- d. Select RCS loop 1 wide range pressure instrument in RPC III Cabinet 11

QUESTION: 064 (1.00)

The following Unit 1 plant conditions exist:

- Mode 5
- Irradiated fuel in the vessel.
- Vessel level drained to 4 ft. below vessel flange.
- The Pressurizer manway has been removed.
- RCS level begins to decrease.

Which one of the following is the required flow path for water into the RCS?

- a. One RHR pump and one CCP with both Cold Leg and Hot leg injection paths.
- b. RWST gravity feed capability through either RHR suction flow path or SI flow path, one SI pump that is also capable of injecting to both Hot and Cold legs.
- c. Two CCPs capable of injecting using the normal charging path and one SI pump with cold leg injection capability.
- d. RWST gravity feed capability via both the RHR suction flow path and charging flow path.

QUESTION: 065 (1.00)

You have been told to close WMO-734, ESW outlet valve for CCW HX 2 East. The following plant conditions exist:

- RCS pressure is 1600 psig and decreasing
- Pressurizer is empty
- Containment pressure is 1.5 psi
- Steam generator (NR) levels are 6% and increasing

What actions must be taken to close the valve?

- a. The valve position switch must be put in pull to lock and must be closed manually.
- b. The valve must be closed using the position switch immediately.
- c. When the valve reaches its preset position you can close the valve using the position switch.
- d. No action is necessary, the valve has already been closed by an automatic signal.

QUESTION: 066 (1.00)

Offsite power was lost without SI actuation. Unit One control room operators verified a reactor trip and a turbine trip. They determined that the D/Gs have energized the AC emergency busses. All appropriate loads have sequenced on. While ensuring that the RCS stabilizes at no-load conditions, an operator observed that RCS temperature stabilized at 541°F and that PZR pressure is 2060 psig and slowly lowering. He checked the PZR PORVs and spray valves. They were closed. PZR level is stable at 40%.

What corrective action, if any, should be taken to stabilize the plant until offsite power is restored?

- a. No operator action is necessary. Pressure will stabilize at approximately 1837 psig.
- b. Manually actuate SI and return to EOP E-0, Reactor Trip or Safety Injection.
- c. Initiate a rapid depressurization to minimize RCS inventory loss through the RCP seals.
- d. Manually load the PZR heaters on energized AC emergency buses.

QUESTION: 067 (1.00)

The following plant conditions exist:

- Reactor trip, Safety Injection, and Main Steam Line Isolation have occurred
- RCS pressure is 1820 psig and decreasing rapidly
- RCS temperature is 525°F and decreasing rapidly
- Containment humidity: increasing
- Secondary radiation: normal
- Containment pressure is 2.1 psi and increasing
- Containment radiation: normal

These conditions are indicative of...

- a. A small break LOCA.
- b. A large break LOCA.
- c. A faulted steam generator.
- d. A steam generator tube rupture.

QUESTION: 068 (1.00)

The site had a station blackout. During the recovery phase it was discovered that the switchyard 125V DC distribution system lost power.

How will this affect the restoration of power to the plant?

- a. The 345 kV and 765 kV switchyard circuit breakers can not be opened or closed
- b. The 4 kV circuit breakers CAN NOT be operated in auto or manual
- c. The air compressors for the 345 kV and 765 kV circuit breaker have lost power
- d. Heat tracing and cooling is lost for TR4 and TR5, this reduces their load carrying capacity

QUESTION: 069 (1.00)

A Control Room evacuation is in progress. As part of the evacuation the operator attempted to trip the Unit 2 turbine. The turbine stop valve closed status lights did not energize.

Which one of the following is the correct method for tripping the turbine locally?

- a. Deenergize the solenoid trip device
- b. Deenergize the emergency oil circuit
- c. Place both overspeed trip devices in the trip position
- d. Place the manual-mechanical trip device in push to trip

QUESTION: 070 (1.00)

The following plant parameters exist:

- RCS pressure is 1600 psig and decreasing
- Pressurizer level is slowly decreasing
- PORVs and spray valves are closed
- All steam generator pressures and levels are normal
- Auxiliary building radiation levels are increasing
- Plant vent radiation monitors are increasing
- Containment pressure and sump levels are normal

Which one of the following is the correct plant condition?

- a. LOCA inside containment
- b. LOCA outside containment
- c. Faulted steam generator
- d. Ruptured steam generator

QUESTION: 071 (1.00)

A reactor trip and safety injection occurred due to a LOCA. There are several ECCS system failures. The following plant conditions exist:

- Containment pressure is 7.2 psi and increasing
- Containment hydrogen concentration is increasing

Which one of the following describes the correct mitigating strategy for hydrogen control?

