UNITED STATES NUCLEAR REGULATORY COMMISSION
PRESSURIZED WATER REACTOR GENERIC FUNDAMENTALS EXAMINATION
DECEMBER 2008 -- FORM A

Please Print

Name: _____

Docket No.: _____

Facility: _____

Start Time: _____ Stop Time: _____

INSTRUCTIONS TO APPLICANT

Answer all the test items using the answer sheet provided, ensuring a single answer is marked for each test item. Each test item has equal point value. A score of at least 80% is required to pass this portion of the NRC operator licensing written examination. All examination papers will be collected 3.0 hours after the examination begins. This examination applies to a typical pressurized water reactor (PWR) nuclear power plant.

SECTION	QUESTIONS	% OF TOTAL	SCORE
COMPONENTS	1 - 22		
REACTOR THEORY	23 - 36		
THERMODYNAMICS	37 - 50		
TOTALS	50		

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

_____

Applicant's Signature

RULES AND GUIDELINES FOR THE NRC
GENERIC FUNDAMENTALS EXAMINATION

During the administration of this examination the following rules apply:

NOTE: The generic term "control rod" refers to the length of neutron absorber material that can be positioned by the operator to change core reactivity.

1. Print your name in the blank provided on the cover sheet of the examination.

2. Fill in your individual docket number.

3. Fill in the name of your facility.

4. Fill in your start and stop times at the appropriate time.

5. Two aids are provided for your use during the examination:

   (1) An equations and conversions sheet contained within the examination copy, and

   (2) Steam tables and Mollier Diagram provided by your proctor.

6. Place your answers on the answer sheet provided. Credit will only be given for answers properly marked on this sheet. Follow the instructions for filling out the answer sheet.

7. Scrap paper will be provided for calculations.

8. Cheating on the examination will result in the automatic forfeiture of this examination. Cheating could also result in severe penalties.

9. Restroom trips are limited. Only **ONE** examinee may leave the room at a time. In order to avoid the appearance or possibility of cheating, avoid all contact with anyone outside of the examination room.

10. After you have completed the examination, sign the statement on the cover sheet indicating that the work is your own and you have neither given nor received any assistance in completing the examination. Either pencil or pen may be used.

11. Turn in your examination materials, answer sheet on top, followed by the examination copy and the examination aids - steam table booklets, handouts, and scrap paper used during the examination.

12. After turning in your examination materials, leave the examination area, as defined by the proctor. If after leaving you are found in the examination area while the examination is in progress, your examination may be forfeited.

GENERIC FUNDAMENTALS EXAMINATION
EQUATIONS AND CONVERSIONS HANDOUT SHEET

EQUATIONS

$\dot{Q} = \dot{m}c_p\Delta T$

$\dot{Q} = \dot{m}\Delta h$

$\dot{Q} = UA\Delta T$

$\dot{Q} \propto \dot{m}^3_{\text{Nat Circ}}$

$\Delta T \propto \dot{m}^2_{\text{Nat Circ}}$

$K_{eff} = 1/(1 - \rho)$

$\rho = (K_{eff} - 1)/K_{eff}$

$SUR = 26.06/\tau$

$$\tau = \frac{\overline{\beta}_{eff} - \rho}{\lambda_{eff}\,\rho}$$

$$\rho = \frac{\ell^*}{\tau} + \frac{\overline{\beta}_{eff}}{1 + \lambda_{eff}\,\tau}$$

$\ell^* = 1 \times 10^{-4}$ sec

$\lambda_{eff} = 0.1\ \text{sec}^{-1}$ (for small positive ρ)

$DRW \propto \varphi^2_{tip}/\varphi^2_{avg}$

$P = P_o 10^{SUR(t)}$

$P = P_o e^{(t/\tau)}$

$A = A_o e^{-\lambda t}$

$CR_{S/D} = S/(1 - K_{eff})$

$CR_1(1 - K_{eff1}) = CR_2(1 - K_{eff2})$

$1/M = CR_1/CR_X$

$A = \pi r^2$

$F = PA$

$\dot{m} = \rho A\vec{v}$

$\dot{W}_{Pump} = \dot{m}\Delta P\upsilon$

$E = IR$

Thermal Efficiency = Net Work Out/Energy In

$$\frac{g(z_2 - z_1)}{g_c} + \frac{(\vec{v}_2^{\,2} - \vec{v}_1^{\,2})}{2g_c} + \upsilon(P_2 - P_1) + (u_2 - u_1) + (q - w) = 0$$

$g_c = 32.2$ lbm-ft/lbf-sec^2

CONVERSIONS

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1 Mw = 3.41×10^6 Btu/hr	1 Curie = 3.7×10^{10} dps
1 hp = 2.54×10^3 Btu/hr	1 kg = 2.21 lbm
1 Btu = 778 ft-lbf	1 gal_{water} = 8.35 lbm
°C = (5/9)(°F - 32)	1 ft^3_{water} = 7.48 gal
°F = (9/5)(°C) + 32	

QUESTION: 1

The difference between the setpoint pressure at which a relief valve begins to open and the pressure at which it is fully open is called...

A. setpoint deviation.

B. setpoint tolerance.

C. accumulation.

D. blowdown.

QUESTION: 2

Two common types of check valves used in nuclear power plants are...

