UNITED STATES NUCLEAR REGULATORY COMMISSION
BOILING 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 boiling water reactor (BWR) 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

After an adjustment of the packing gland on a valve that had a minor packing leak, an operator attempts to operate the valve but finds that the valve is stuck. What is the most probable cause?

A. The disk separated from the valve stem as a result of overtightening the packing gland.

B. The operator placed the valve in the wrong position for adjusting the packing gland.

C. The valve was overtorqued in the closed direction during the packing gland adjustment.

D. The maintenance technician overtightened the packing gland, causing the stem to bind.

QUESTION: 2

Prior to shifting a valve controller from automatic to manual control, why should the automatic and manual controller output signals be matched?

A. To ensure the valve will operate in manual control upon demand.

B. To ensure valve position indication is accurate in manual control.

C. To move the valve to the new position prior to the transfer.

D. To prevent a sudden valve repositioning during the transfer.

QUESTION: 3

In a comparison between ball valves and butterfly valves in the same liquid process system application, the valves that typically would allow more leakage when fully closed and under high differential pressure are _____ valves, and the valves that typically would cause the higher system pressure drop when fully open are _____ valves.

A. ball; butterfly

B. ball; ball

C. butterfly; butterfly

D. butterfly; ball

QUESTION: 4

A differential pressure (D/P) cell is being used to measure flow rate in a cooling water system. Flow rate is indicating 75% of scale. If the D/P cell diaphragm ruptures, indicated flow rate will...

A. decrease because low D/P is sensed.

B. decrease because high D/P is sensed.

C. increase because low D/P is sensed.

D. increase because high D/P is sensed.

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

A reactor scrammed due to a loss-of-coolant accident, after which the source range monitors (SRMs) were fully inserted into the core.

If the SRMs are currently in a voided section of the core, how will the count rate change when the SRMs are withdrawn below core water level?

A. Decrease due to decreased neutron migration length.

B. Decrease due to increased moderator neutron absorption.

C. Increase due to decreased neutron leakage.

D. Increase due to increased fast fission.

QUESTION: 7

A beta particle and an alpha particle enter and cause ionization in a gas-filled radiation detector operating in the Geiger-Mueller region. Which one of the following accurately compares the amplitude of the detector pulses caused by each type of radiation?

A. The beta particle pulse will be larger in amplitude.

B. The alpha particle pulse will be larger in amplitude.

C. The pulses will be identical for both types of radiation.

D. Cannot be determined without particle kinetic energy information.

QUESTION: 8

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.

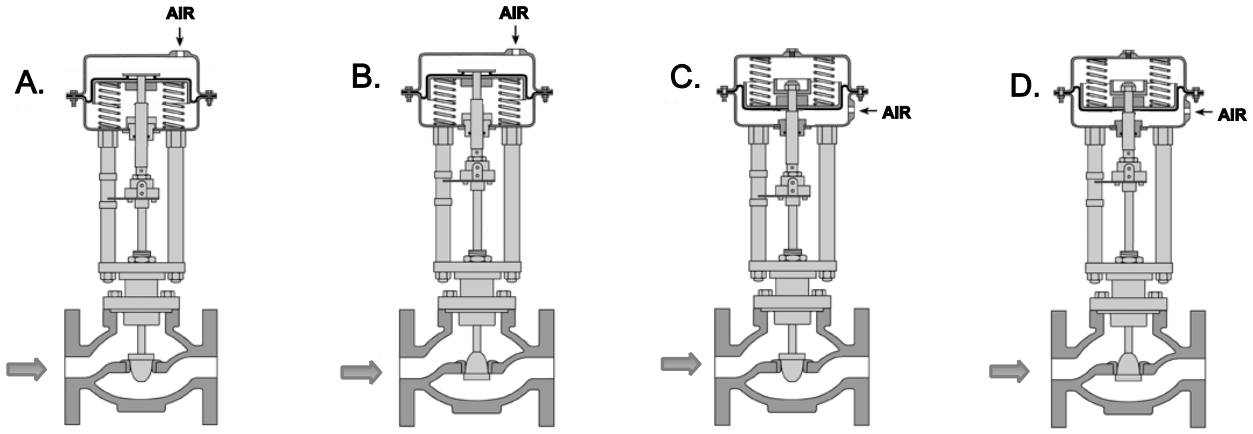
Which of the following flow control valves will be compatible with the controller in this application?