- a. Both hydrogen recombiners should be started when containment hydrogen reaches 4.0%.
- b. A hydrogen recombiner should have been started when containment pressure reached 2.9 psi.
- c. Both hydrogen recombiners should be started more than 30 minutes after the LOCA and within 2 hours after the LOCA.
- d. A hydrogen recombiner should be placed in service 6 hours after the LOCA if hydrogen concentrations are less than 4%.

QUESTION: 072 (1.00)

Unit 2 has been drained to midloop for repairs to RCP #21 seals. Following indications of cavitation the RO noted RCS level at 612' 8" and stopped the West RHR pump. The crew's strategy for mitigation of the Loss of RHR will include which one of the following:

- a. Initiation of Safety Injection.
- b. Isolation of RCS Vent Paths.
- c. Isolate letdown and known drain paths.
- d. Immediate start of the East RHR Pump.

QUESTION: 073 (1.00)

The loss of reactor coolant pumps during a steam generator tube rupture increases the risk of voiding in the upper head region during the subsequent cooldown and depressurization. Why?

- a. More ECCS flow is injected into the ruptured loop cold leg due to the reduced pressure bypassing the core and not removing enough heat
- b. The isolation of the steam generator in the affected loop causes that loop to stagnate therefore insufficient heat removal capacity is available to cool the RCS
- c. The RCS reaches saturation temperature during the rapid depressurization due to the tube rupture and the injection of cold ECCS fluid causing the RCS to flash
- d. The upper head region becomes inactive and the fluid temperature in that region will significantly lag the temperatures in the RCS loop

QUESTION: 074 (1.00)

Which one of the following conditions will DIRECTLY cause both Unit 2 main feedwater pumps to trip?

- a. Reactor trip
- b. Turbine trip
- c. Narrow range S/G level at 65%
- d. Lube oil pressure less than 6 psig

QUESTION: 075 (1.00)

The magnitude of a potential release is limited during a fuel handling accident by limiting the maximum load to less than _____ pounds from traveling over the fuel assemblies in the spent fuel pool.

- a. 1000
- b. 1500
- c. 2000
- d. 2500

QUESTION: 076 (1.00)

The following breaker alignment exists:

CLOSED	OPEN
21AC	T21A10
21A11	21BD
T21D2	21D1
21C1	21B11
T21C3	T21B4

Which one of the following statements about the MG sets is correct? (Refer to attached electrical drawing)

- a. Both have power available
- b. 2N has power, 2S does not
- c. 2S has power, 2N does not
- d. Neither has power available

QUESTION: 077 (1.00)

During normal plant operation, what is the primary parameter used to monitor containment ventilation system performance?

- a. Pressure
- b. Humidity
- c. Temperature
- d. Sump level

QUESTION: 078 (1.00)

Given the following plant conditions:

- A plant trip occurred due to the loss of offsite power
- RCS temperature is 537°F and decreasing
- RCS pressure is 1750 psig and steady
- Steam generator pressure is 750 psig and decreasing
- ECCS is providing water to the RCS
- Pressurizer level is 17% and increasing
- Thermocouple temperatures are 617°F and steady

Which one of the following describes the condition in the upper head region?

- a. The head region is subcooled
- b. The head region is superheated
- c. The head region is at saturation with voids
- d. The head region is at saturation with no voids

QUESTION: 079 (1.00)

Reactor power is 4×10^{-6} amps and SUR is 0.17 dpm. How long will it take before a reactor trip occurs if no operator action is taken?

- a. 0.58 minutes
- b. 3.52 minutes
- c. 6.47 minutes
- d. the reactor should have tripped at 10^{-6} amps

Question deleted, no valid answer.

QUESTION: 080 (1.00)

You are touring the Unit 2 Turbine Building. Both Motor Driven Auxiliary Feedwater Pumps have been running for the past 3 hours in preparation for a unit start-up. You notice the outboard bearing on the east pump is very warm to the touch and obtain a pyrometer. Contact readings with the pyrometer indicate bearing temperature is 145°F.

Assuming that no local operations have taken place at the pump, which one of the following describes the actions you are required to take, if any?