A. globe and gate.

B. ball and plug.

C. swing and lift.

D. needle and angle.

QUESTION: 3

Semiconductor strain gages are often used in transmitters for...

A. reactor coolant pressure instruments.

B. reactor coolant temperature instruments.

C. control rod position instruments.

D. steam generator level instruments.

QUESTION: 4

A cooling water system bourdon tube pressure detector is located inside a sealed building and system pressure currently indicates 50 psig. A building ambient temperature increase of 20°F will cause a _____ change in indicated system pressure, and a building pressure increase of 20 psig will cause a _____ change in indicated system pressure.

A. significant; significant

B. negligible; significant

C. significant; negligible

D. negligible; negligible

QUESTION: 5

Which one of the following is a characteristic of a resistance temperature detector but not a thermocouple?

A. Sensing element is made from a single metal or alloy.

B. Requires a reference junction for accurate temperature measurement.

C. Extension leads made from relatively expensive metals or alloys are required for accurate temperature measurement.

D. Temperature measurement relies on a sensor material property that varies directly with the change in the measured temperature.

QUESTION: 6

What is the most common type of sensor used to provide remote position indication of a valve that is normally either fully open or fully closed?

A. Limit switch

B. Reed switch

C. Servo transmitter

D. Linear variable differential transformer

QUESTION: 7

Refer to the drawing of a pneumatic control system (see figure below).

An increasing steam generator (S/G) water level will decrease the S/G level control signal and reduce the control air pressure applied to the feed control valve which reduces feedwater flow to the S/G.

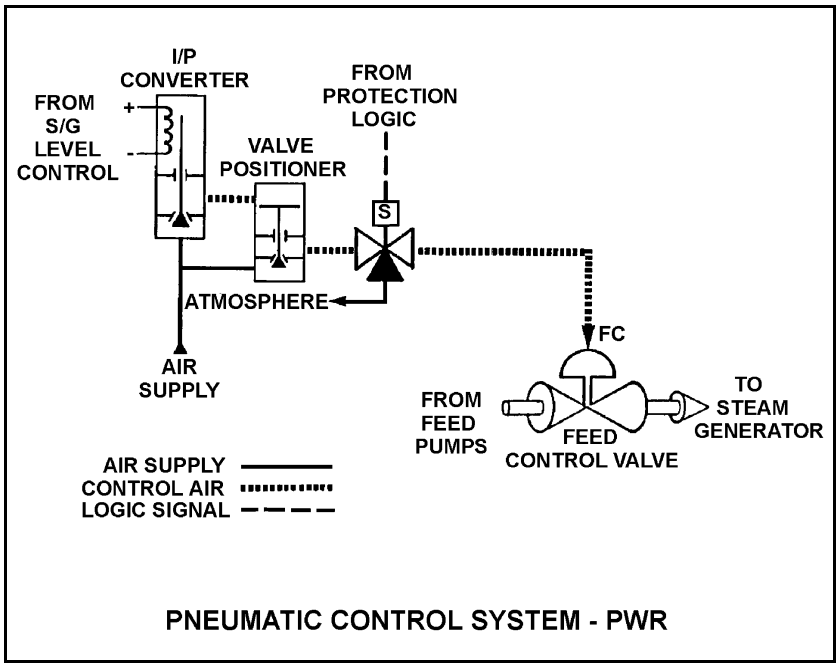
If the level control signal is manually increased, how will the pneumatic control system affect steam generator level?

A. Level will increase because the valve positioner will close more.

B. Level will decrease because the valve positioner will close more.

C. Level will increase because the valve positioner will open more.

D. Level will decrease because the valve positioner will open more.



PNEUMATIC CONTROL SYSTEM - PWR

QUESTION: 8

The temperature of the water in a storage tank is monitored by a bistable alarm circuit. If water temperature decreases to 50°F a bistable turns on to actuate an alarm indicator. As soon as the water temperature exceeds 50°F the bistable turns off to clear the alarm.

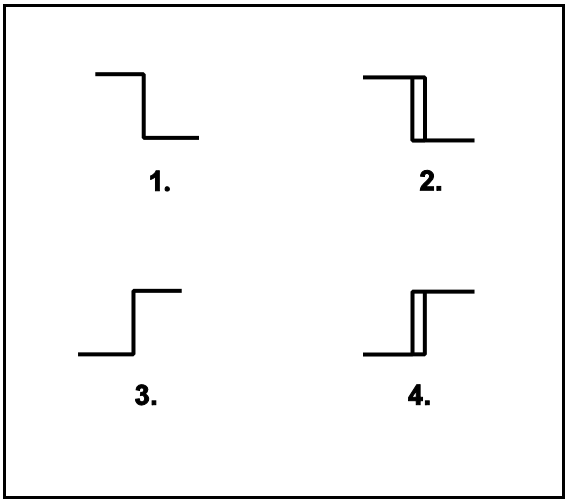
Which one of the following bistable symbols indicates the characteristics of the bistable used in the alarm circuit?

A. 1.

B. 2.

C. 3.

D. 4.



QUESTION: 9

Given:

- A reverse-acting proportional controller will be used to maintain level in a water storage tank by positioning an air-operated makeup water flow control valve.
- The controller input varies directly with water level.

