APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Operator Licensing Exam Report: 50-313/OL 92-01

Operating License: DPR-51

Docket No: 50-313

Licensee: Entergy Operations, Inc.
Route 3, Box 137G
Russellville, AR 72801

Facility Name: Arkansas Nuclear One, Unit 1

Examination at: ANO1

Examinations Conducted: February 24-26, 1992

Chief Examiner: J. M. Keeton, Examiner, Operator Licensing Section
Division of Reactor Safety

Approved: Dwight D. Chamberlain for 4-3-92
J. L. Pellet, Chief, Operator Licensing Section Date
Division of Reactor Safety

Summary

NRC Administered Examinations Conducted During the Week of February 24, 1992 (NRC Report 50-313/OL 92-01)

NRC administered examinations to six senior reactor operator (SRO) applicants. All of the applicants passed all sections of the examination and have been issued the appropriate licenses. The examinations were conducted in accordance with NUREG 1021, Revision 6.

Operator performance observed during this examination was considered good with only minor weaknesses that NRC identified and communicated to the training staff. NRC commented on the professional conduct and good cooperation of the operations and training staff. Continuing improvement in the training program and operation's involvement is considered a strength.

DETAILS

1. PERSONS EXAMINED

		RO	SRO	Total
Licensee Examinations:	Pass -	0	6	6
	Fail -	0	0	0

2. EXAMINERS

J. M. Keeton, Chief Examiner
E. L. Benjamin
M. P. Lintz

3. EXAMINATION REPORT

Performance results for individual candidates are not included in this report because examination reports are placed in the NRC Public Document Room. Individual performance results are not subject to public disclosure.

3.1 Examination Review Comment/Resolution

In general, editorial comments or changes made as a result of facility reviews prior to the examination are not addressed by this resolution section. All facility licensee pre-examination comments were incorporated into the examination.

The facility training staff provided post-examination comments on questions 13, 44, 52, 77, 84, and 88. The recommended resolutions for questions 52, 77, 84, and 88 were accepted and the answer key was changed accordingly.

The recommended resolutions for questions 13 and 44 were not accepted and the answer key remained unchanged.

Question 13 clearly asks for the response in both loops to a transmitter failure in one loop. The word "slowly" was used to describe transmitter failure to avoid extreme system upset. The change in Loop B flow will be delayed until the delta-Tc threshold is reached, but the ultimate response will be the same, i.e., flow in Loop B will decrease. The facility comment was not accepted.

Question 44 was used to determine the candidate's ability to identify multiple failures that required more restrictive Technical Specification application than any of the single failures, i.e., conditions requiring entry into Technical Specification 3.0.3. This ability is identified as memory level in the facility learning objectives. The facility comment was not accepted.

The post-examination comments are attached to this report.

3.2 Site Visit Summary

The facility licensee was provided a copy of the examination and answer key for the purpose of commenting on the examination content validity.

An exit meeting was held February 27, 1992, with members of the facility licensee staff. The following personnel were present at the exit:

NRC	Facility Licensee	
J. Pellet	J. Vandergrift	J. Swailes
J. Keeton	C. Zimmerman	E. Force
	K. Canitz	D. Smith
	J. Albers	

NRC did not discuss specifics of this examination at the exit. The attendees were told that examination results could be expected within 30 days of the exit. NRC commented on the professional conduct and good cooperation of the operations and training staff. Continuing improvement in the training program and operation's involvement is considered a strength. Only minor weaknesses were identified in procedures and details were discussed with the staff during the examination process.

3.3 General Comments

3.3.1 Written Examination

The average score on the reactor operator examination was 87.7 percent. Seven questions on the examination were missed by more than four of the applicants. The question numbers were 7, 12, 13, 29, 44, 48, and 53. This information is provided to assist facility evaluation of training weaknesses.

3.3.2 Operating Examination

NRC noted that overall operator performance was good during the operating examinations. Some generic weaknesses were identified in communications and in command and control. These weaknesses were discussed with the training staff.

3.4 Master Examination and Answer Key

A master copy of the examination and answer key with facility comments incorporated is attached to this report.

3.5 Simulator Fidelity Report

All comments pertaining to simulator fidelity were discussed with the facility staff.

SIMULATION FACILITY FIDELITY REPORT

Facility Licensee: Arkansas Nuclear One, Unit 1

Facility Licensee Docket No.: 50-313

Operating Tests Administered at: ANO1

This report does not constitute an audit or inspection and is not, without further verification and review, indicative of noncompliance with 10 CFR Part 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information which may be used in future evaluations. No licensee action is required in response to these observations.

During the conduct of the simulator portion of the operating tests identified above, the following apparent performance and/or human factors discrepancies were observed:

- A pressure indicator on the decay heat removal system adjacent to controls for CV-1404 was reading 2500 psig.

- The causes and effects listed in the malfunction book are incomplete.

FACILITY COMMENTS ON SRO WRITTEN EXAMINATION

ADMINISTERED 2/24/1992

QUESTION 13:

May have two correct answers depending upon the interpretation of the candidate to the word "SLOWLY" in the stem of the question.

"A" loop FW flow will increase directly with the lowering FW flow signal. Initially "B" loop flow is not affected. Once "A" loop actual flow goes up then a ΔTc will be generated. It is this ΔTc that will cause "B" flow to increase. Thus "B" loop response is indirect and occurs some time later in the transient.

Recommend accepting A or B as correct answers.

QUESTION 44:

This was originally a facility question. It was modified for use on this exam. Pre-exam review comments stated this would be a good "OPEN REFERENCE" exam question. We feel the question was modified to the point where it became too complex for closed reference exam use. Our efforts during the pre-exam review phase to clarify the modified question were not successful. We, therefore, request this question be deleted from the exam.

QUESTION 52:

Question has 2 correct answers. A and D.

A procedural reference was overlooked during the pre-exam review. The main feedwater pumps do not go to track and hold as was assumed at the time of the review. Procedural references were located to support two answers as being correct.

A. 1203.001 1.1.E MFW pumps do not go to track and hold and will go to minimum speed.

D. 1203.001 1.1.G The low load block valves close.

Recommend accepting A and D as correct answers.

QUESTION 77:

Two correct answers not recognized during pre-exam review.

A and C are correct based upon the following.

C - Correct 1502.004 2.6.1.

A - Correct 1502.004 2.6.2, 2.6.3
RB Drain lines are part of Att. I as referenced in 2.6.2 and are required to be isolated per 2.6.3.

QUESTION 84:

Two correct answers based upon an assumption which must be made relating to the length of the OT period. At ANO most OT periods are 4 hours in length (i.e., operator stays over 4 hours or comes in 4 hours early). 8 hour OT periods are rare.

Based upon an 8 hour assumption answer C is correct.

Based upon a 4 hours assumption answer B or C could be correct.

A and D are incorrect based upon the following:

A. 1015.001, 10.2.2.A 16 hour limit.
D. 1015.001, 10.2.2.C 8 hours off between work periods.

Recommend accepting B or C as correct answers.

QUESTION 88:

Has no correct answer. The reference for this question was not available for the pre-exam review. In doing a detailed review of the references section D of Att. 3 of 1622.007 applies to this entry. Section D requires only 3 conditions listed in the question for an "emergency entry".

1. Approval of Plant Manager
2. TLD
3. Neutron TLD

Thus the correct response to the question would be a selection offering 1, 3 and 4.

Recommend deleting this question.

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
SENIOR OPERATOR LICENSE
REGION 4

CANDIDATE'S NAME: _____

FACILITY: Arkansas Nuclear One-1

REACTOR TYPE: PWR-B&W177

DATE ADMINISTERED: 92/02/24

INSTRUCTIONS TO CANDIDATE:

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Points for each question are indicated in parentheses after the question. The passing grade requires a final grade of at least 80%. Examination papers will be picked up four (4) hours after the examination starts.

TEST VALUE	CANDIDATE'S SCORE	%
99.0 ~~100.00~~		% TOTALS
	FINAL GRADE	

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

_____
Candidate's Signature

QUESTION: 001 (1.00)

WHICH ONE of the following combinations of AC and DC breakers and electronic trips will remove all power from the Control Rod Drive Mechanisms assuming only specified components actuate?

a. A+C breakers open plus "F" electronic trip.

b. B+D breakers open plus "F" electronic trip.

c. A+D breakers open plus "E" electronic trip.

d. B+C breakers open plus "E" electronic trip.

ANSWER: 001 (1.00)

d. [+1.0]

REFERENCE:

ANO1 STM-1-02 page 20
KA 001000K202 (3.6/3.7)

001000K202 ..(KA's)

QUESTION: 002 (1.00)

The following plant conditions exist:

-Reactor power is 45%.
-Rod Control is in AUTOMATIC.

WHICH ONE of the following conditions would result in an Out Inhibit being generated in the Rod Control Logic?

a. Safety Rod Groups at the c t.

b. ICS in track.

c. One rod is 10 inches from its group average position.

d. High neutron error signal (1.0%).

ANSWER. 002 (1.00)

c. [+1.0]

REFERENCE:

ANO1 STM-1-02 page 20
KA 001000K403 (3.5/3.8)

001000K403 ..(KA's)

QUESTION: 003 (1.00)

The following plant conditions exist:

-RCP seal injection and seal cooling flow have BOTH been lost.
-RCP seal bleedoff temperature is 207 degrees F.