- a. Continue to monitor temperature. If temperature exceeds 150°F notify the Unit Supervisor to stop the pump.
- b. Notify the US immediately to stop the pump before bearing damage occurs.
- c. Continue to monitor temperature. When the temperature exceeds 160°F throttle open the NESW cooling supply to the bearing.
- d. Throttle open the NESW cooling supply to the bearing to maintain temperature less than 160°F.

QUESTION: 081 (1.00)

Unit 1 tripped from 100% power. Narrow range steam generator levels are now 25%. The TDAFP had auto started but has been secured and reset. AMSAC has not been reset.

Which one of the following statements correctly describes its auto start capability now?

- a. It will not auto start.
- b. It will auto start when an SI occurs.
- c. It will auto start when reserve power is lost.
- d. It will auto start when all steam generator levels decrease below lo-lo level.

QUESTION: 082 (1.00)

Unit 1 is at 100% power with circulating water pump 11 shutdown because of high bearing temperature. Generator megawatts are decreasing. Main feedwater pump speed is decreasing. Circulating water pump 12 has tripped and condenser vacuum has decreased to 21 inches Hg.

Which one of the following is the correct response?

- a. Begin turbine load reduction per 01-OHP.4021.001.003 "Power Reduction"
- b. Begin turbine load reduction per 01-OHP.4022.001.006 "Rapid Power Reduction"
- c. Trip the turbine and then the reactor and go to 1-OHP- 4023.E-0 "Reactor Trip or Safety Injection"
- d. Trip the reactor and then the turbine and go to 1-OHP- 4023.E-0 "Reactor Trip or Safety Injection"

QUESTION: 083 (1.00)

Which one of the following precautions MUST be satisfied to start the FIRST RCP in Mode 4?

- a. RCS cold leg temperature is greater than 152°F
- b. Seal injection flow is greater than 13 gpm
- c. Associated pressurizer spray valve is partially open
- d. Differential pressure across No. 1 seal is greater than 215 psid

QUESTION: 084 (1.00)

Which one of the following Reactor Coolant Pump parameters has an indicating meter on the Reactor Coolant Pump panel in the Control Room?

- a. RCP CCW Supply/Return Flow (CFA-450)
- b. RCP Thermal Barrier CCW Outlet Temperature (CTA-451)
- c. RCP Thermal Barrier CCW Differential Pressure (CDA-451)
- d. RCP Lower Guide Bearing Oil Cooler CCW Outlet Flow (CFA-451)

QUESTION: 085 (1.00)

The Unit 2 reactor has failed to trip following a rupture of the suction line for both main feedwater pumps. The reactor operator is manually inserting control rods. The balance of plant operator, following manual actuation of AMSAC, notes that the turbine steam stop valves status lights are NOT lit. The turbine will not manually trip from the control room.

Which one of the following is the next required action to mitigate the event?

- a. Trip all control fluid pumps.
- b. Manually reduce the turbine load.
- c. Manually depress the unit trip pushbutton.
- d. Trip closed all steam generator stop valves.

QUESTION: 086 (1.00)

During a liquid radwaste discharge from the monitoring tanks, Annunciator Panel #127, Drop 5 "WASTE LIQUID MONIT RAD LEVEL HIGH" alarms but the auto actions do not occur.

What operator immediate actions are required?

- a. Trip RRV-285 "Radiation Waste Discharge Isolation Valve" closed and switch the monitor tanks to recirculation
- b. Trip RRV-285 "Radiation Waste Discharge Isolation Valve" closed and trip the selected Monitor Tank Pumps
- c. Place the radiation monitoring tanks on recirculation, flush the discharge line and the radiation monitor and start the discharge again
- d. Secure the radiation waste discharge lineup per 12- OHP.4012.006.004 "Transferring Distillate From Monitoring Tanks" and report the release to chemistry

QUESTION: 087 (1.00)

An auto-start signal is generated for the Unit 1 West ESW Pump when which one of the following Unit 2 CRIDs is de-energized?

- a. CRID 1
- b. CRID 2
- c. CRID 3
- d. CRID 4

QUESTION: 088 (1.00)

Unit 2 power range channel N44 failed high and during the subsequent shutdown N43 failed as is at 12% power. The other power range channels, N41 and N42, read 6% power. The turbine impulse pressure transmitters are reading equivalent to 6% power.

If a turbine high thrust bearing position alarms at +34 mils, what is the status of the plant?

- a. Only the turbine trips
- b. Only the reactor trips
- c. The turbine trips resulting in a reactor trip
- d. Nothing happens the thrust bearing position is below the turbine trip setpoint

QUESTION: 089 (1.00)

Which one of the following is the correct pressure sequence of events that happen in the control and plant air systems during pressure lowers?