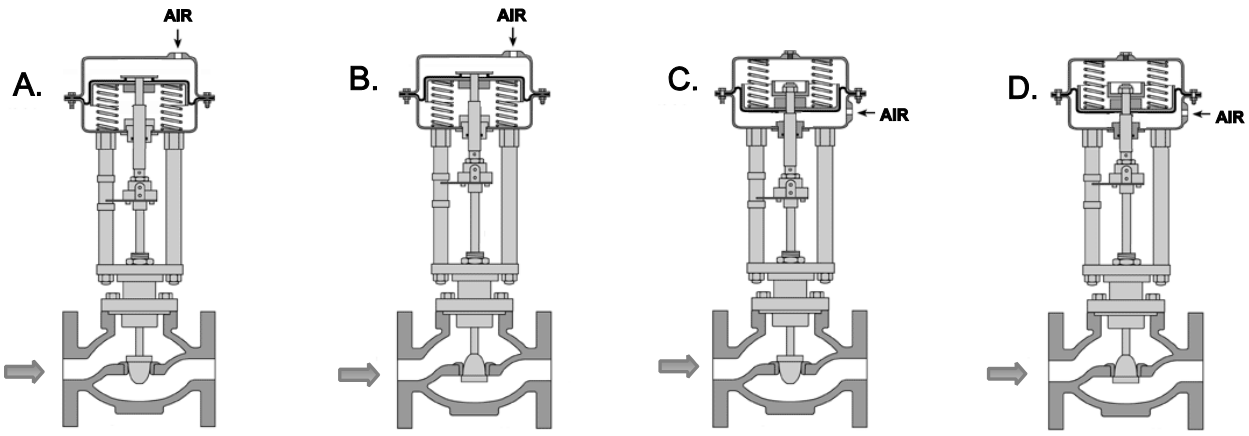
Which of the following flow control valves will be compatible with the controller in this application?

A. A and B

B. B and C

C. C and D

D. D and A



QUESTION: 10

Refer to the drawing below of a centrifugal pump taking suction from the bottom of an open storage tank containing water at 75°F. Pump and water level elevations are indicated in the figure. Assume standard atmospheric pressure.

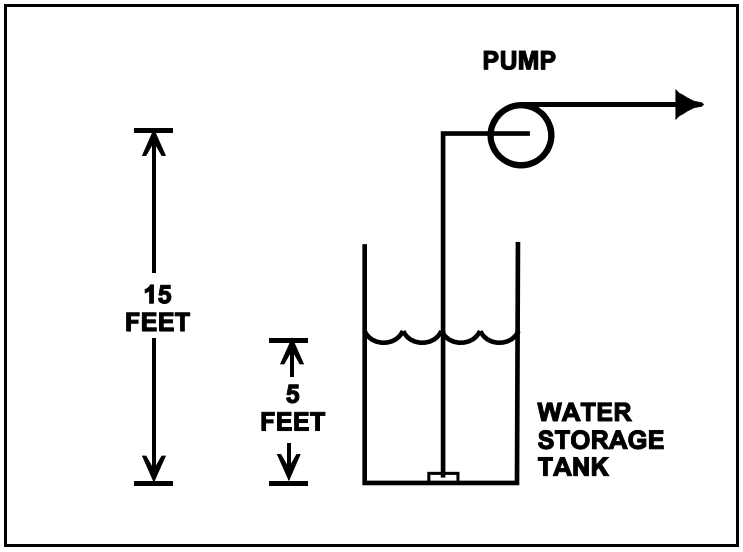
Assuming that pump suction head loss is negligible, what is the approximate value of net positive suction head available to the pump.

A. 5 feet

B. 10 feet

C. 17 feet

D. 23 feet



QUESTION: 11

A centrifugal pump is operating in parallel with a positive displacement pump in an open water system. Each pump has the same maximum design pressure.

If pump discharge pressure increases to the maximum design pressure of each pump, the centrifugal pump will be operating at _____ flow and the positive displacement pump will be operating near _____ flow.

A. minimum; minimum

B. minimum; maximum rated

C. maximum rated; minimum

D. maximum rated; maximum rated

QUESTION: 12

Refer to the drawing of an operating cooling water system (see figure below). As shown in the drawing, only two of the three system heat loads are currently in service.

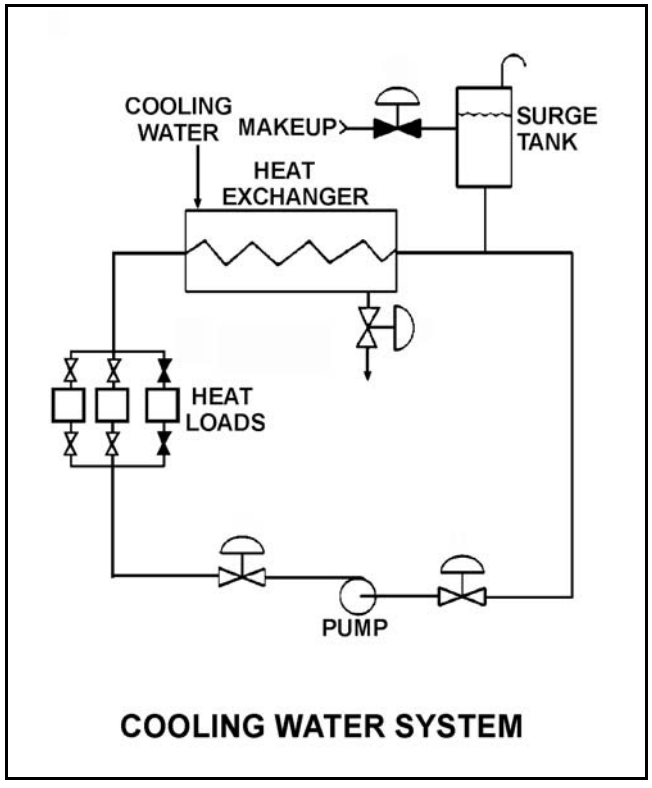
Which one of the following changes to the cooling water system will result in a higher cooling water pump flow rate and a reduced pump discharge head?