WHICH ONE of the following is the reason why Seal Injection flow must be SLOWLY increased when flow is restored through RCP Seal Injection block valve (CV-1206)?

a. Allows time for the PZR level control valve to respond.

b. Avoids thermal shock to seal parts.

c. Ensures the MU pump maintains NPSH.

d. Prevents water hammer.

ANSWER: 003 (1.00)

b. [+1.0]

REFERENCE:

ANO1 1203.31 page 10
KA 003000K602 (2.7/3.1)

003000K602 ..(KA's)

QUESTION: 004 (1.00)

The following plant conditions exist:

-Reactor power is 87%.
Makeup Tank level is INCREASING.
-Boronometer indicates a DECREASE in boron concentration.

WHICH ONE of the following is an IMMEDIATE ACTION in accordance with 1203.17, "Moderator Dilution"?

a. Isolate letdown.

b. Close Pressurizer level control valve (CV-1235).

c. Isolate the inservice purification demineralizer.

d. Open CV-1407 or 1408 (BWST outlet to MU pump).

ANSWER: 004 (1.00)

b. [+1.0]

REFERENCE:

ANO1 1203.17 page 2
ANO1 1202.01 page 18
KA 004000A206 (4.2/4.3)

004000A206 ..(KA's)

QUESTION: 005 (1.00)

WHICH ONE of the following valves fails AS IS on loss of Instrument Air?

a. Letdown orifice block valve (CV-1222).

b. Pressurizer level control valve (CV-1235).

c. RC pump seals total injection flow (CV-1207).

d. Purification demineralizer inlet valve (CV-1244).

ANSWER: 005 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1203.024 page 15
KA 004010A204 (3.6/4.2)

004010A204 ..(KA's)

QUESTION: 006 (1.00)

WHICH ONE of the following detector types is used by the Source Range Nuclear Channels NI-1 (501) and NI-2 (502)?

a. Fission chambers.

b. BF-3 Proportional counters

c. Compensated ion chambers.

d. Uncompensated ion chambers.

ANSWER: 006 (1.00)

a. [+1.0]

REFERENCE:

ANO1 STM 1-67 2.1.2 page 13 and figure 67.2
KA 015000K601 (2.9/3.2)

015000K601 ..(KA's)

QUESTION: 007 (1.00)

The following plant conditions exist:

-LOCA has occurred.
-Water level is DECREASING below the top of the core.
-ALL the RCPs are OFF.

WHICH ONE of the following describes the Source Range Excore Nuclear Instrument detector count rate response?

a. Continually INCREASES as the core level decreases.

b. Continually DECREASES as the core level decreases.

c. Initially INCREASES to a maximum level then DECREASES as the water level continues to decrease.

d. Initially DECREASES to a minimum level then INCREASES as the water level continues to decrease.

ANSWER: 007 (1.00)

c. [+1.0]

REFERENCE:

ANO1 NOAA-21008-009 page 3
KA 015000A303 (3.9/3.9)

015000A303 ..(KA's)

QUESTION: 008 (1.00)

WHICH ONE of the following temperatures is the LOWEST temperature at which clad melting can occur when UO-2 and zircalloy are in contact?

a. 1930 degrees F.

b. 2580 degrees F.

c. 3320 degrees F.

d. 5070 degrees F.

ANSWER: 008 (1.00)

b. [+1.0]

REFERENCE:

ANO1 LP 21000-006 page 4
KA 017020K501 (3.1/3.9)

017020K501 ..(KA's)

QUESTION: 009 (1.00)

WHICH ONE of the following coolers will continue to provide cooling after ESAS channels 1 through 6 actuate?

a. RB coolers.

b. RCP motor air coolers.

c. CRD coolers.

d. Letdown coolers.

ANSWER: 009 (1.00)

a. [+1.0]

REFERENCE:

ANO1 LP 12 pages 30 and 32
ANO1 1103.06 page 9
KA 022000A301 (4.1/4.3)

022000A301 ..(KA's)

QUESTION: 010 (1.00)

WHICH ONE of the following systems is the source of cooling water to the Reactor Building cooling system during normal operation?

a. Auxiliary cooling water.

b. Intermediate cooling water.

c. Service water.

d. Chilled water.

ANSWER: 010 (1.00)

d. [+1.0]

REFERENCE:

ANO1 STM 1-9, pages 2-4
KA 022000K104 (2.9/2.9)

022000K104 ..(KA's)

QUESTION: 011 (1.00)

WHICH ONE of the following will trip the Main Feedwater pumps (MFP) when ALL Condensate pumps trip and the standby Condensate pump fails to start?

a. High Condenser Hotwell pressure.

b. MFP suction pressure low.

c. Loss of Condenser vacuum.

d. MFP discharge pressure low.

ANSWER: 011 (1.00)

b. [+1.0]

REFERENCE:

ANO1 STM 1-19 pages 4, 5, and 6
ANO1 LP 32 page 23 and 15
KA 056000A204 (2.6/2.8)

056000A204 ..(KA's)

QUESTION: 012 (1.00)

WHICH ONE of the following will cause an AUTOMATIC trip of a Main Feedwater Pump (MFP) Turbine during normal operation?

a. Turbine speed at 5635 RPM.

b. MFP discharge pressure at 1325 psig.

c. MFP suction pressure at 225 psig for 50 seconds.

d. Turbine bearing oil pressure at 8 psig.

ANSWER: 012 (1.00)

d. [+1.0]

REFERENCE:

ANO1 1106.016 pages 13, 14, and 153
ANO1 1203.12F page 53
KA 059000K416 (3.1/3.2)

059000K416 ..(KA's)

QUESTION: 013 (1.00)

The following plant conditions exist:

-The plant is operating at 80% power.
-All ICS HAND/AUTO stations are in AUTO.

WHICH ONE of the following describes how the MFW flow in EACH loop is affected when the "A" MFW loop flow transmitter slowly fails to ZERO?

a. Loop A flow increases, Loop B flow is not affected.

b. Loop A flow increases, Loop B flow increases.

c. Loop A flow decreases, Loop B flow is not affected.

d. Loop A flow decreases, Loop B flow increases.

ANSWER: 013 (1.00)

b. [+1.0]

REFERENCE:

ANO1 P & ID D554903G (ICS FW)
ANO1 Advanced LP 04 page 3
KA 059000K107 (3.2/3.2)

059000K107 ..(KA's)

QUESTION: 014 (1.00)

The following plant conditions exist:

-Plant startup is in progress.
-RCS temperature is 210 degrees F.
-RCS pressure is 290 psig.
-The Steam Driven EFW pump has been declared INOPERABLE.
-The Motor Driven EFW pump is OPERABLE.

WHICH ONE of the following limitations is placed on reactor startup by Technical Specification 3.4, "Steam and Power Conversion System"?

a. The reactor cannot be heated above 210 degrees F.

b. The reactor cannot be heated above 280 degrees F.

c. The reactor startup may continue to Power Operations.

d. The reactor startup may continue to Hot Standby.

ANSWER: 014 (1.00)

b. [+1.0]

REFERENCE:

ANO1 Tech Spec 3.4.1
ANO1 LP 32, LO 32.11
KA 061000G005 (3.3/4.0)

061000G005 ..(KA's)

QUESTION: 015 (1.00)

WHICH ONE of the following provides the motive force for CV-2645 (EFW flow control valve)?

a. Essential DC power.

b. Essential AC power.

c. Instrument Air.

d. Electrohydraulic.

ANSWER: 015 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1107.004 page 41
ANO1 STM 1-66 page 57
KA 061000K201 (3.2/3.3)

061000K201 ..(KA's)

QUESTION: 016 (1.00)

The following plant conditions exist:

-ALL RCPs are secured.
-An EFW actuation has taken place.
-The OTSG level setpoint was manually selected at 378 inches.

WHICH ONE of the following is the AUTOMATIC EFIC response when an RCP is started?

EFIC will automatically select:

a. 312 inches, but level will have to be manually adjusted to the setpoint.

b. 378 inches, but maintain level at 312 inches.

c. 31 inches and control level at this point.

d. 24 inches but will not control level until manually reset.

ANSWER: 016 (1.00)

c. [+1.0]

REFERENCE:

ANOI LP 24 page 49
KA 061000A101 (3.9/4.2)

061000A101 ..(KA's)

QUESTION: 017 (1.00)

WHICH ONE of the following is the basis for the limits on RCS leakage per Technical Specification 3.1.6, "Leakage"?

a. Prevent exceeding make-up capacity.

b. Prevent a large leak from masking a smaller one.

c. Prevent exceeding in-plant dose rates to plant personnel.

d. Prevent exceeding in-plant radioactivity contamination limits.

ANSWER: 017 (1.00)

b. [+1.0]

REFERENCE:

ANO1 Tech Spec 3.1.6 and Bases
KA 002000G006 (2.6/3.8)

002000G006 ..(KA's)

QUESTION: 018 (1.00)

WHICH ONE of the following would require an RCS cooldown in accordance with the Pressurized Thermal Shock (PTS) limits with NO tube rupture?

a. RCS temperature is 475 degrees F, HPI is on and all RC pumps are off.

b. RCS temperature is 515 degrees F, HPI is on and 2 RC pumps are off.

c. RCS temperature is 475 degrees F and the cooldown rate is 110 degrees F/hour.

d. RCS temperature is 515 degrees F and the cooldown rate is 90 degrees F/hour.