- a. 125 psig CAS wet receiver pressure CAC unloads
100 psig at PPS-11 (21) plant air header isolates
110 psig at PPS-10 (20) standby PAC starts
- b. 115 psig CAS wet receiver pressure CAC unloads
95 psig at PPS-11 (21) plant air header isolates
100 psig at PPS-10 (20) standby PAC starts
- c. 105 psig CAS wet receiver pressure CAC unloads
88 psig at PPS-11 (21) plant air header isolates
98 psig at PPS-10 (20) standby PAC starts
- d. 100 psig CAS wet receiver pressure CAC unloads
95 psig at PPS-10 (20) standby PAC starts
85 psig at PPS-11 (21) plant air header isolates

QUESTION: 090 (1.00)

Which one of the following will cause the Fire Protection to Auxiliary Building shutoff valves, ZMO-10 and ZMO-20, to open automatically?

- a. Reactor Coolant Pump fire protection deluge for #21 RCP is activated
- b. An AEO locally depresses the push button for an Auxiliary Building fire hose station
- c. An AEO locally depresses the push button for an Auxiliary Building fire CO₂ hose station
- d. Fire Protection or the Technical Support Center charcoal filter is actuated

QUESTION: 091 (1.00)

The following plant conditions exist:

- Initial pressurizer pressure was 2235 psig
- Pressurizer PORV NRV-153 has just opened
- The operator closed the block valve NMO-153
- Current pressurizer pressure is 2190 psig

Pressurizer relief tank parameters:

- Level 75%
- Pressure 6.5 psig
- Temperature 123°F

What is the expected temperature indication for NTA-154, PORV outlet temperature?
(Reference the steam tables)

- a. 125°F
- b. 175°F
- c. 230°F
- d. 350°F

QUESTION: 092 (1.00)

The Unit 1 containment hydrogen is 2.7%. The hydrogen recombiner can be verified to be operating properly by which one of the following operating characteristics? Indications of a ramp increase in hydrogen temperature . . .

- a. will occur when the recombination temperature of 1225°F is reached
- b. will occur when the recombination temperature of 1200°F is reached
- c. will be too small to detect when the recombination temperature of 1225°F is reached, so therefore temperature of the recombiner thermocouples should be maintained above 1225°F to assure proper operation
- d. will be too small to detect when the recombination temperature of 1200°F is reached, so therefore temperature of the recombiner thermocouples should be maintained above 1200°F to assure proper operation

QUESTION: 093 (1.00)

A turbine runback just occurred in the plant. Auctioneered high T_{ave} is 590°F and T_{ref} is 582°F. Which one of the following is the status of the steam dumps?

- a. No steam dump control valves are open
- b. Group 1 control dump valves are open
- c. Group 1 and 2 control dump valves are open
- d. Group 1, 2, and 3 control dump valves are open

QUESTION: 094 (1.00)

Which one of the following is the purpose of a STRIPPED TAG?

- a. Denote that the status of the tagged equipment is not to be changed in any manner until after the clearance permit is released and the tag removed
- b. Denote that the equipment is not to be operated or its status changed in any manner except by request of the permit holder
- c. Provide tracking of plant equipment that has been removed for testing or repairs
- d. Provide special instructions regarding the status of plant equipment

QUESTION: 095 (1.00)

The Code of Federal Regulations, 10CFR50.36, Technical Specifications, defines a Limiting Condition for Operation as:

- a. The most limiting reactivity addition resulting from an accident.
- b. Operation in a condition not included in the Final Safety Analysis Report.
- c. The lowest functional capability or performance levels of equipment required for safe operation of the facility.
- d. The minimum required redundant equipment to meet the design bases for a Loss of Coolant Accident.

QUESTION: 096 (1.00)

All of the following are the responsibility of the Reactor Operator in the control room during fuel handling except:

- a. Directs the refueling activities during core alteration
- b. Clears, tags, and returns equipment to service as directed
- c. Directs the performance of routine and special tests of plant equipment
- d. Monitors plant operation parameters and equipment status and maintains these within Technical Specification limits

QUESTION: 097 (1.00)

The control room operators are responding to a SGTR. In order to cool down the RCS and establish required subcooling margin, the operators dump steam to the condenser using intact Sgs.

This method of RCS cooldown is preferred over dumping steam through the PORVs of intact SGs because it minimizes . . .