A. Increase pump speed by 20%.

B. Decrease pump speed by 20%.

C. Isolate one of the two in-service heat loads.

D. Place the third system heat load in service.



COOLING WATER SYSTEM

QUESTION: 13

Centrifugal pumps A and B are identical except that pump A uses a single-suction impeller while pump B uses a double-suction impeller. If both pumps are pumping water at the same inlet temperature, inlet pressure, and flow rate, single-suction pump A typically will have the _____ impeller axial thrust and the _____ required net positive suction head.

A. greater; greater

B. greater; smaller

C. smaller; greater

D. smaller; smaller

QUESTION: 14

Refer to the pump performance curves for a centrifugal cooling water pump (see figure below). The pump is being driven by a single-speed ac induction motor. Pump flow rate is being controlled by a throttled discharge flow control valve.

The following initial pump conditions exist:

Pump motor current: 100 amps
Pump flow rate: 800 gpm

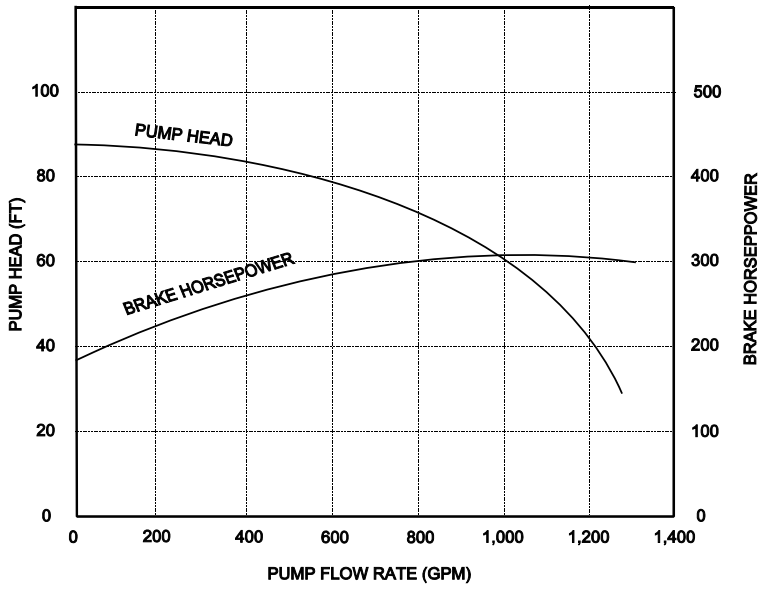
If the flow control valve is repositioned such that pump flow rate decreases to 400 gpm, what will be the approximate new pump motor current?

A. Less than 15 amps

B. 25 amps

C. 50 amps

D. Greater than 75 amps



QUESTION: 15

Which one of the following describes the typical ammeter response during a normal start of a large ac motor-driven centrifugal pump with a closed discharge valve?

A. Indication will approach full scale and then return to the full-load value.

B. Indication will go off scale high and then return to the no-load value.

C. Indication will approach full scale and then return to the no-load value.

D. Indication will go off scale high and then return to the full-load value.

QUESTION: 16

A nuclear power plant was initially operating at steady-state 50% rated thermal power with 50 gpm of main condenser cooling water inleakage through a cooling water tube rupture. Thermal power was then increased and is currently stable at 60%.

Assume that the size of the cooling water tube rupture does not change, and that the main condenser cooling water inlet pressure and inlet temperature do not change.

When compared to the flow rate of main condenser cooling water inleakage at 50% power, the flow rate of main condenser cooling water inleakage at 60% power is _____ because the main condenser pressure at 60% power is _____.

A. higher; lower

B. higher; higher

C. lower; lower

D. lower; higher

QUESTION: 17

During normal nuclear power plant operation, why does air entry into the main condenser reduce the thermodynamic efficiency of the steam cycle?

A. The rate of steam flow through the main turbine increases.

B. The condensate subcooling in the main condenser increases.

C. The enthalpy of the low pressure turbine exhaust increases.

D. The air mixes with the steam and enters the condensate.

QUESTION: 18

A condensate demineralizer differential pressure (D/P) gauge indicates 6.0 psid at 50% flow rate. Which one of the following combinations of condensate flow rate and demineralizer D/P observed at various power levels over the next few days indicates an increase in the accumulation of insoluble corrosion products in the demineralizer?

	Condensate Flow Rate	Demineralizer D/P (psid)
A.	100%	23.5
B.	75%	16.5
C.	60%	8.5
D.	25%	1.5

QUESTION: 19

During a nuclear power plant cooldown, the reactor experiences a large crud burst. After 10 minutes, with stable reactor coolant chemistry parameters, the operators begin to record parameters for the in-service reactor coolant purification ion exchanger. The ion exchanger was recently filled with fresh resin.