A. A and B

B. B and C

C. C and D

D. D and A



QUESTION: 9

The temperature of the water in a small outside storage tank is controlled by a set of heaters submerged in the tank. The heaters energize at a water temperature of 40°F and deenergize at 48°F. When energized, the heaters produce a constant thermal output.

Which one of the following types of control devices is used in the heater control circuit to produce these characteristics?

A. Bistable

B. Proportional

C. Proportional Integral

D. Proportional Derivative

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.

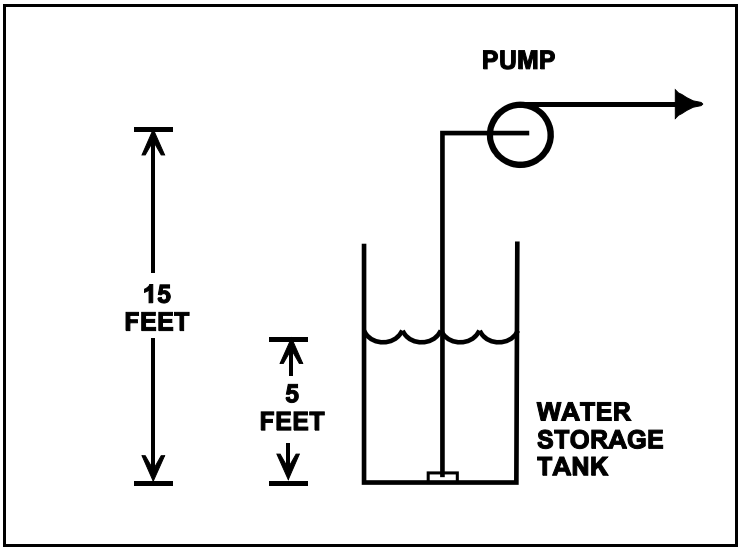
Assuming that pump suction head loss is negligible, what is the approximate value of net positive suction head available to the pump.

A. 5 feet

B. 10 feet

C. 17 feet

D. 23 feet



QUESTION: 11

A radial flow centrifugal cooling water pump is driven by an ac induction motor. The pump can supply cooling water to several heat loads, all of which are in parallel alignment. The following pump conditions initially exist:

Pump motor current:	100 amps
Pump flow rate:	400 gpm
Pump suction temperature:	70°F

Four hours later, the motor is drawing 95 amps. Which one of the following could be responsible for the observed decrease in motor amps?

A. The temperature of the cooling water being pumped decreased to 60°F with no change in pump flow rate.

B. The temperature of the cooling water being pumped increased to 80°F with no change in pump flow rate.

C. Cooling water flow was established to an additional heat load with no change in the temperature of the cooling water being pumped.

D. Cooling water flow was isolated from an out-of-service heat load with no change in the temperature of the cooling water being pumped.

QUESTION: 12

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: 13

A centrifugal pump is operating normally in an open system with all valves fully open. If the pump discharge valve is throttled to 50%, pump suction pressure will _____ and pump discharge pressure will _____.

A. increase; decrease

B. decrease; increase

C. increase; increase

D. decrease; decrease

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

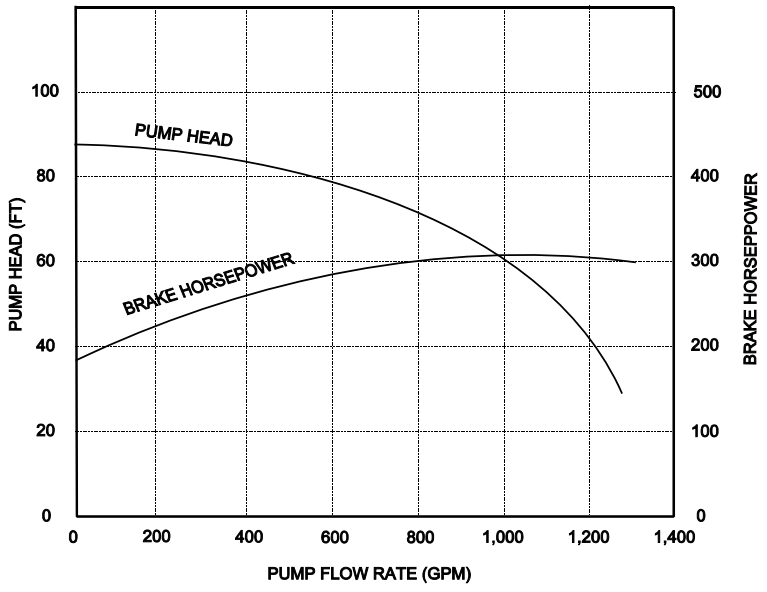
If the flow control valve is repositioned such that pump flow rate decreases to 400 gpm, what will be the approximate new pump motor current?