- a. RCS subcooling requirements.
- b. shrink experienced by the RCS.
- c. thermal shock to the reactor vessel.
- d. radiological releases and conserves feedwater supply.

QUESTION: 098 (1.00)

Who may grant an extension to administrative exposure limits?

- a. Unit Supervisor
- b. RP Superintendent
- c. Senior RP Tech on site
- d. Work Group Supervisor

QUESTION: 099 (1.00)

2-OHP.4023.E-3 "Steam Generator Tube Rupture", contains the following CAUTION, "If any ruptured SG is faulted, AFW flow to that SG should remain isolated during subsequent recovery actions unless needed for RCS cooldown." Which one of the following would be the consequence of not following this caution?

Continued AFW flow may . . .

- a. extend the time required for a ruptured/faulted SG depressurization
- b. cooldown the ruptured/faulted SG, thus extending the time required to refill the pressurizer
- c. aggravate an uncontrolled cooldown of the RCS and increase the possibility of SG overfill
- d. dilute the RCS and lead to a loss of shutdown margin

QUESTION: 100 (1.00)

What are the three plant and related plant locations where it is possible to notify the NRC operations center using the preferred means other than the Control Room?

- a. Operational Staging Center, Plant Managers Office, NRC Resident Inspectors Office
- b. Technical Support Center, Operational Staging Center, Emergency Operations Facility
- c. Technical Support Center, Emergency Operations Facility, NRC Resident Inspectors Office
- d. Technical Support Center, Operational Staging Center, NRC Resident Inspectors Office

(***** END OF EXAMINATION *****)

ANSWER: 001 (1.00)
 a.
 REFERENCE:
 RO-C-AOP-7
 Cognitive
 000001K118 ..(KA's)

ANSWER: 006 (1.00)
 c.
 REFERENCE:
 SOD-01900-001
 Cognitive
 000062A102 ..(KA's)

ANSWER: 011 (1.00)
 b.
 REFERENCE:
 SD-03200
 Cognitive
 000058K301 ..(KA's)

ANSWER: 002 (1.00)
 b.
 REFERENCE:
 SD01200.RV1,
 SOD-01200-002
 Memory
 000005A102 ..(KA's)

ANSWER: 007 (1.00)
 a.
 REFERENCE:
 Steam Tables
 Cognitive
 000074K106 ..(KA's)

ANSWER: 012 (1.00)
 b.
 REFERENCE:
 SD-00202-003
 02-OHP 4022.013.010
 Cognitive
 000028K101 ..(KA's)

ANSWER: 003 (1.00)
 a.
 REFERENCE:
 02-OHP 4022.002.001
 Cognitive
 000015A107 ..(KA's)

ANSWER: 008 (1.00)
 b.
 REFERENCE:
 Drawing No. OP-1-5128A-37
 Cognitive
 000008K201 ..(KA's)

ANSWER: 013 (1.00)
 c.
 REFERENCE:
 SD-08201.RV.1
 Memory
 000056A247 ..(KA's)

ANSWER: 004 (1.00)
 a.
 REFERENCE:
 PSBD 02-OHP 4023.FR-S.1
 Procedure 02-OHP
 4023.FR-S.1
 Memory
 000029A204 ..(KA's)

ANSWER: 009 (1.00)
 d.
 REFERENCE:
 02-OHP 4023 FR-P.1, Sup.
 010, and Sup. 007
 Cognitive
 000022K101 ..(KA's)

ANSWER: 014 (1.00)
 a.
 REFERENCE:
 OPH 4022.012.005
 Cognitive
 000003K304 ..(KA's)

ANSWER: 005 (1.00)
 a.
 REFERENCE:
 02-OHP 4024 212 Drop 8
 Memory
 000051G2.1 ..(KA's)

ANSWER: 010 (1.00)
 a.
 REFERENCE:
 02-OHP 4024.206,
 SOD-01700-002
 Cognitive
 000025G2.4 ..(KA's)

ANSWER: 015 (1.00)
 d.
 REFERENCE:
 OHP 4023 ES-1.1
 Cognitive

ANSWER: 016 (1.00)
 c.
 REFERENCE:
 OHP 4023 ES-0.1
 Cognitive
 000024A205 ..(KA's)

ANSWER: 017 (1.00)

ANSWER: 022 (1.00)
 a.