Assuming no additional operator actions, what trend will the recorded parameters show during the next few hours?

A. Increasing ion exchanger inlet water conductivity.

B. Increasing ion exchanger outlet water conductivity.

C. Increasing flow rate through the ion exchanger.

D. Increasing radiation levels around the ion exchanger.

QUESTION: 20

Which one of the following describes the local overcurrent trip flag indicators for a breaker?

A. They actuate prior to breaker tripping to warn of imminent protective action.

B. When actuated, they indicate that the breaker overcurrent trip relay has been reset.

C. They indicate breaker overcurrent trip actuation during and after breaker trip actuation.

D. When actuated, they indicate that the associated breaker has failed to trip open.

QUESTION: 21

Refer to the drawing of a valve motor control circuit (see figure below) for a valve that is currently fully open and has a 10-second stroke time.

Note: Limit switch (LS) contacts are shown open regardless of valve position, but relay contacts are shown open/closed according to the standard convention for control circuit drawings.

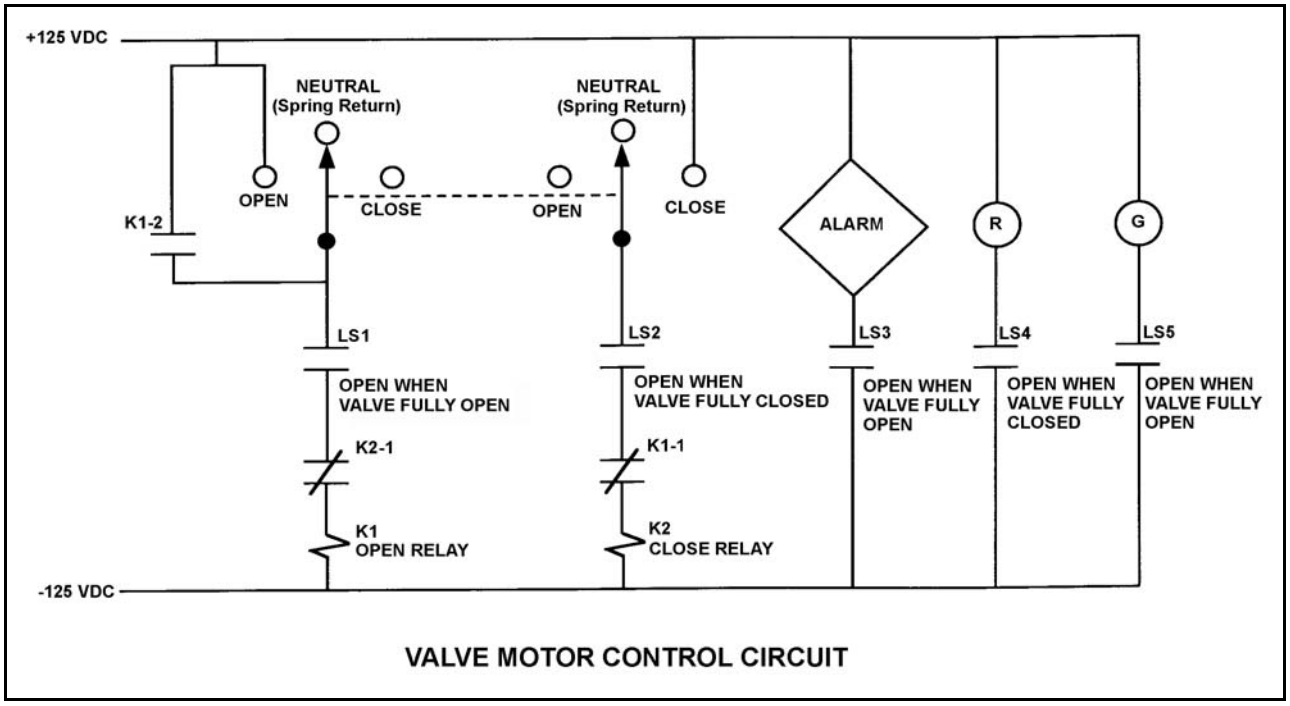
The operator takes the control switch to "Close". Two seconds later, after verifying the valve is closing, the operator releases the control switch. Which one of the following describes the valve motor control circuit alarm response after the switch is released?

A. The alarm will continue to actuate for approximately 8 seconds.

B. The alarm will continue to actuate until additional operator action is taken.

C. The alarm will actuate after approximately 8 seconds.

D. The alarm will <u>not</u> actuate until additional operator action is taken.



VALVE MOTOR CONTROL CIRCUIT

QUESTION: 22

Which one of the following is an unsafe practice if performed when working on or near energized electrical equipment?

A. Cover exposed energized circuits with insulating material to prevent inadvertent contact.

B. Have a person standing by to deenergize the equipment in the event of an emergency.

C. Use two hands for balance and to prevent dropping tools onto energized equipment.

D. Stand on insulating rubber material to prevent yourself from being grounded.

QUESTION: 23

Which one of the following is a characteristic of a prompt neutron?