ANSWER: 018 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1202.02 page 5 caution
002000G010 (3.4/3.9)

002000G010 ..(KA's)

QUESTION: 019 (1.00)

WHICH ONE of the following conditions relating to the BWST requires an LCO be entered by Technical Specifications 3.3, "Emergency Core Cooling, Reactor Building Cooling and Reactor Building Spray Systems"?

a. It contains a level of 39.1 feet (376,800 gallons).

b. It is borated to 2335 ppm.

c. Water temperature is 41.1 degrees F.

d. Only 1 level instrument channel is operable.

ANSWER: 019 (1.00)

d. [+1.0]

REFERENCE:

ANO1 Tech Spec 3.3.1 F & G
KA 006000G006 (2.9/4.0)

006000G006 ..(KA's)

QUESTION: 020 (1.00)

WHICH ONE of the following is the reason BOTH Core Flood Tanks (CFT) are required to be OPERABLE per Technical Specification 3.3, "Emergency Core Cooling, Reactor Building Cooling and Reactor Building Spray Systems"?

a. One CFT does not contain sufficient boron to maintain shutdown margin for a large break LOCA.

b. One CFT is required to be in service to support each independent and redundant Emergency Core Cooling System train.

c. One CFT has insufficient inventory to reflood the core in the event of a large break LOCA.

d. One CFT does not contain enough inventory if the BWST is at the minimum specified level to provide enough level in the RB sump to establish early recirculation flow.

ANSWER: 020 (1.00)

c. [+1.0]

REFERENCE:

ANO1 Tech Spec 3.3.3 and Bases (page 39)
KA 006000K602 (3.4/3.9)

006000K602 ..(KA's)

QUESTION: 021 (1.00)

WHICH ONE of the following is the Bases for the Technical Specification 3.1.3.4 MINIMUM (45 inches) Pressurizer level limit?

a. Ensures that the water level is above minimum detectable limits.

b. Ensures pressurizer heaters will respond to plant transients.

c. Ensures a pressurizer steam bubble exists to prevent an uncontrolled depressurization.

d. Ensures that the pressurizer will not go solid if a rod withdrawal accident occurs during startup.

ANSWER: 021 (1.00)

a. [+1.0]

REFERENCE:

ANO1 Tech Spec 3.2.1.2 and Bases
ANO1 QB I1000286 page 50
KA 011000G006 (2.6/3.7)

011000G006 ..(KA's)

QUESTION: 022 (1.00)

WHICH ONE of the following RPS trips is bypassed when the RPS is in "Shutdown Bypass"?

a. High Pressure.

b. High Flux.

c. High Temperature.

d. Variable Pressure-Temperature.

ANSWER: 022 (1.00)

d. [+1.0]

REFERENCE:

ANO1 STM-1-63 figure 63.5
KA 012000K406 (3.2/3.5)

012000K406 ..(KA's)

QUESTION: 023 (1.00)

The following plant conditions exist:

-Reactor power is 60%.
-T-ave suddenly INCREASES.
-T-cold simultaneously INCREASES.

WHICH ONE of the following is the cause for these increases?

a. T-cold failed HIGH.

b. T-cold failed LOW.

c. T-hot failed HIGH.

d. T-hot failed LOW.

ANSWER: 023 (1.00)

a. [+1.0]

REFERENCE:

ANO1 STM 1-69 page 5
ANO1 LP 34 pages 3 and 4
KA 016000A201 (3.0/3.1)

016000A201 ..(KA's)

QUESTION: 024 (1.00)

WHICH ONE of the following is the loading sequence for the EDG load sequencer on an ESAS with a Blackout?

a. HPI pump.
RB Spray pump.
EFW pump.

b. HPI pump.
EFW pump.
RB Spray pump.

c. EFW pump.
RB Spray pump.
HPI pump.

d. EFW pump.
HPI pump.
RB Spray pump.

ANSWER: 024 (1.00)

a. [+1.0]

REFERENCE:

ANO1 LP 16 page 23
KA 013000A302 (4.2/4.2)

013000A302 ..(KA's)

QUESTION: 025 (1.00)

WHICH ONE of the following Reactor Building valves/dampers CLOSE on ESAS channel THREE actuation?

a. RB chiller bypass damper (SV-7411).

b. RB purge outlet (filter inlet damper CV-7438).

c. RB hydrogen purge return isolation valve (CV-7443).

d. RB purge outlet isolation valve (CV-7403).

ANSWER: 025 (1.00)

d. [+1.0]

REFERENCE:

ANO1 STM 1-9 page 2
ANO1 LP-12 pages 31 and 32
ANO1 LO 12.20 page 31
KA 029000K103 (3.6/3.8)

029000K103 ..(KA's)

QUESTION: 026 (1.00)

WHICH ONE of the following describes the reason that Emergency Feedwater (EFW) will cause a quicker DECREASE in OTSG pressure than the same MFW flow rate?

a. EFW is injected into the steam space.

b. Main Feedwater is NOT counterflow to the OTSG tubes.

c. OTSG pressure is higher during EFW flow conditions.

d. EFW is injected into the outer wrapper area of the OTSG.

ANSWER: 026 (1.00)

a. [+1.0]

REFERENCE:

ANO1 STM 1-66 page 57
035010K101 (4.2/4.5)

035010K101 ..(KA's)

QUESTION: 027 (1.00)

WHICH ONE of the following conditions would INCREASE the margin to the loop BTU limit?

a. Feedwater temperature decreasing.

b. Loop RCS flow decreasing.

c. OTSG pressure decreasing.

d. Selected T-hot decreasing.

ANSWER: 027 (1.00)

c. [+1.0]

REFERENCE:

ANO1 STM 1-64 page 19
ANO1 LP 15 page 27
KA 035010A102 (3.5/3.8)

035010A102 ..(KA's)

QUESTION: 028 (1.00)

WHICH ONE of the following conditions would result in the Emergency Feedwater Initiation and Control (EFIC) Vector Logic directing Emergency Feedwater flow ONLY to the "A" OTSG?

OTSG "A" at ____ psig and OTSG "B" at ____ psig.

a. 380, 485.

b. 540, 310.

c. 570, 650.

d. 775, 625.

ANSWER: 028 (1.00)

b. [+1.0]

REFERENCE:

ANO1 STM 1-66 Figure 66.32
ANO1 LP 24 page 46
KA 035010A406 (4.5/4.6)

035010A406 ..(KA's)

QUESTION: 029 (1.00)

WHICH ONE of the following would be the status of the Emergency Diesel Generator (EDG) following a LOSS of 125 VDC power?

a. The EDG will remain shutdown and cannot be started.

b. The EDG can be started but the EDG lockout relay will shut it down.

c. The EDG can be started, and will come up to speed, but the RUN/STOP light on C10 will NOT illuminate.

d. The EDG can be started, and will come up to speed, and the RUN/STOP light on C10 will illuminate.

ANSWER: 029 (1.00)

c. [+1.0]

REFERENCE:

ANO1 1107.004 page 41
ANO1 LP 16 pages 19 and 24
ANO1 1104.036 page 18
KA 063000K301 (3.7/4.1)

063000K301 ..(KA's)

QUESTION: 030 (1.00)

WHICH ONE of the following is the conditions under which the EDG output breakers can be closed when the EDG sync-check relays are in the "HLDB" position?

a. The buses are in sync OR when either the line or bus is dead but not both.

b. The buses are in sync OR when the line is energized and the bus is dead.

c. The buses are in sync OR when the bus is energized and the line is dead.

d. Only when running AND incoming buses are energized and in sync.

ANSWER: 030 (1.00)

b. [+1.0]

REFERENCE:

ANO1 1107.002 page 4
KA 064000A209 (3.1/3.3)

064000A209 ..(KA's)

QUESTION: 031 (1.00)

WHICH ONE of the following will NOT trip an Emergency Diesel Generator when started by an ESAS?

a. EDG stop pushbutton on C10.

b. Mechanical overspeed.

c. Low lube oil pressure.

d. Generator phase differential.

ANSWER: 031 (1.00)

a. [+1.0]

REFERENCE:

ANO1 LP 16 page 19
KA 064000K402 (3.9/4.2)

064000K402 ..(KA's)

QUESTION: 032 (1.00)

WHICH ONE of the following conditions will permit the Emergency Diesel Generator to AUTOMATICALLY start on an ESAS actuation?

a. Engine Control switch in maintenance.

b. EDG lockout relay tripped.

c. Emergency trip relay (K-11) energized.

d. Lockout switch (C-10) in lockout.

ANSWER: 032 (1.00)

c. [+1.0]

REFERENCE:

ANO1 LP 16 page 18
KA 064000A301 (4.1/4.0)

064000A301 ..(KA's)

QUESTION: 033 (1.00)

WHICH ONE of the following pairs of valves automatically close on actuation of WASTE GAS DISCHARGE LINE RAD HI?

-GZ-5 Surge Tank Outlet to Vent Plenum valve.
-CV-4806 ABVH Diversion valve to Surge Tank.
-CV-4820 Gaseous Radwaste Header Isolation valve.
-CV-4830 Station Vent Discharge valve.

a. CV-4806 and GZ-5.

b. CV-4806 and CV-4830.

c. CV-4820 and GZ-5.

d. CV-4820 and CV-4830.