ANSWER: 027 (1.00)
 c.

d.
 REFERENCE:
 ERG-HP Background
 FR-P.1, Response to
 Imminent Pressurized
 Thermal Shock Condition,
 Step 2
 Cognitive

ANSWER: 018 (1.00)

d.
 REFERENCE:
 SD-05001.RV.1
 SD-05002.RV.0
 Memory
 000067K102 ..(KA's)

ANSWER: 019 (1.00)

c.
 REFERENCE:
 SD-01100.RV.1
 SOD-01100-002
 Cognitive
 000069A101 ..(KA's)

ANSWER: 020 (1.00)

b.
 REFERENCE:
 SD-02200.RV.0
 SOD-02200-001
 Memory
 000059A205 ..(KA's)

ANSWER: 021 (1.00)

a.
 REFERENCE:
 Technical Specifications
 3.4.6.2
 ATR 1-RCS-3
 Cognitive
 000037G2.2 ..(KA's)

ANSWER: 032 (1.00)

d.
 REFERENCE:

REFERENCE:
 SD-01200.RV.0
 SOD-01200-003
 Cognitive
 001K105 ..(KA's)

ANSWER: 023 (1.00)

b.
 REFERENCE:
 OHP 4021.003.001
 Attachment 13 Caution
 SD-00300
 Cognitive
 004K507 ..(KA's)

ANSWER: 024 (1.00)

a.
 REFERENCE:
 SD-01200
 01-OHP 4024.210 Drop 39
 01-OHP 4021.001.003
 Cognitive
 004K601 ..(KA's)

ANSWER: 025 (1.00)

c.
 REFERENCE:
 01-OHP 4021.082.008
 Cognitive
 013K201 ..(KA's)

ANSWER: 026 (1.00)

a.
 REFERENCE:
 02-OHP 4023 FR-P.1
 Memory
 013K416 ..(KA's)

ANSWER: 037 (1.00)

c.
 REFERENCE:

REFERENCE:
 02-OHP 4024.210 Drop 39
 Memory
 014A103 ..(KA's)

ANSWER: 028 (1.00)

a.
 REFERENCE:
 RO-C-NS09
 Cognitive
 015A101 ..(KA's)

ANSWER: 029 (1.00)

b.
 REFERENCE:
 02-OHP 4021.028.001
 Precautions
 Memory
 022G2.1.32 ..(KA's)

ANSWER: 030 (1.00)

a.
 REFERENCE:
 SD-01100, SOD-01000-001
 Cognitive
 025A204 ..(KA's)

ANSWER: 031 (1.00)

d.
 REFERENCE:
 OHP 4024.205 Drop 3, 23,
 and 24
 Cognitive
 026G2.1.31 ..(KA's)

ANSWER: 042 (1.00)

b.
 REFERENCE:

SD-05500
Memory
059A306 ..(KA's)

SOD-00800-001,
OP-1-12012-13
Cognitive
006K204 ..(KA's)

12-OHP 4022.018.001
Memory
033K303 ..(KA's)

ANSWER: 033 (1.00)
a.
REFERENCE:
SD-08204
01-OHP 4022.082.002AB
Cognitive
063A301 ..(KA's)

ANSWER: 038 (1.00)
d.
REFERENCE:
OHI-4000.RV.2
01-OHP.4024.108 Drop 8
and 9
Cognitive
011A206 ..(KA's)

ANSWER: 043 (1.00)
d.
REFERENCE:
RO-C-01201.RV.1
Cognitive
034A203 ..(KA's)

ANSWER: 034 (1.00)
d.
REFERENCE:
SD-02200
Memory
068K504 ..(KA's)

ANSWER: 039 (1.00)
b.
REFERENCE:
SD-01100
02-OHP 4022.013.016
Cognitive
012K604 ..(KA's)

ANSWER: 044 (1.00)
b.
REFERENCE:
SD 5103
Memory
035K111 ..(KA's)

ANSWER: 035 (1.00)
a.
REFERENCE:
01-OHP 4024.128, SD-02300
Cognitive
071A429 ..(KA's)

ANSWER: 040 (1.00)
c.
REFERENCE:
RO-C-05600.RV.1
Cognitive
016K106 ..(KA's)

ANSWER: 045 (1.00)
a.
REFERENCE:
SD-05200.RV.1
Cognitive
039K402 ..(KA's)

ANSWER: 036 (1.00)
c.
REFERENCE:
12-OHP 4022.018.003
Memory
072K302 ..(KA's)

ANSWER: 041 (1.00)
b.
REFERENCE:
SOD-02800-002
Memory
029A103 ..(KA's)