A. Less than 15 amps

B. 25 amps

C. 50 amps

D. Greater than 75 amps



QUESTION: 15

A difference in electrical potential is measured in...

A. amps.

B. volts.

C. ohms.

D. volt-amps reactive.

QUESTION: 16

Decreasing the temperature of the lube oil leaving a lube oil heat exchanger is normally accomplished by...

A. increasing the cooling water flow rate.

B. increasing the lube oil flow rate.

C. decreasing the cooling water flow rate.

D. decreasing the lube oil flow rate.

QUESTION: 17

Refer to the drawing of an operating lube oil heat exchanger (see figure below).

Given the following existing conditions:

$\dot{m}_{oil}$ = 1.8×10^4 lbm/hr
$\dot{m}_{water}$ = 3.3×10^4 lbm/hr
$c_{p\text{-}oil}$ = 1.1 Btu/lbm-°F
$c_{p\text{-}water}$ = 1.0 Btu/lbm-°F
$T_{cw\text{-}in}$ = 90°F
$T_{cw\text{-}out}$ = 120°F
$T_{oil\text{-}in}$ = 170°F
$T_{oil\text{-}out}$ = ?

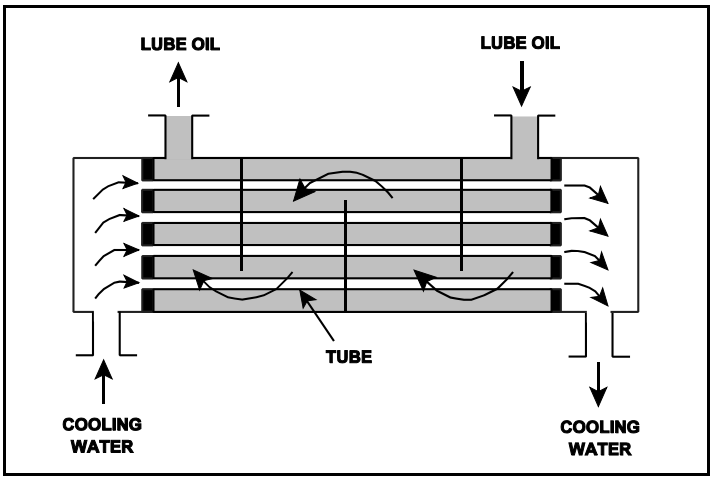
What is the approximate temperature of the oil exiting the heat exchanger ($T_{oil\text{-}out}$)?

A. 110°F

B. 120°F

C. 130°F

D. 140°F



QUESTION: 18

Which one of the following describes the state of water at 160 psig and 372°F?

A. Saturated liquid

B. Subcooled liquid

C. Superheated vapor

D. Mixture of saturated liquid and vapor

QUESTION: 19

A condensate demineralizer differential pressure (D/P) gauge indicates 4.0 psid at 50% flow rate. Over the next two days plant power changes have caused condensate flow rate to vary between 25% and 100%.

Which one of the following combinations of condensate flow rate and demineralizer D/P, observed during the power changes, indicates an increase in the accumulation of corrosion products in the demineralizer?

	Condensate Flow Rate	Demineralizer D/P (psid)
A.	100%	15.0
B.	75%	9.0
C.	60%	5.0
D.	25%	2.0

QUESTION: 20

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: 21

While remotely investigating the condition of a normally-open 480 VAC motor control center (MCC) feeder breaker, an operator observes the following indications:

Green breaker position indicating light is out.
Red breaker position indicating light is lit.
MCC voltmeter indicates 480 VAC.
MCC ammeter indicates zero amperes.

Based on these indications, the operator should report that the feeder breaker is _____ and racked _____.