ANSWER: 033 (1.00)

d. [+1.0]

REFERENCE:

ANO1 1203.06 page 1
ANO1 1104.022 page 5
ANO1 STM 1-54 page 4
ANO1 LP 29 page 17
KA 073000K401 (4.0/4.3)

073000K401 ..(KA's)

QUESTION: 034 (1.0C)

The following plant condition exists:

-Plant is shutdown.
-RCS pressure is 250 psig.
-CV-1410 Decay Heat suction valve is OPEN.
-CV-1405 Decay Heat suction valve is OPEN.

WHICH ONE of the following will occur if RCS pressure INCREASES to 340 PSIG?

a. CV-1410 will close and CV-1050 will remain open.

b. CV-1410 will closed and CV-1050 will close.

c. CV-1410 will remain open and CV-1050 will remain open.

d. CV-1410 will remain open and CV-1050 will close.

ANSWER: 034 (1.00)

d. [+1.0]

REFERENCE:

ANO1 STM 1-5 page 11
KA 005000K407 (3.2/3.5)

005000K407 ..(KA's)

QUESTION: 035 (1.00)

WHICH ONE of the following Intermediate Cooling Water (ICW) loads is a Non-nuclear (Circuit II) load?

a. Spent Fuel cooler (E-27B).

b. Pressurizer sample cooler (E-30).

c. Reactor Coolant pump motor air and lube oil cooler (E-41B).

d. Reactor Coolant pump seal cooling water heat exchanger (E-25B).

ANSWER: 035 (1.00)

c. [+1.0]

REFERENCE:

ANO1 STM 1-43 page 24
KA 008000K102 (3.3/3.4)

008000K102 ..(KA's)

QUESTION: 036 (1.00)

WHICH ONE of the following actions is required by Technical Specification 3.8, "Fuel loading and Refueling" if a tornado watch has been declared in Logan county?

a. Suspend all fuel handling in the Reactor Building only.

b. Suspend all fuel handling in the Auxiliary Building only.

c. Suspend all fuel handling in the Reactor and Auxiliary Buildings.

d. Suspend all fuel handling except in the spent fuel cask area.

ANSWER: 036 (1.00)

b. [+1.0]

REFERENCE:

Technical Specification 3.8.12
KA 034000G011 (2.4/3.5)

034000G011 ..(KA's)

QUESTION: 037 (1.00)

WHICH ONE of the following describes the design of the fuel transfer tube?

a. A blind flange is used to close the transfer tube on both the containment side and the Fuel Handling Building side.

b. A valve is used to close the transfer tube on both the containment side and the Fuel Handling Building side.

c. A valve is used to close the transfer tube on the containment side and a blind flange is used on the Fuel Handling Building side.

d. A blind flange is used to close the transfer tube on the containment side and a valve is used on the Fuel Handling Building side.

ANSWER: 037 (1.00)

d. [+1.0]

REFERENCE:

ANO1 LP 25 page 10
KA 034000K601 (2.1/3.0)

034000K601 ..(KA's)

QUESTION: 038 (1.00)

The following plant conditions exist:

-The Reactor and Turbine are RESET.
-Steam Header pressure setpoint is set at 870 psig.
-Unit Load Demand is set at 18%.

WHICH ONE of the following is the LOWEST Steam Header pressure at which the TBVs will open?

a. 870 psig.

b. 920 psig.

c. 980 psig.

d. 1005 psig.

ANSWER: 038 (1.00)

b. [+1.0]

REFFRENCE:

ANO1 STM 1-64 pages 42 and 44
ANO1 P&ID D554902G
KA 041020A405 (3.1/3.3)

041020A405 ..(KA's)

QUESTION: 039 (1.00)

The following plant conditions exist:

-The plant has tripped from 100% power.
-TWO control rods have failed to fully insert into the core.

WHICH ONE of the following is the total amount of boric acid from the BAAT that is required to be added to the RCS, in accordance with 1202.01, "Reactor Trip"?

a. 1500 gallons.

b. 2000 gallons.

c. 2500 gallons.

d. 3000 gallons.

ANSWER: 039 (1.00)

d. [+1.0]

REFERENCE:

ANO1 1202.01 page 2
ANO1 1202.12
KA 000005A203 (3.5/4.4)

000005A203 ..(KA's)

QUESTION: 040 (1.00)

WHICH ONE of the following statements is the reason that any rod suspected of being mechanically bound is only to be operated in RUN speed?

a. JOG speed may damage the CRA spider.

b. JOG speed may damage the CRDM torque tube.

c. JOG speed supplies insufficient torque to free the stuck rod.

d. JOG speed would overheat the motor coils.

ANSWER: 040 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1105.009 page 11
KA 000005A202 (2.5/3.0)

000005A202 ..(KA's)

QUESTION: 041 (1.00)

The following plant conditions exist:

-The Diamond Control Station is in MANUAL during a runback from 85% power initiated by the trip of RCP "A".

WHICH ONE of the following explains the response of feedwater flow?

a. Decrease until a FW/RX limited cross limit is generated.

b. Decrease to 75% flow regardless of the Diamond Station condition.

c. Decrease until a RX/FW limited cross limit is generated.

d. Decrease to loop A because of the Diamond Station.

ANSWER: 041 (1.00)

a. [+1.0]

REFERENCE:

ANO1 STM 1-64 pages 16 and 17
ANO1 LP 15 page 45
ANO1 STM 1-03 Figure 3.2
KA 000015A108 (3.0/2.9)

000015A108 ..(KA's)

QUESTION: 042 (1.00)

WHICH ONE of the following statements describes the response of the operating Service Water pump to a loss of offsite power with an ESAS actuation?

a. The pump continues operation without interruption.

b. The pump continues operation until the standby pump is started by ESAS load sequencing.

c. The pump stops and is restarted by ESAS load sequencing.

d. The pump stops and will not restart until offsite power is restored.

ANSWER: 042 (1.00)

c. [+1.0]

REFERENCE:

ANO1 LP 16, page 23
KA 000026A202 (2.9/3.6)

000026A202 ..(KA's)

QUESTION: 043 (1.00)

WHICH ONE of the following operator actions is to be taken when the RCS pressure controlling channel fails HIGH at 89% power and all automatic actions occur?

a. Open the Pressurizer spray valve.

b. Open the ERV block valve.

c. De-energize the Pressurizer heaters.

d. Close the ERV block valve.

ANSWER: 043 (1.00)

d. [+1.0]

REFERENCE:

ANO1 1203.012H page 4
ANO1 1203.15 page 2
ANO1 LP 34 page 5
KA 000027A215 (3.7/4.0)

000027A215 ..(KA's)

QUESTION: 044 (1.00)

The following plant conditions exist:

-Plant is in startup.
-Reactor power is at 4% and does not change with the transient.
-Loss of Main FW caused a transient with the following parameters:
  -RCS temperature 617 degrees F.
  -RCS pressure 2585 psig.
  -RCS flow remained normal.
-Neither Code Safety valve lifted.
-ERV lifted.
-MFW has been restored.
-All other plant responses were normal.

WHICH ONE of the following is the action required by Technical Specifications?

a. Startup may be resumed when post transient analysis are complete.

b. The Action Statements for Limiting Conditions for Operations of Technical Specification 3.0.3 apply.

c. Restore a Code Safety valve to operable status within 15 minutes or be in Hot Shutdown within 12 hours.

d. The Action Statements for Limiting Conditions for Operations of Technical Specification 3.0.5 apply.

ANSWER: 044 (1.00)

b. [+1.0]

REFERENCE:

ANO1 Tech Spec 3.0.3, 3.1.1.3
KA 000027G008 (3.1/3.6)

000027G008 ..(KA's)

QUESTION: 045 (1.00)

WHICH ONE of the following is the Technical Specifications basis event for the 1102.002, "Plant Startup," Limit and Precaution not to raise OTSG levels above 40" without adequate shutdown margin?

a. Main steam line break.

b. Large break LOCA.

c. OTSG tube rupture.

d. Overfeeding OTSGs.

ANSWER: 045 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1102.002 page 4
ANO1 QB AA61002-011
KA 000040G007 (3.3/3.6)

000040G007 ..(KA's)

QUESTION: 046 (1.00)

The following plant conditions exist:

-The plant has TRIPPED from 100% power.
-All RCPs are TRIPPED.
-The crew is performing actions of 1202.03, "Overcooling".
-OTSG "A" is at 650 psig and will NOT repressurize.
-OTSG "B" is at 1000 psig.

WHICH ONE of the following actions concerning Emergency Feedwater should be taken, in accordance with 1202.12 "Repetitive Task 6, Verify Proper MSLI Actuation and Control"?

a. Run EFW until OTSG "B" level is 25 to 35 inches.

b. Run EFW until OTSG "B" level is 300 to 320 inches.

c. Restore MFW and secure EFW immediately.

d. Restore AFW and secure EFW immediately.

ANSWER: 046 (1.00)

b. [+1.0]

REFERENCE:

ANO1 1202.12 RT 6 page 1
KA 000040A110 (4.1/4.1)

000040A110 ..(KA's)

QUESTION: 047 (1.00)

WHICH ONE of the following is the operational consideration associated with conducting a forced circulation cooldown with one OTSG dry and depressurized?

a. Excessive delta T-cold.

b. Water hammer.

c. Pressurized thermal snock.

d. OTSG tube-to-shell differential temperature.

ANSWER: 047 (1.00)

d. [+1.0]

REFERENCE:

ANO1 1202.06 page 26
KA 000040G007 (3.3/3.6)

000040G007 ..(KA's)

QUESTION: 048 (1.00)

The following plant conditions exist:

-Reactor power is 28%.
-CONDENSER VAC PUMP AUTOSTART annunciates.
-Condenser Vacuum pump C-5A starts.
-Turbine trip is activated by solenoid trip.