A. Expelled with an average kinetic energy of 0.5 MeV.

B. Usually emitted by the excited nucleus of a fission product.

C. Accounts for more than 99% of fission neutrons.

D. Released an average of 13 seconds after the fission event.

QUESTION: 24

During core refueling, burnable poisons are often installed in the core to help control K_{excess}. Why are more burnable poison rods installed during fuel load for the first fuel cycle than for subsequent fuel cycles?

A. Control rod worth is lower at the beginning of subsequent fuel cycles.

B. More fuel reactivity is present at the beginning of subsequent fuel cycles.

C. More fission product poisons are present at the beginning of subsequent fuel cycles.

D. Reactor coolant boron concentration is higher at the beginning of subsequent fuel cycles.

QUESTION: 25

Given the following data for a nuclear reactor:

The core average delayed neutron fraction is 0.0068.
The core effective delayed neutron fraction is 0.0065.

The above data indicates that the reactor core is operating near the _____ of a fuel cycle and that a typical delayed neutron is _____ likely than a typical prompt neutron to cause another fission in the core.

A. beginning; less

B. beginning; more

C. end; less

D. end; more

QUESTION: 26

Which one of the following isotopes is the most significant contributor to resonance capture of fission neutrons in a nuclear reactor core near the end of a fuel cycle?

A. U-235

B. U-238

C. Pu-239

D. Pu-240

QUESTION: 27

The amount of boric acid required to increase the reactor coolant boron concentration by 50 ppm near the beginning of core life (1,200 ppm) is approximately _____ as the amount of boric acid required to increase boron concentration by 50 ppm near the end of core life (100 ppm).

A. the same

B. four times as large

C. eight times as large

D. twelve times as large

QUESTION: 28

A nuclear reactor is operating at 75% power in the middle of a fuel cycle. Which one of the following actions will cause the greatest shift in reactor power distribution toward the top of the core? (Assume control rods remain fully withdrawn.)

A. Decrease reactor power by 25%.

B. Decrease reactor coolant boron concentration by 10 ppm.

C. Decrease average reactor coolant temperature by 5°F.

D. Decrease reactor coolant system operating pressure by 15 psia.

QUESTION: 29

A nuclear reactor is operating at equilibrium full power when a single control rod fully inserts (from the fully withdrawn position). Reactor power is returned to full power with the control rod still fully inserted.

Compared to the initial axial neutron flux shape, the current flux shape will have a...

A. minor distortion, because a fully inserted control rod has zero reactivity worth.

B. minor distortion, because the fully inserted control rod is an axially uniform poison.

C. major distortion, because the upper and lower core halves are loosely coupled.

D. major distortion, because power production along the length of the rod drastically decreases.

QUESTION: 30

Nuclear reactors A and B are operating at steady-state 100% power with equilibrium core Xe-135. The reactors are identical except that reactor A is operating near the end of core life and reactor B is operating near the beginning of core life.

Which reactor is experiencing the most negative reactivity from equilibrium core Xe-135?

A. Reactor A due to a greater concentration of equilibrium core Xe-135.

B. Reactor A due to lower competition from the fuel for thermal neutrons.

C. Reactor B due to a greater thermal neutron flux in the core.

D. Reactor B due to a smaller accumulation of stable fission product poisons.

QUESTION: 31

A nuclear reactor had been operating at 50% power for two weeks when power was increased to 100% over a 3-hour period. In order to maintain reactor power stable during the next 24 hours, which one of the following incremental control rod manipulations will be required?

A. Withdraw rods slowly during the entire period

B. Withdraw rods slowly at first, then insert rods slowly

C. Insert rods slowly during the entire period

D. Insert rods slowly at first, then withdraw rods slowly

QUESTION: 32

Refer to the drawing of K_{eff} versus core age for a nuclear reactor core following a refueling outage (see figure below).

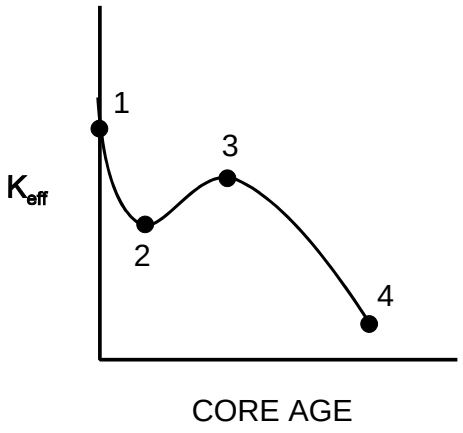
Which one of the following is responsible for the majority of the decrease in K_{eff} from point 1 to point 2?

A. Depletion of fuel

B. Burnout of burnable poisons

C. Initial heat-up of the reactor

D. Buildup of fission product poisons



QUESTION: 33

The following data were obtained at steady-state conditions during a nuclear reactor startup:

Control Rod Units Withdrawn	Source Range Count Rate (cps)
10	360
15	400
20	450
25	514
30	600
35	720
40	900

Assuming uniform differential rod worth, at what approximate control rod position will criticality occur?

A. 50 units withdrawn

B. 60 units withdrawn

C. 70 units withdrawn

D. 80 units withdrawn

QUESTION: 34

Refer to the drawing that shows a graph of fission rate versus time (see figure below). Both axes have linear scales.