A. open; in

B. closed; in

C. open; to the test position

D. closed; to the test position

QUESTION: 22

Which one of the following describes the operation of a thermal overload device for a large motor?

A. A balanced bridge circuit compares actual current to a fixed overcurrent setpoint and trips the breaker if the setpoint is exceeded.

B. An in-line heater coil, when subjected to a sustained high current, overheats and completes a circuit to trip the breaker.

C. A temperature monitor senses the temperature of the operating equipment and trips the breaker if the temperature exceeds preset limits.

D. An in-line induction coil generates a secondary current proportional to the primary current, and closes breaker trip circuit contacts for a sustained overcurrent condition.

QUESTION: 23

The ideal moderator has a _____ macroscopic absorption cross section for thermal neutrons and a _____ average logarithmic energy decrement.

A. large; small

B. large; large

C. small; small

D. small; large

QUESTION: 24

A nuclear reactor is initially operating at steady-state 60% power near the end of core life when a fully withdrawn control rod suddenly inserts completely into the core. No operator action is taken and the plant control systems stabilize the reactor at a power level in the power range.

Compared to the initial shutdown margin (SDM), the new steady-state SDM is _____; compared to the initial 60% power core K_{eff}, the new steady-state core K_{eff} is _____.

A. the same; smaller

B. the same; the same

C. less negative; smaller

D. less negative; the same

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 has the smallest microscopic cross section for absorption of a thermal neutron in an operating nuclear reactor?

A. Uranium-235

B. Uranium-238

C. Samarium-149

D. Xenon-135

QUESTION: 27

Which one of the following is the primary reason the void coefficient becomes less negative with core burnup toward the end of core life?

A. The thermal neutron flux increases.

B. The thermal diffusion length decreases.

C. The fuel centerline temperature increases.

D. The control rod density decreases.

QUESTION: 28

A notch movement of a control rod represents a rod travel of _____ inches.

A. 2

B. 3

C. 6

D. 12

QUESTION: 29

Which one of the following control rods, when repositioned by 2 notches, will have the smallest effect on axial flux shape?

A. Deep rods at the center of the core

B. Deep rods at the periphery of the core

C. Shallow rods at the center of the core

D. Shallow rods at the periphery of the core

QUESTION: 30

Which one of the following equilibrium reactor pre-scram conditions requires the greater amount of control rod withdrawal to perform a reactor startup during peak xenon conditions after a reactor scram? (BOC = beginning of a fuel cycle. EOC = end of a fuel cycle.)

A. BOC and 100% power

B. EOC and 100% power

C. BOC and 20% power

D. EOC and 20% power

QUESTION: 31

Following a seven day shutdown, a reactor startup is performed and a nuclear power plant is taken to 100% power over a 16-hour period. After reaching 100% power, what type of reactivity will the operator need to add to compensate for core xenon-135 changes over the next 24 hours?

A. Negative only

B. Negative, then positive

C. Positive only

D. Positive, then negative

QUESTION: 32

Refer to the drawing of K_{eff} versus core age (see figure below).

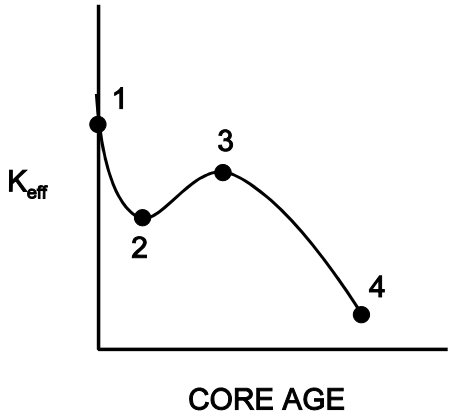
The change in K_{eff} from point 2 to point 3 is caused by...

A. depletion of fuel.

B. depletion of control rods.

C. burnout of burnable poisons.

D. burnout of fission product poisons.



QUESTION: 33

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

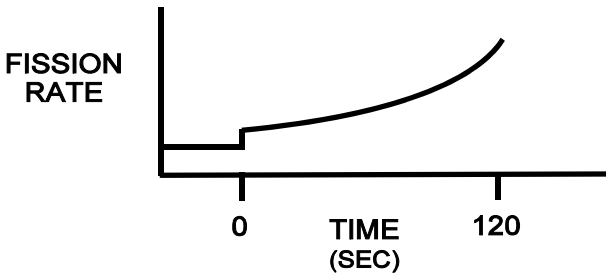
Which one of the following events, beginning at time = 0 seconds, would cause the reactor response shown on the graph?