WHICH ONE of the following caused the Turbine trip?

a. Bearing vibration high.

b. Exhaust hood high temperature.

c. Thrust bearing high pressure.

d. Bearing oil pressure low.

ANSWER: 048 (1.00)

b. [+1.0]

REFERENCE:

ANO1 1203.012E annunciator D-7
ANO1 LP 13 pages 11 and 12
ANO1 1101.01 page 100
KA 000051A202 (3.9/4.1)

000051A202 ..(KA's)

QUESTION: 049 (1.00)

The following plant conditions exist:

-Reactor power is 38%.
-Turbine trip occurs.
-Condenser vacuum has stabilized at 20" Hg.

WHICH ONE of the following actions is the LEAST restrictive and satisfies the requirements of the AOP?

a. Manually trip the reactor.

b. Perform a rapid shutdown to less than 2% power.

c. Reduce reactor power to 6%.

d. Reduce reactor power to 14%.

ANSWER: 049 (1.00)

c. [+1.0]

REFERENCE:

ANO1 1203.18 page 1
KA 000051G010 (2.6/2.9)

000051G010 ..(KA's)

QUESTION: 050 (1.00)

The following plant conditions exist:

-Degraded power conditions exist.
-OTSG Tube Rupture is in progress.
-CETs reading 490 degrees F.

WHICH ONE of the following is the purpose for throttling HPI flow when the Pressurizer is full and subcooling is greater than 50 degrees F?

a. Minimize possible pressurized thermal shock of the reactor vessel.

b. Minimize possible pressurized thermal shock of the OTSG tubes.

c. Maintain ruptured OTSG tube-to-shell delta T limits.

d. Minimize the potential for OTSG overfill.

ANSWER: 050 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1202.07 page 18 rev 1
ANO1 1990 SRO exam
KA 000055K302 (4.3/4.6)

000055K302 (KA's)

QUESTION: 051 (1.00)

WHICH ONE of the following is the INITIAL method for decay heat removal from the OTSGs following a Station Blackout?

a. Main Steam safeties.

b. Turbine Bypass valves.

c. Atmospheric Dump valves.

d. Moisture Separator and Reheaters A & B.

ANSWER: 051 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1202.08 pages 2, 3, and 9
ANO1 LP 02 page 34
KA 000055A202 (4.4/4.6)

000055A202 ..(KA's)

QUESTION: 052 (1.00)

WHICH ONE of the following is a direct component response to a loss of all ICS power?

a. The Main Feedwater pumps go to minimum speed.

b. Feedwater crossover valve goes closed.

c. The Diamond Control Station goes to automatic.

d. Feedwater low load block valves go closed.

ANSWER: 052 (1.00)

a. or d. [+1.0]

REFERENCE:

ANO1 LP 15 page 47
KA 0000 ac19 (4.0/4.3)

000057A219 ..(KA's)

QUESTION: 053 (1.00)

WHICH ONE of the following will occur if QS-7907 (VSF-8A/B suction) CONTROL ROOM FIRE DETECTOR actuates with Control Room (CR) Air Supply Fan (VSF-8A) operating?

a. Control Room smoke exhaust fan damper (CV-7846) opens.
Control Room Air Supply Fan (VSF-8A) continues to operate.

b. Control Room smoke exhaust fan damper (CV-7846) closes.
Control Room Air Supply Fan (VSF-8A) trips.

c. Control Room Return Damper (CV-7845) opens.
Control Room Air Supply Fan (VSF-8A) continues to operate.

d. Control Room Return Damper (CV-7845) closes.
Control Room Air Supply Fan (VSF-8A) trips.

ANSWER: 053 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1104.034 page 4
KA 000067A105 (3.0/3.1)

000067A105 ..(KA's)

QUESTION: 054 (1.00)

The following plant conditions exist:

-The reactor is operating at 90% power.
-Control Room evacuation is required.

WHICH ONE of the following is NOT an action in accordance with 1203.002, "Alternate Shutdown," section 1, "Immediate Control Room Evacuation"?

a. Open Service water to DG2 Coolers valve (CV-3807).

b. Close main feedwater isolation to OTSG A valve (CV-2680).

c. Start ES standby pump (P-36A or P-36C).

d. Close RCS letdown coolers outlet valve (CV-1221).

ANSWER: 054 (1.00)

c. [+1.0]

REFERENCE:

ANO1 1203.002 page 3
ANO1 STM 1-04 page 12
KA 000068K318 (4.2/4.5)

000068K318 ..(KA's)

QUESTION: 055 (1.00)

WHICH ONE of the following is Unit 1 required to do in accordance with 1203.02, "Alternate Shutdown," if an Alternate Shutdown of Unit 2 must be performed due to a fire in the Unit 2 control room?

a. Maintain stable plant conditions.

b. Trip the reactor and go to Hot Standby.

c. Immediately begin to shut the reactor down.

d. Isolate all Unit 1 and Unit 2 common systems.

ANSWER: 055 (1.00)

c. [+1.0]

REFERENCE:

ANO1 1203.02 page 4
KA 000068G010 (4.1/4.2)

000068G010 ..(KA's)

QUESTION: 056 (1.00)

WHICH ONE (1) of the following defines the MAXIMUM time for the Hydrogen Samplers and the MAXIMUM hydrogen concentration for the Hydrogen Recombiners for placing these components in service?

	Hydrogen Samplers	Hydrogen Recombiners
a.	Within 15 minutes after a LOCA	Before Hydrogen reaches 2.5%
b.	Within 15 minutes after a LOCA	Before Hydrogen reaches 3.5%
c.	Within 30 minutes after a LOCA	Before Hydrogen reaches 2.5%
d.	Within 30 minutes after a LOCA	Before Hydrogen reaches 3.5%

ANSWER: 056 (1.00)

d. [+1.0]

REFERENCE:

ANO1 1104.031 rev 5, p. 4 & 8
KA 000069G007 (3.5/3.6)

000069G007 ..(KA's)

QUESTION: 057 (1.00)

The following plant condition exists:

-A pneumatically operated valve (air to open) which has an ES position of shut has been declared inoperable.

WHICH ONE of the following is the MINIMUM that must be done in order to re-establish containment integrity once the valve is closed?

a. Isolate its operating air.

b. Isolate its operating air and bleed off the valve operator.

c. Any remote operating stations must be tagged shut.

d. Valve must be blocked with an appropriate blocking device.

ANSWER: 057 (1.00)

b. [+1.0]

REFERENCE:

ANO1 1000.027
ANO1 Tech Spec 1.7
ANO1 1203.05 page 1
KA 000069A101 (3.5/3.7)

000069A101 ..(KA's)

QUESTION: 058 (1.00)

WHICH ONE of the following conditions will satisfy CONTAINMENT INTEGRITY requirements during POWER OPERATIONS?

a. While conducting maintenance inside the personnel lock, personnel leave the outer door open for easier access.

b. An automatic isolation valve fails in the open position and is isolated by a manual valve downstream.

c. An automatic isolation valve's stroke time is excessive. Valve is electrically closed and caution tagged.

d. The equipment hatch has been opened and then closed. The leak check is now in progress.

ANSWER: 058 (1.00)

a. [+1.0]

REFERENCE:

ANO1 Tech Spec 1.7 and 3.6
ANO1 1203.05 page 1
KA 000069A202 (3.9/4.4)

000069A202 ..(KA's)

QUESTION: 059 (1.00)

The following plant conditions exist:

-The reactor is tripped.
-Adequate subcooling margin does NOT exist.
-RCPs are tripped.
-EFW is supplying BOTH OTSGs.
-RCS pressure is 1700 psig.
-T-cold and OTSG pressures are uncoupled.
-OTSG levels are 100 inches.

WHICH ONE of the following methods may be used to regain heat transfer via an OTSG?

a. Bump an RCP in the loop with the lowest OTSG level.

b. Lower OTSG pressure until secondary T-sat is 40 to 60 degrees less than Incore T/C temperatures.

c. Open the ERV and reduce RCS pressure until it is 40 to 60 degrees F. below OTSG T-sat.

d. Reduce OTSG levels to 25 to 35 inches.

ANSWER: 059 (1.00)

b. [+1.0]

REFERENCE:

ANO1 1202.02 pages 4, 5, and 11
KA 000074A204 (3.7/4.2)

000074A204 ..(KA's)

QUESTION: 060 (1.00)

WHICH ONE of the following is an indication of failed fuel used by the Failed Fuel Monitor?

a. Argon - 41.

b. Sodium - 24.

c. Iodine - 131.

d. Nitrogen - 16.

ANSWER: 060 (1.00)

c. [+1.0]

REFERENCE:

ANO1 1203.019 page 5
KA 000076A104 (3.2/3.4)

000076A104 ..(KA's)

QUESTION: 061 (1.00)

The following plant conditions exist:

-Reactor power is 100%.
-RCS has high gross gamma activity.
-There is NO failed fuel.

WHICH ONE of the following actions is required according to 1203.19, "High Activity in Reactor Coolant"?

a. Increase MU tank hydrogen concentration.

b. Purge the MU tank to remove non-condensable gases.

c. Place BOTH purification demineralizers in service.

d. Increase letdown flow to maximum.