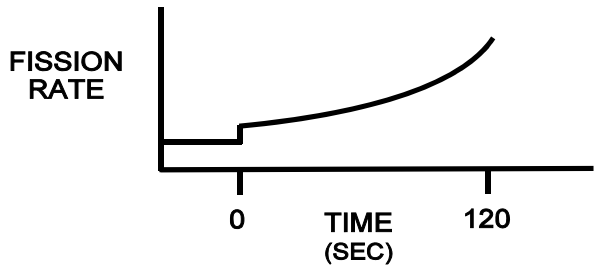
Which one of the following events, beginning at time = 0 seconds, would cause the reactor response shown on the graph?

A. A step addition of positive reactivity to a reactor that is initially subcritical in the source range and remains subcritical for the duration of the 120-second interval shown.

B. A step addition of positive reactivity to a reactor that is initially critical in the source range and remains below the point of adding heat for the duration of the 120-second interval shown.

C. A step addition of positive reactivity to a reactor that is initially critical in the power range and remains in the power range for the duration of the 120-second interval shown.

D. A constant rate of positive reactivity addition to a reactor that is initially critical in the power range and remains in the power range for the duration of the 120-second interval shown.



QUESTION: 35

A multi-loop nuclear power plant is operating at 50% power with manual rod control when the main steam isolation valve (MSIV) for one steam generator inadvertently closes. Assume that no reactor trip or other protective action occurs, and no operator action is taken.

Immediately after the MSIV closure, the cold leg temperature (T_{cold}) in the reactor coolant loop with the closed MSIV will _____; and the T_{cold} in a loop with an open MSIV will initially _____.

A. decrease; increase

B. decrease; decrease

C. increase; increase

D. increase; decrease

QUESTION: 36

A nuclear power plant had been operating at 100% power for six months when a steam line rupture occurred that resulted in a reactor trip and all steam generators (S/Gs) blowing down (emptying) after approximately 1 hour. The S/G blowdown caused reactor coolant system (RCS) temperature to decrease to 400°F at which time an RCS heatup began.

Given the following information, what was be the average RCS heatup rate during the 5 minutes immediately after all S/Gs became empty?

Reactor rated thermal power:	3,400 MWt
Decay heat:	1.0% rated thermal power
Reactor coolant pumps heat input to the RCS:	15 MWt
RCS total heat loss:	Negligible
RCS c_p:	1.1 Btu/lbm-°F
RCS inventory (less pressurizer):	475,000 lbm

A. 8 to 15°F/hour

B. 50 to 75°F/hour

C. 100 to 150°F/hour

D. 300 to 350°F/hour

QUESTION: 37

Refer to the drawing of a water storage tank with a differential pressure (D/P) level indicator that is vented to atmosphere (see figure below). Both the tank and the level indicator are surrounded by standard atmospheric pressure. Tank water temperature is 70°F.

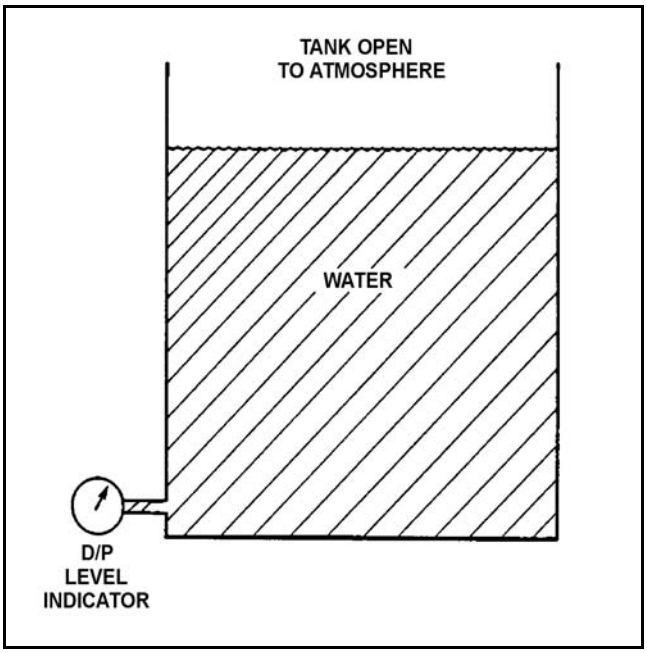
The D/P level indicator is sensing a differential pressure of 4.0 psi. What is the water level in the tank above the instrument penetration?

A. 9.2 feet

B. 16.7 feet

C. 24.7 feet

D. 43.2 feet



QUESTION: 38

Consider a water/steam mixture with a current quality of 99%. If pressure remains constant and heat is removed from the mixture, the temperature of the mixture will _____ and the quality of the mixture will _____. (Assume the mixture remains saturated.)

A. decrease; remain the same

B. decrease; decrease

C. remain the same; remain the same

D. remain the same; decrease

QUESTION: 39

An open vessel contains one pound-mass of water at 206°F and standard atmospheric pressure. Which one of the following will be caused by the addition of 3.0 Btu to the water?

A. The water temperature will rise by approximately 3°F.

B. Approximately 3% of the water mass will vaporize.

C. The water density will decrease by approximately 3%.

D. The water will become superheated by approximately 3°F.

QUESTION: 40

Which one of the following is essentially a constant enthalpy process?