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: 34

Which one of the following will add the most positive reactivity during a power decrease from 100% to 65% over a 1 hour period? (Assume the power change is performed only by changing core recirculation flow rate.)

A. Fuel temperature change

B. Moderator temperature change

C. Fission product poison change

D. Core void fraction change

QUESTION: 35

A nuclear reactor is operating at steady-state 20% power. Then reactor power is increased to 40%. In comparison to operating conditions at 20% power, when the plant stabilizes at 40% power, reactor vessel pressure will be _____, and reactor vessel water temperature will be _____.

A. the same; the same

B. the same; higher

C. higher; the same

D. higher; higher

QUESTION: 36

Following a reactor shutdown from three months of operation at full power, core heat production will continue for a period of time. The rate of core heat production will depend on the...

A. amount of fuel that has been depleted.

B. amount of time that has elapsed since K_{eff} decreased below 1.0.

C. amount of time required for the reactor pressure vessel to cool down.

D. rate at which the photoneutron source strength decays following shutdown.

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.

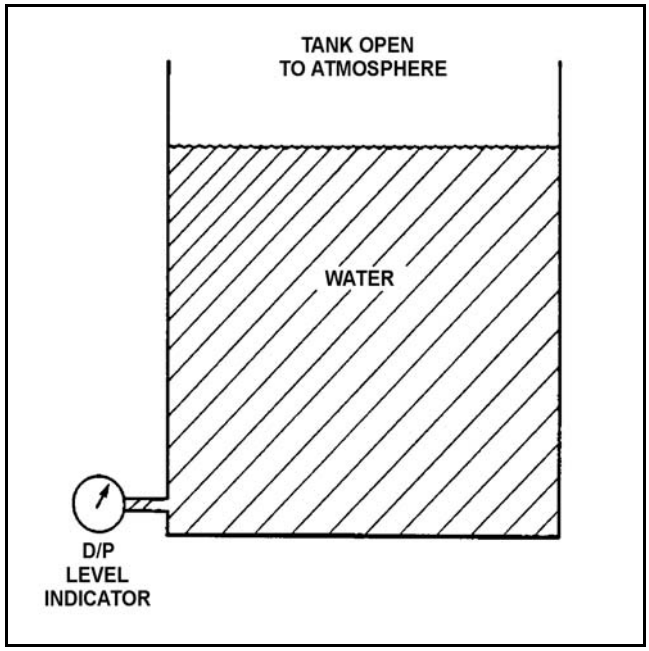
The D/P level indicator is sensing a differential pressure of 4.0 psi. What is the water level in the tank above the instrument penetration?

A. 9.2 feet

B. 16.7 feet

C. 24.7 feet

D. 43.2 feet



QUESTION: 38

Consider a sealed vessel containing 1,000 lbm of a saturated water/vapor mixture at 500°F. The mixture is currently stable with no net heat gain or loss occurring.

If a leak near the bottom of the vessel results in a loss of 10% of the liquid volume from the vessel, the temperature of the mixture will _____, and the overall quality of the mixture will _____. (Assume the mixture remains saturated.)

A. decrease; increase

B. decrease; decrease

C. remain the same; increase

D. remain the same; decrease

QUESTION: 39

The steam inlet nozzles used in steam jet air ejectors convert the _____ of the steam into _____.

A. kinetic energy; pressure

B. enthalpy; kinetic energy

C. kinetic energy; velocity

D. enthalpy; pressure

QUESTION: 40

A steam plant main turbine consists of a high-pressure (HP) unit and several low-pressure (LP) units. The main turbine is most likely to experience stress-related failures of the rotor blades in the _____ stages of the _____ unit(s).

A. inlet; HP

B. inlet; LP

C. outlet; HP

D. outlet; LP

QUESTION: 41

Refer to the drawing of four centrifugal pump operating curves (see figure below).

A centrifugal pump is initially operating in a closed water system and discharging through a heat exchanger. A second heat exchanger, in parallel with the first, is then placed in service.