ANSWER: 061 (1.00)

d. [+1.0]

REFERENCE:

ANO1 1203.19 page 2
KA 000076A202 (2.8/3.4)

000076A202 ..(KA's)

QUESTION: 062 (1.00)

WHICH ONE of the following conditions would require a manual reactor trip?

a. Loss of two power range NI channels.

b. Two dropped rods at 1% reactor power.

c. One dropped rod at 80% reactor power.

d. A startup rate prompt jump to 1.25 DPM.

ANSWER: 062 (1.00)

b. [+1.0]

REFERENCE:

ANO1 1203.21 rev 3, page 1
ANO1 1203.03 rev 12, page 2
ANO1 1102.08 rev 13, page 3
KA 000003K304 (3.8/4.1)

000003K304 ..(KA's)

QUESTION: 063 (1.00)

WHICH ONE of the following operational parameters would require a MANUAL reactor trip, in accordance with the requirements of 1202.01, "Reactor Trip"?

a. T-Hot at 612 degrees F.

b. Reactor Building pressure at 2.7 psig.

c. One Main Feed pump trips with reactor power at 92%.

d. A Main Turbine trip with reactor power at 45%.

ANSWER: 063 (1.00)

d. [+1.0]

REFERENCE:

ANO1 1202.01 page 1
KA 000007A202 (4.3/4.6)

000007A202 ..(KA's)

QUESTION: 064 (1.00)

WHICH ONE of the following is the reason for Step 2, "Depress Turbine Trip PB," of EOP 1202.01, "Reactor Trip"?

a. Potentially prevents an uncontrolled reactor cooldown.

b. Turbine trip signal is required to transfer AC bus power supplies.

c. Reduces feedwater flow requirements

d. Minimizes steam generator tube-to-shell delta-T.

ANSWER: 064 (1.00)

a. [+1.0]

REFERENCE:

ANO1 ATOG Part II - Volume 1, Heat Transfer, pages 24-26.
KA 000007K301 (4.0/4.6)

000007K301 ..(KA's)

QUESTION: 065 (1.00)

WHICH ONE of the following parameters will differentiate between a steam leak and a LOCA inside containment?

a. Containment radiation levels.

b. Containment pressure readings.

c. Containment temperature readings.

d. Reactor Building Sump levels.

ANSWER: 065 (1.00)

a. [+1.0]

REFERENCE:

ANO1 LP 02, page 29
KA 000009A236 (4.2/4.6)

000009A236 ..(KA's)

QUESTION: 066 (1.00)

The following plant conditions exist:

-1202.03, "Overcooling" has been entered.
-Subcooling margin is 65 degrees F.
-All RCPs are running.
-T-cold is 487 degrees F.

WHICH ONE of the following actions satisfies the requirements of 1202.03, "Overcooling"?

Trip Reactor Coolant pump(s):

a. A.

b. B and C.

c. B, C, and D.

d. A, B, C, and D.

ANSWER: 066 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1202.03 page 26
KA 000040G003 (3.1/3.9)

000040G003 ..(KA's)

QUESTION: 067 (1.00)

WHICH ONE of the following actions does 1202.10, "ESAS" specify to OPTIMIZE suction pressure to safety system pumps?

a. Align Pressurizer Auxiliary Spray to the LPI system.

b. Secure one LPI pump if both are operating.

c. Throttle RB Spray flow if RB spray on.

d. Batch water to the MU Tank and keep the MU Tank outlet valve (CV-1275) open.

ANSWER: 067 (1.00)

c. [+1.0]

REFERENCE:

ANO1 1202.10 pages 6 and 7 cautions
ANO1 1202.10 floating steps
KA 000011A113 (4.1/4.2)

000011A113 ..(KA's)

QUESTION: 068 (1.00)

The following plant conditions exist:

-Reactor power is 100%.
-HPI PUMP TRIP alarms.
-MU TANK LEVEL HI/LO alarms.
-ALL AUTOMATIC actions have occurred as designed.

WHICH ONE of the following is the required IMMEDIATE ACTION?

a. Isolate letdown.

b. Isolate RCP seal controlled bleedoff.

c. Manually start the standby HPI pump.

d. Open BWST Suction valves to the HPI pumps.

ANSWER: 068 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1203.026 page 5
KA 000022G010 (3.5/3.4)

000022G010 ..(KA's)

QUESTION: 069 (1.00)

WHICH ONE of the following is the Technical Specification Bases for requiring ONE DH removal loop to be in operation during refueling operations?

a. To maintain RCS temperature less than 190 degrees F.

b. To minimize the effect of a postulated boron dilution event.

c. Ensures that a single failure of the operating DH removal loop will not result in a complete loss of DH removal capability.

d. To prevent the partial uncovering of a fuel assembly during refueling.

ANSWER: 069 (1.00)

b. [+1.0]

REFERENCE:

ANO1 Tech Spec 3.8.3.a and Bases
KA 000025G004 (2.6/3.8)

000025G004 ..(K s)

QUESTION: 070 (1.00)

The following plant conditions exist:

- Reactor power is at 8% during initial power escalation from a refueling outage.
- Intermediate Range NI-3 fails LOW.

WHICH ONE of the following will result from this occurrence?

a. Source Range NI-1 will de-energize.

b. Power Range NI-5 and NI-7 will de-energize.

c. Startup rate rod withdrawal inhibit is activated.

d. Intermediate Range SUR will fail mid-scale at 5 dpm.

ANSWER: 070 (1.00)

c. [+1.0]

REFERENCE:

ANO1 STM 1-67 pages 2, 3, and figure 67.2
ANO1 LP 14 pages 3 and 4
ANO1 1102.002 pages 45 and 46
ANO1 1102.10 pages 15 and 16
KA 000033A202 (3.3/3.6)

000033A202 ..(KA's)

QUESTION: 071 (1.00)

WHICH ONE of the following describes the effect of a loss of compensating voltage on the Intermediate Range indication?

a. Indicated neutron level lower than actual.

b. Indicated neutron level higher than actual.

c. Greater indicated startup rate (SUR).

d. Decrease in the amount of overlap between Intermediate and Source Range Nuclear Instruments.

ANSWER: 071 (1.00)

b. [+1.0]

REFERENCE:

ANO 1, LP: Nuclear Instrumentation page 15
KA 000033A211 (3.1/3.4)

000033A211 ..(kA's)

QUESTION: 072 (1.00)

The following plant conditions exist:

-Subcooling margin was lost.
-Subcooling margin has recovered and been stable at 40 degrees F for 5 minutes.
-All FOUR RCPs are running.

WHICH ONE of the following actions is in accordance with 1202.02, "Loss of Subcooling Margin"?

Trip Reactor Coolant pump(s):

a. A.

b. B and C.

c. B, C, and D.

d. A, B, C, and D.

ANSWER: 072 (1.00)

b. [+1.0]

REFERENCE:

ANO1 1202.02 page 2
ANO1 AA-61004-002 page 21
KA 000054G007 (2.7/3.0)

000054G007 ..(KA's)

QUESTION: 073 (1.00)

The following plant conditions exist:

-All RCPs are OFF.
-Both OTSGs are dry.
-HPI is providing reactor cooling.
-FFW pumps are NOT available.

WHICH ONE of the following pump(s) should be used for subsequent cooldown in accordance with 1202.04, "Overheating"?

a. Auxiliary Feedwater pump.

b. [illegible]ump(s).

c. High [illegible] Injection pump(s).

d. [illegible] pump(s).

ANSWER: 073 (1.00)

c. [+1.0]

REFERENCE:

ANO1 1202.04 pages 9-11
KA 000054A104 (4.4/4.5)

000054A104 ..(KA's)

QUESTION: 074 (1.00)

The following plant conditions exist:

-Reactor power is 65%.
-Both Main Feedwater pumps trip.

WHICH ONE of the following operating parameters would provide the first indication of the loss of Main Feedwater?

a. RCS pressure.

b. Main steam header pressure.

c. Reactor power.

d. Generated megawatts.

ANSWER: 074 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1203.27 p. 1.
KA 000054G011 (3.4/3.3)

000054G011 ..(KA's)

QUESTION: 075 (1.00)

WHICH ONE of the following will be lost as a result of a loss of DC distribution panel D21?

a. Power to CV-2626 (EFW P-7B to B OTSG isolation).

b. Power to inverter Y24.

c. Emergency Diesel Generator 2, if operating will trip.

d. Emergency oil lift pump P80A (for RC pump P32A) if operating will trip.

ANSWER: 075 (1.00)

c. [+1.0]

REFERENCE:

ANO1 STM 1-66 page 57.
ANO1 STM 1-32 figure 32.47.
ANO1 LP 007 page 44.
ANO1 1107.04 page 4 Exhibit A.
KA 000058A203 (3.5/3.9)

000058A203 ..(KA's)

QUESTION: 076 (1.00)

The following plant conditions exist:

-Reactor power is 80%.
-Pressurizer level control is in AUTOMATIC.
-NO operator action is taken.

WHICH ONE of the following will result from a leak on the reference leg of the controlling Pressurizer level instrument?

Actual Pressurizer level would:

a. decrease, indicated level would increase.

b. increase, indicated level would decrease.

c. decrease, indicated level would remain constant.

d. increase, indicated level would remain constant.

ANSWER: 076 (1.00)

a. [+1.0]

REFERENCE:

ANO1 LP 34 page 8
KA 000028K202 (2.6/2.7)

000028K202 ..(KA's)

QUESTION: 077 (1.00)

The following plant conditions exist:

-Damage to a spent fuel assembly has occurred in the Reactor Building.
-RB portable air monitor is on HI alarm.
-All automatic actions have occurred as designed.