A. Steam flowing through an ideal convergent nozzle.

B. Condensation of turbine exhaust in a main condenser.

C. Expansion of main steam through the stages of an ideal turbine.

D. Throttling of main steam through main turbine steam inlet valves.

QUESTION: 41

If superheating of the inlet steam to a low pressure turbine is reduced, low pressure turbine work output will _____ and low pressure turbine exhaust steam moisture content will _____. (Assume steam mass flow rate does not change.)

A. remain the same; increase

B. remain the same; decrease

C. decrease; increase

D. decrease; decrease

QUESTION: 42

Which one of the following will minimize the possibility of water hammer?

A. Draining the discharge line of a centrifugal pump after shutdown.

B. Draining condensate out of steam lines before and after initiating flow.

C. Starting a centrifugal pump with its discharge valve fully open.

D. Starting a positive displacement pump with its discharge valve partially closed.

QUESTION: 43

Reactor coolant system (RCS) hot leg temperature is 568°F and RCS pressure is decreasing due to a small leak. Which one of the following pressure ranges includes the pressure at which two-phase flow will first occur in the hot leg?

A. 1,250 to 1,201 psig

B. 1,200 to 1,151 psig

C. 1,150 to 1,101 psig

D. 1,100 to 1,051 psig

QUESTION: 44

A nuclear power plant is operating with the following parameters:

Reactor power:	100%
Core ΔT:	60°F
Reactor coolant system flow rate:	100%
Average coolant temperature:	587°F

A station blackout occurs and natural circulation is established with the following stable parameters:

Decay heat:	1%
Core ΔT:	30°F
Average coolant temperature:	572°F

What is the core mass flow rate in percent?

A. 2.0%

B. 2.5%

C. 3.0%

D. 4.0%

QUESTION: 45

How does critical heat flux vary from the bottom to the top of the nuclear reactor core during normal full power operation?

A. Increases continuously.

B. Increases, then decreases.

C. Decreases continuously.

D. Decreases, then increases.

QUESTION: 46

Which one of the following will increase the reactor coolant system (RCS) subcooling margin with the reactor operating at full power?

A. Decreased RCS pressure.

B. Decreased RCS hot leg temperature.

C. Increased RCS cold leg temperature.

D. Increased concentration of soluble gases in the RCS.

QUESTION: 47

Refer to the drawing of a section of pipe that contains flowing subcooled water (see figure below).

Given:

Pressure at P_1 is 26 psig.
Pressure at P_2 is 34 psig.
Pressure change due to change in velocity is 2 psig.
Pressure change due to change in elevation is 8 psig.

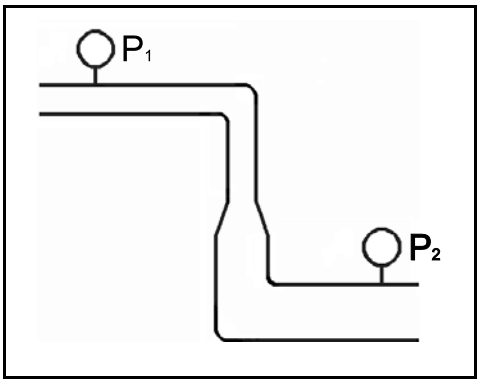
The pressure decrease due to friction head loss between P_1 and P_2 is _____; and the direction of flow is from _____.

A. 2 psig; left to right

B. 2 psig; right to left

C. 4 psig; left to right

D. 4 psig; right to left



QUESTION: 48

If the steam generator thermal centers were at the same elevation as the reactor core thermal center, natural circulation flow in the reactor coolant system would...

A. not occur.

B. not be affected.

C. be greater than if they were at different elevations.

D. flow in the reverse direction.

QUESTION: 49

A nuclear reactor is operating at 80% power with all control rods fully withdrawn and in manual control. Compared to a 50% insertion of one control rod, 50% insertion of a group (or bank) of control rods will cause a _____ increase in the steady state core maximum axial power peaking factor and a _____ increase in the steady state core maximum radial power peaking factor. (Assume reactor power remains constant.)

A. smaller; smaller

B. smaller; larger

C. larger; smaller

D. larger; larger

QUESTION: 50

During a severe reactor coolant system overcooling transient, a major concern is...

A. accelerated zirconium hydriding.

B. loss of reactor vessel water level.

C. loss of reactor coolant pump net positive suction head.

D. brittle fracture of the reactor vessel.

*****FINAL ANSWER KEY *****

DECEMBER 2008 NRC GENERIC FUNDAMENTALS EXAMINATION
PRESSURIZED WATER REACTOR - ANSWER KEY

FORM A	FORM B	ANS.	FORM A	FORM B	ANS.
1	15	C	26	40	B
2	16	C	27	41	A
3	17	A	28	42	A
4	18	B	29	43	B
5	19	A	30	44	B
6	20	A	31	45	D
7	21	C	32	46	D
8	22	A	33	47	B
9	23	B	34	48	B
10	24	D	35	49	D
11	25	B	36	50	D
12	26	D	37	1	A
13	27	A	38	2	D
14	28	D	39	3	A
15	29	B	40	4	D
16	30	D	41	5	C
17	31	C	42	6	B
18	32	B	43	7	B
19	33	D	44	8	A
20	34	C	45	9	C
21	35	B	46	10	B
22	36	C	47	11	A
23	37	C	48	12	A
24	38	C	49	13	C
25	39	A	50	14	D