ANSWER: 046 (1.00)
b.
REFERENCE:
SD-12-CAR-100
01-OHP-4021.053.002 Rev
11
01-OHP-4021.053.003 Rev 2
Memory
055K301 ..(KA's)

ANSWER: 047 (1.00)
c.
REFERENCE:
RO-C-08201.RV.1

ANSWER: 052 (1.00)
a.
REFERENCE:
SD-01600.RV.1

ANSWER: 057 (1.00)
c.
REFERENCE:
Unit Tech Data Books

Cognitive
062G2.1.28 ..(KA's)

ANSWER: 048 (1.00)

d.
REFERENCE:
SOD-01350-001
SD-01600.RV.1

Memory
073K101 ..(KA's)

ANSWER: 049 (1.00)

c.
REFERENCE:
SOD-01900-001

Memory
075A401 ..(KA's)

ANSWER: 050 (1.00)

b.
REFERENCE:
SD-01700.RV.1
SOD-01700-002

Memory
005K407 ..(KA's)

ANSWER: 051 (1.00)

b.
REFERENCE:
02-OHP 4021.002.001

Memory
007K502 ..(KA's)

ANSWER: 063 (1.00)

d.
REFERENCE:
SD-01301

SOD-01600-001
SOD-01600-002
SOD-00901-001
SOD-00800-002

Cognitive
008A305 ..(KA's)

ANSWER: 053 (1.00)

c.
REFERENCE:
SD-02000
SD-02000.RV.1

Memory
076A401 ..(KA's)

ANSWER: 054 (1.00)

d.
REFERENCE:
OHI-4012 Data Sheets

Memory

ANSWER: 055 (1.00)

b.
REFERENCE:
RO-C-ADM02

Memory

ANSWER: 056 (1.00)

c.
REFERENCE:
PMP-4043.ICV.001

Memory

ANSWER: 069 (1.00)

d.
REFERENCE:
02-OHP.4025.LTI-1

Memory

Memory

ANSWER: 058 (1.00)

c.
REFERENCE:
GE-C-1000 OBS E.7

Cognitive

ANSWER: 059 (1.00)

b.
REFERENCE:
SD-03201.RV.1

Memory
064A304 ..(KA's)

ANSWER: 060 (1.00)

a.
REFERENCE:
PMP-2080.EPP.106

Memory

ANSWER: 061 (1.00)

c.
REFERENCE:
Overview Drawing
SOD-00300-001

Memory
000011A105 ..(KA's)

ANSWER: 062 (1.00)

c.
REFERENCE:
Tech Spec 3.4.8 Bases

Memory
000076K201 ..(KA's)

ANSWER: 075 (1.00)

d.
REFERENCE:

Cognitive
000009A116 ..(KA's)

ANSWER: 064 (1.00)
b.
REFERENCE:
PMP-4100.SDR.001.RV.4
Memory
002K401 ..(KA's)

ANSWER: 065 (1.00)
c.
REFERENCE:
Drawing OP-2-98416-26,
SD-01900
Cognitive
000026K301 ..(KA's)

ANSWER: 066 (1.00)
d.
REFERENCE:
01-OHP.4023.ES-01
Cognitive
000027K303 ..(KA's)

ANSWER: 067 (1.00)
c.
REFERENCE:
RO-C-EOP07
Cognitive
000040K202 ..(KA's)

ANSWER: 068 (1.00)
a.
REFERENCE:
RO-C-08200
Memory
000055A203 ..(KA's)

ANSWER: 080 (1.00)
d.
REFERENCE:
02-OHP.4021.056.002
Rev.11

000068A115 ..(KA's)

ANSWER: 070 (1.00)
b.
REFERENCE:
01-OHP.4023.E-0
Cognitive
2.1.7 ..(KA's)

ANSWER: 071 (1.00)
d.
REFERENCE:
02-OHP.4023.E-1
Memory

ANSWER: 072 (1.00)
c.
REFERENCE:
01-OHP.4022.017.001
Cognitive

ANSWER: 073 (1.00)
d.
REFERENCE:
RO-C-EOP08
Cognitive
000038K103 ..(KA's)

ANSWER: 074 (1.00)
a.
REFERENCE:
02-OHP.4021.055.003 Rev.
8
RO-C-05500.RV.1
Memory
000054A201 ..(KA's)

ANSWER: 086 (1.00)
b.
REFERENCE:
12-OHP.4024.127 Drop 5
Cognitive

Fuel handling accident bases
and tech spec entry condition
3/4.9.7

Memory
000036A203 ..(KA's)