WHICH ONE of the following is an IMMEDIATE ACTION per ANO 1502.004, "Refueling and Pre-Operational Events," attachment H, "Refueling Accident"?

a. Stop draining of Reactor Building sump if in progress.

b. Initiate controlled purging of the Reactor Building through the normal containment purge system.

c. Shutdown the Reactor Building purge system.

d. Replace the blind flange on the fuel transfer tube.

ANSWER: 077 (1.00)

a. or c. [+1.0]

REFERENCE:

ANO1 1502.004 page 88
KA 000036K303 (3.7/4.1)

000036K303 ..(KA's)

QUESTION: 078 (1.00)

WHICH ONE of the following indicates a steam bubble in the Reactor Vessel head during a natural circulation cooldown in accordance with 1203.013, "Natural Circulation Cooldown"?

a. Incore thermocouples show a rapid decrease while temperature is constant on T-hot.

b. RV level indicates a rapid fall in level, while pressurizing RCS.

c. A drop in Pressurizer level, while pressurizing RCS.

d. A sharp increase in RCS pressure while cooling.

ANSWER: 078 (1.00)

c. [+1.0]

REFERENCE:

ANO1 1203.013 page 6
KA 000056G007 (3.3/3.4)

000056G007 ..(KA's)

QUESTION: 079 (1.00)

WHICH ONE of the following is the response of an Emergency Diesel Generator (EDG) when it is in parallel operation for testing, and a Loss of Off Site power occurs?

a. The EDG's output breaker would trip when the Main Generator lockout relay is actuated, then auto close to energize ES loads once the normal supply breaker opens on undervoltage.

b. The ES Bus incoming breakers from the switchyard will trip, the EDG will remain running carrying the respective ES bus.

c. The lowered speed droop setting will cause the EDG to trip on low RPM, the EDG will then receive an ES start signal and the load sequencer will load the bus.

d. The EDG's output breaker and ES Bus supply breakers will trip, then the EDG output breaker will have to be manually closed.

ANSWER: 079 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1107.002 page 3
KA 000056A214 (4.4/4.6)

000056A214 ..(KA's)

QUESTION: 080 (1.00)

WHICH ONE of the following is the MAXIMUM Instrument Air header pressure which would require tripping the reactor in accordance with 1203.024, "Loss of Instrument Air"?

a. 35 psig.

b. 45 psig.

c. 60 psig.

d. 80 psig.

ANSWER: 080 (1.00)

a. [+1.0]

REFERENCE:

ANO1 1203.024 p.6 rev. 5
KA 000065A206 (3.6/4.2)

000065A206 ..(KA's)

QUESTION: 081 (1.00)

WHICH ONE of the following valves does NOT have an air accumulator?

a. RB Service Water Cooling Coil discharge valve (CV-3815).

b. Intermediate Cooling Water pump suction crossconnect valve (CV-2240).

c. SG B Atmospheric Dump Control valve (CV-2618).

d. Turbine Bypass valve loop B (CV-6688).

ANSWER: 081 (1.00)

b. [+1.0]

REFERENCE:

ANO1 1203.024 pages 15 and 16
ANO1 STM 1-48 page 10
KA 000065A208 (2.9/3.3)

000065A208 ..(KA's)

QUESTION: 082 (1.00)

The following plant conditions exist:

-Control rods are being withdrawn for startup.
-A stable startup rate of 0.4 dpm is being maintained.
-RCS temperature is 498 degrees F.
-RCS pressure is 2155 psig.

WHICH ONE of the following are the MINIMUM actions required by Technical Specifications 3.1.3, "Minimum Conditions For Criticality"?

a. Restore RCS temperature to greater than or equal to 525 degrees F within 15 minutes or be in Hot Shutdown within the next 15 minutes.

b. Restore RCS temperature to greater than or equal to 525 degrees F within 15 minutes or be in Hot Standby within the next 15 minutes.

c. Shutdown the reactor IMMEDIATELY and maintain the reactor shutdown until RCS temperature can be raised to greater than or equal to 525 degrees F.

d. Shutdown the reactor IMMEDIATELY and be in Cold Shutdown in the next 24 hours.

ANSWER: 082 (1.00)

a. [+1.0]

REFERENCE:

ANO1 Tech Spec 3.1.3, "Minimum Conditions For Criticality", page 21.
KA 194001A102 (4.1/3.9)

194001A102 ..(KA's)

QUESTION: 083 (1.00)

WHICH ONE of the following is the MINIMUM crew complement required for Unit 1 during core geometry changes while in Refueling Operation per 1015.001, "Conduct of Operations"?

	Licensed SROs (Does NOT include SRO for Fuel Handling)	Licensed ROs	Fire Brigade Members
a.	1	2	1
b.	1	1	2
c.	2	1	1
d.	2	2	2

ANSWER: 083 (1.00)

b. [+1.0]

REFERENCE:

ANO1 Procedure No. 1015.001, "Conduct of Operations", page 18.
KA Numbers 194001A109 (2.7/3.9)

194001A109 ..(KA's)

QUESTION: 084 (1.00)

The following plant conditions exist:

-The Reactor is in Refueling Shutdown.
-The Shift Superintendent needs an additional control room operator for the upcoming evening shift.
-Operating crews on 8 hour shifts.

WHICH ONE of the following operators can work the additional shift per OPS Administrative Procedure 1015.001, "Conduct of Operations"?

a. Operator "A", who has worked his normal dayshift, is willing to hold over on to the evening shift but he states that he came in one hour early to relieve an operator for a doctors appointment.

b. Operator "B", who has worked his normal dayshift, is willing to hold over on to the evening shift but he states that he worked the evening shift the day before.

c. Operator "C" is willing to work the evening shift but states that he worked an overtime shift two days ago and it would be his fourth overtime shift this week.

d. Operator "D", who works the midnight shift, is willing to come in and work the evening shift, but states he held over from his previous shift for a one hour training class.

ANSWER: 084 (1.00)

b or c. [+1.0]

REFERENCE:

ANO1 OPS Admin. Procedure 1015.001, "Conduct of Operations", page 32.
KA 194001A103 (2.5/3.4)

194001A103 ..(KA's)

QUESTION: 085 (1.00)

WHICH ONE of the following satisfies the requirement for an independent verification of a component?

a. A single individual may remotely reposition and verify the position of a motor operated valve utilizing an energized valve position light.

b. Two individuals may, at separate times, be used to verify the position of a repositioned motor operated valve utilizing the same energized valve position light.

c. A single individual may throttle and verify the position of the throttled valve.

d. Two individuals may reposition and verify the position of a throttled valve if verifier observes the handwheel revolutions as the valve is being repositioned.

ANSWER: 085 (1.00)

d. [+1.0]

REFERENCE:

ANO1 OPS Admin. Procedure 1015.001, "Conduct of Operations", page 41.
KA 194001K101 (3.6/3.7)

194001K101 ..(KA's)

QUESTION: 086 (1.00)

WHICH ONE of the following defines the MINIMUM criteria for a radiological HOT SPOT in containment per Station Admin 1000.031, "Radiation Protection Manual"?

a. Any area where dose rates exceed four times the ambient dose rate for that area AND greater than 100 mR/hour on contact.

b. Any area where dose rates exceed ten times the ambient dose rate for that area AND greater than 50 mR/hour on contact.

c. Any area where a major portion of the body could receive a dose in excess of 0.1 R/hour.

d. Any area where a major portion of the body could receive a dose in excess of 1.0 R/hour.

ANSWER: 086 (1.00)

a. [+1.0]

REFERENCE:

ANO1 Station Admin 1000.031, "Radiation Protection Manual", page 37.
KA 194001K103 (2.8/3.4)

194001K103 ..(KA's)

QUESTION: 087 (1.00)

The following plant radiological condition exists:

-The Refueling Canal water level has been lowered to facilitate maintenance activity.
-The dose rate in the area of the Refueling Cavity is 0.9 R/hour.

WHICH ONE of the following is the MINIMUM posting requirement for this radiological condition?

a. The area must be conspicuously posted as a RADIATION AREA.

b. The area must be conspicuously posted as a HIGH RADIATION AREA.

c. The area must be barricaded and conspicuously posted as a RADIATION AREA, and have an activated flashing warning device.

d. The area must be barricaded, conspicuously posted as a HIGH RADIATION AREA, and have an activated flashing warning device.

ANSWER: 087 (1.00)

b. [+1.0]

REFERENCE:

1. Station Admin 1000.031, "Radiation Protection Manual", page 36.
2. XA 194001K103 (2.8/3.4)

194001K103 ..(KA's)

QUESTION: 088 (1.00)

Question deleted.

ANSWER: 088 (1.00)

REFERENCE:

194001K105 ..(KA's)

QUESTION: 089 (1.00)

The following plant conditions exist:

-Plant is in a Refueling Outage.
-You are assigned the housekeeping responsibility for an Operations Department outage work area.
-There is a partially used box (4 cans) of a flammable aerosol cleaning agent in the area.
-The area has a housekeeping level of IV.

WHICH ONE of the following actions is the MINIMUM required?

a. Remove excess cans (3 cans) from the work area.

b. Store all of the cans in a flammable liquid storage cabinet.

c. Ensure that the box is located out of the walkway to protect personnel.

d. Ensure that the box of cans is placed on a shelf or bench away from any heat or flame source.