ANSWER: 076 (1.00)
d.
REFERENCE:
SD-01200, SOD-08201-001,
OP-2-12001-29,
OP-2-12002-26
Cognitive
0001K205 ..(KA's)

ANSWER: 077 (1.00)
c.
REFERENCE:
SD-02800
Memory
022A101 ..(KA's)

ANSWER: 078 (1.00)
c.
REFERENCE:
RO-C-01301.RV.1
Cognitive
017A101 ..(KA's)

~~ANSWER: 079 (1.00)~~
~~b.~~
~~REFERENCE:~~
~~RO-C-01300.RV.1~~
~~Cognitive~~
~~015K405 ..(KA's)~~

ANSWER: 092 (1.00)
a.
REFERENCE:
01-OHP.4023.SUP.005 page
4 of 6

Memory
061A204 ..(KA's)

ANSWER: 081 (1.00)
a.
REFERENCE:
RO-C-05600.RV.1
Cognitive
061K406 ..(KA's)

ANSWER: 082 (1.00)
d.
REFERENCE:
01-OHP.4024.118, Drop 71
Cognitive
056G2.1.23 ..(KA's)

ANSWER: 083 (1.00)
d.
REFERENCE:
OHP.4021.002.003
Memory
003 2.1.27 ..(KA's)

ANSWER: 084 (1.00)
d.
REFERENCE:
SD-00201.RV.0, RCP Panel
Picture
Memory
003A408 ..(KA's)

ANSWER: 085 (1.00)
b.
REFERENCE:
2-OHP 4023.FR-S.1
Cognitive
059A205 ..(KA's)

ANSWER: 098 (1.00)
b.
REFERENCE:
THP 6010 RPP.101
Memory

068A204 ..(KA's)

ANSWER: 087 (1.00)
a.
REFERENCE:
02-OHP.4021.082.008
Memory
000057A101 ..(KA's)

ANSWER: 088 (1.00)
c.
REFERENCE:
RO-C-05002.RV.0
02-OHP 4024.212 Drop 17
Cognitive
045K301 ..(KA's)

ANSWER: 089 (1.00)
d.
REFERENCE:
SOD-06401-002
Memory
079K101 ..(KA's)

ANSWER: 090 (1.00)
b.
REFERENCE:
RO-C-AS17
Memory
086A302 ..(KA's)

ANSWER: 091 (1.00)
c.
REFERENCE:
SD-00202.RV.1
Cognitive
010K502 ..(KA's)

Memory
028K601 ..(KA's)

ANSWER: 093 (1.00)
c.
REFERENCE:
RO-C-05200
Cognitive
041K105 ..(KA's)

ANSWER: 094 (1.00)
b.
REFERENCE:
RO-C-ADM09
Memory

ANSWER: 095 (1.00)
c.
REFERENCE:
RO-C-TS01
Memory

ANSWER: 096 (1.00)
a.
REFERENCE:
OHI-4011, OHI-4013
Memory

ANSWER: 097 (1.00)
d.
REFERENCE:
RO-C-EOP08
Memory

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ANSWER: 099 (1.00)

c.

REFERENCE:

OHP 4023.E-3

Cognitive

ANSWER: 100 (1.00)

c.

REFERENCE:

E-Plan, Rev. 15, Section

12.3.7.3

Memory

(***** END OF EXAMINATION *****)

ANSWER KEY
MULTIPLE CHOICE

001 b	021 a	041 b	061 d	081 a
002 b	022 a	042 b	062 c	082 d
003 a	023 b	043 d	063 d	083 d
004 a	024 a	044 b	064 b	084 d
005 a	025 c	045 a	065 c	085 b
006 c	026 a	046 b	066 d	086 b
007 a	027 c	047 c	067 c	087 a
008 b	028 a	048 d	068 a	088 c
009 d	029 b	049 c	069 d	089 d
010 a	030 a	050 b	070 b	090 b
011 b	031 d	051 b	071 d	091 c
012 b	032 d	052 a	072 c	092 a
013 c	033 c	053 c	073 d	093 c
014 a	034 d	054 d	074 a	094 b
015 d	035 a	055 b	075 d	095 c
016 c	036 c	056 c	076 d	096 a
017 d	037 c	057 c	077 c	097 d
018 d	038 d	058 c	078 c	098 b
019 c	039 b	059 b	079 b	099 c
020 b	040 c	060 a	080 d	100 c

(***** END OF EXAMINATION *****)