ANSWER: 089 (1.00)

b. [+1.0]

REFERENCE:

ANO1 Question bank QID B1000246
ANO1 Overall Admin 1000.047, "Control of Combustibles", pages 6 & 7.
KA 1001K116 (3.5/4.2)

194001K116 ..(KA's)

QUESTION: 090 (1.00)

WHICH ONE of the following statements describes the application of NOTES and CAUTIONS listed in an EOP?

a. Only apply to the immediate action steps of that procedure.

b. Only apply to the step immediately following the NOTE or CAUTION.

c. Apply to the entire procedure in which the NOTE or CAUTION is listed.

d. Apply to every EOP since they are generic in nature.

ANSWER: 090 (1.00)

b. [+1.0]

REFERENCE:

ANO1 EOP - Bases, Format, and Usage, pages 5 & 6.
ANO1 OPS Admin. 1015.029, "Unit One Emergency Operating Procedure Writer's Guide", pages 27 & 28.
KA 194001A102 (4.1/3.9)

194001A102 ..(KA's)

QUESTION: 091 (1.00)

WHICH ONE of the following individual(s), by title, is the MINIMUM approval(s) required for an interim procedure change that is safety related to BOTH units but does not require PSC review?

a. Vice President, Operations ANO.

b. Director, Operations.

c. Unit 1 Plant Manager and Unit 2 Plant Manager.

d. Unit 1 SRO and Unit 2 SRO.

ANSWER: 091 (1.00)

d. [+1.0]

REFERENCE:

ANO1 Admin Procedure 1000.006, "Procedure Control", Attachment 1, page 31.
KA Numbers 194001A102 (4.1/3.9)

194001A102 ..(KA's)

QUESTION: 092 (1.00)

WHICH ONE of the following defines the use of a CAUTION CARD?

a. Used to notify operators of a re-occurring potential for an electrical shock when operating an electrical breaker.

b. Used to notify operators of a conflict between the currently desired instructions and those requirements specified in Operating Procedures.

c. Used to supplement information contained in Operating Procedures.

d. Used to assure a broken piece of equipment is not operated.

ANSWER: 092 (1.00)

c. [+1.0]

REFERENCE:

ANO1 Station Admin 1000.027, "Hold And Caution Card Control", page 31.
KA 194001K102 (3.7/4.1)

194001K102 ..(KA's)

QUESTION: 093 (1.00)

WHICH ONE of the following tags has the HIGHEST priority if these four different types of tags are found hanging on an electrical breaker?

a. White tag.

b. Green tag.

c. Red tag.

d. Yellow tag.

ANSWER: 093 (1.00)

c. [+1.0]

REFERENCE:

ANO1 Station Admin. 1000.027, "Hold and Caution Card Control", page 5.
KA 194001K102 (3.7/4.1)

194001K102 ..(KA's)

QUESTION: 094 (1.00)

The following plant conditions exist:

-An irradiated fuel assembly has been dropped in the spent fuel pool.
-The irradiated fuel assembly has been out of the reactor for 200 days.
-The fuel cladding has been breached.

WHICH ONE of the following is the major source of radiation exposure to operators attempting to recover the assembly?

a. Neutron exposure from delayed neutron emitters.

b. Whole body gamma exposure from dissolved fission fragments in the spent fuel pool.

c. Beta exposure to the skin from gaseous fission products.

d. Internal alpha exposure from inhalation of gaseous fission products.

ANSWER: 094 (1.00)

c. [+1.0]

REFERENCE:

ANO1 Refueling & Pre-Op Events 1502.004, "Refueling Shuffle", page 4.
KA 194001K104 (3.3/3.5)

194001K104 ..(KA's)

QUESTION: 095 (1.00)

The following plant conditions exist:

-An operator has been assigned to operate the Refueling Machine from 0800 hours until 1300 hours on Monday, 04-06-1992.
-Dose rate for the area is 25 mR/hour.
-The operator has NO previous exposure for 1992.
-The operator's exposure for the previous seven days is as follows:

* Monday, 03-30-1992.....25 mR
* Tuesday, 03-31-1992.....30 mR
* Wednesday, 04-01-1992.....50 mR
* Thursday, 04-02-1992..... 0 mR
* Friday, 04-03-1992..... 0 mR
* Saturday, 04-04-1992.....20 mR
* Sunday, 04-05-1992.....05 mR

WHICH ONE of the following is the expected ACCUMULATED quarterly dose for the operator FOLLOWING his present work assignment?

a. 125 mR.

b. 175 mR.

c. 200 mR.

d. 255 mR.

ANSWER: 095 (1.00)

c. [+1.0]

REFERENCE:

ANO1 Station Admin 1000.031, "Radiation Protection Manual", page 40.
KA 194001K103 (2.8/3.4)

194001K103 ..(KA's)

QUESTION: 096 (1.00)

WHICH ONE of the following actions may result in a violation of the NPDES Permit?

a. Circulating water bromination for 30 minutes three times during a 24 hour period.

b. Circulating water bromination for 50 minutes twice during a 24 hour period.

c. Bromination with 3 Circulating Water Pumps running.

d. Promination of an idle Circulating Water bay.

ANSWER: 096 (1.00)

d. [+1.0]

REFERENCE:

ANO1 1104.013
KA 194001K111 (3.4/3.5)

194001K111 ..(KA's)

QUESTION: 097 (1.00)

WHICH ONE of the following individuals should be DENIED access to the protected area at ANO-1 per OP-1023.029, "Fitness For Duty Section Organization Responsibility Qualification Training"?

a. An individual that consumed two cans of beer at a company picnic at 10 am prior to reporting to work at 4 pm.

b. An individual that shared a bottle of wine with his wife at a 6 pm dinner party prior to being called in for unscheduled repair work at 10 pm and tested to 0.05 blood alcohol concentration when he arrived on site.

c. An individual that was called in for emergency maintenance at 11 pm that notified security that he had been to happy hour at his hotel at 5 pm and tested to 0.03 blood alcohol concentration when he arrived on site.

d. A technician that was found to have a cooler full of UNOPENED beer in the trunk of his car in the main parking lot outside the protected area.

ANSWER: 097 (1.00)

b. [+1.0]

REFERENCE:

ANO1 OP-1023.029, "Fitness For Duty Section Organization Responsibility Qualification Training"
KA 194001K105 (3.1/3.4)

194001K105 ..(KA's)

QUESTION: 098 (1.00)

WHICH ONE of the following is the MINIMUM action necessary to return an AUTOMATICALLY actuated Containment Isolation MOV to service following maintenance when the valve was MANUALLY closed?

a. Clear the hold card and declare the valve Operable.

b. MANUALLY free the MOV from seat and declare the valve Operable.

c. Stroke the valve throug' the full range of travel and declare the valve Operable.

d. MANUALLY free the MOV from seat, determine the valve closure time, then declare the valve Operable.

ANSWER: 098 (1.00)

d. [+1.0]

REFERENCE:

ANO1 OPS Admin. Procedure 1015.001, "Conduct of Operations", page 43.
KA 194001K102 (3.7/4.1)

194001K102 ..(KA's)

QUESTION: 099 (2.00)

MATCH the RCS penetration in Column A with the associated location in Column B (note: the items in Column B may be used once, more than once, or not at all; only a single answer may occupy a single answer space).

COLUMN A	COLUMN B
_____ a. Pressurizer spray line	1. RCP "A" suction
_____ b. Decay heat suction line	2. RCP "B" suction
_____ c. Letdown line	3. RCP "C" suction
_____ d. Normal RCS makeup line	4. RCP "D" suction
	5. "A" hot leg
	6. "B" hot leg
	7. RCP "A" discharge
	8. RCP "B" discharge
	9. RCP "C" discharge
	10. RCP "D" discharge

ANSWER: 099 (2.00)

a. 9 [+0.5]
b. 5 [+0.5]
c. 1 [+0.5]
d. 10 [+0.5]

REFERENCE:

ANO1 STM 1-3, pages 6-10.
ANO1 STM 1-4 page 3.
003000K110 (3.0/3.2) 003000G004 (3.5/3.5) 003000G007 (3.2/3.3)

003000G007 003000G004 003000K110 ..(KA's)

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

ANSWER KEY

MULTIPLE CHOICE

001	d	023	a
002	c	024	a
003	b	025	d
004	b	026	a
005	a	027	c
006	a	028	b
007	c	029	c
008	b	030	b
009	a	031	a
010	d	032	c
011	b	033	d
012	d	034	d
013	b	035	c
014	b	036	b
015	a	037	d
016	c	038	b
017	b	039	d
018	a	040	a
019	d	041	a
020	c	042	c
021	a	043	d
022	d	044	b
		045	c

ANSWER KEY

046	b	069	b
047	d	070	c
048	b	071	b
049	c	072	b
050	a	073	c
051	a	074	a
052	a or d	075	c
053	a	076	a
054	c	077	a or C
055	c	078	c
056	d	079	a
057	b	080	a
058	a	081	b
059	b	082	a
060	c	083	b
061	d	084	b or C
062	b	085	d
063	d	086	a
064	a	087	b
065	a	088	NO ANSWER!
066	a		MULTIPLE CHOICE
067	c	089	b
068	a	090	b

A N S W E R K E Y

091 d

092 c

093 c

094 c

095 c

096 d

097 b

098 d

099 MATCHING

a 9

b 5

c 1

d 10

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