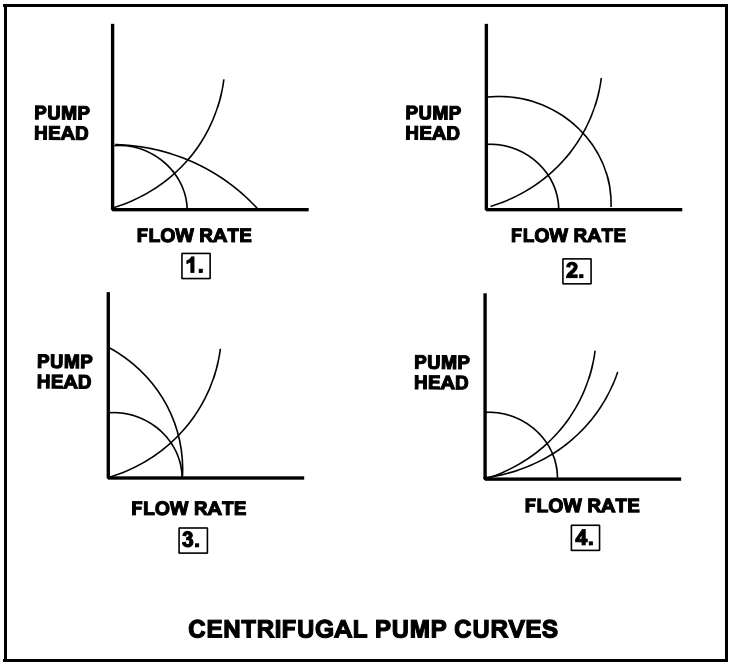
Which set of curves illustrates the initial and final operating conditions?

A. 1.

B. 2.

C. 3.

D. 4.



QUESTION: 42

Water at 90°F and 50 psig is flowing through a 10-inch diameter pipe at 100 lbm/sec. The pipe then splits into two pipes, a 4-inch diameter pipe and an 8-inch diameter pipe.

Disregarding any flow restrictions other than pipe size, which one of the following lists the approximate flow rates through the 4-inch and 8-inch diameter pipes?

	4-inch Pipe (lbm/sec)	8-inch Pipe (lbm/sec)
A.	20	80
B.	25	75
C.	30	70
D.	33	67

QUESTION: 43

Given the following data for a steam condenser:

Total tube area	= 500,000 ft^2
Cooling water flow rate	= 200,000 gpm
Condenser pressure	= 1 psia
Specific heat of cooling water (c_p)	= 1 Btu/lbm-°F
Cooling water inlet temperature	= 60°F
Cooling water outlet temperature	= 80°F
Steam condensing rate	= 3,000,000 lbm/hr
Mass of cooling water	= 8.34 lbm/gal

What is the condenser heat load in megawatts thermal (MWt)?

A. 587 MWt

B. 629 MWt

C. 671 MWt

D. 733 MWt

QUESTION: 44

A nuclear reactor is operating at full power with a fuel bundle coolant channel that is experiencing each of the following heat transfer mechanisms somewhere along the length of the coolant channel.

Which one of the following causes the first reduction in the local fuel clad heat transfer rate as the coolant flows upward through the coolant channel?

A. Nucleate boiling

B. Stable film boiling

C. Partial film boiling

D. Single-phase convection

QUESTION: 45

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.

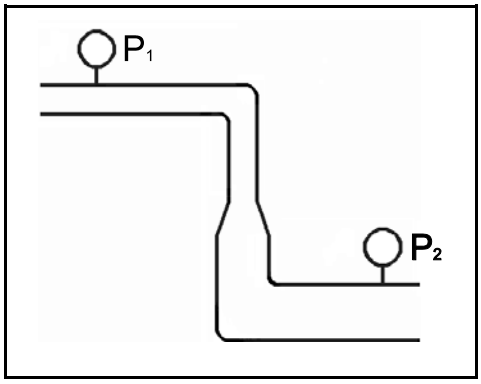
The pressure decrease due to friction head loss between P_1 and P_2 is _____; and the direction of flow is from _____.

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: 46

Given:

- Nuclear reactors A and B are identical except that reactor A has no core orifices while reactor B is equipped with orifices.
- Both reactors always operate with identical recirculation system flow rates.
- Both reactors are currently operating at 80% of full power with the thermal neutron flux radially peaked in the center of both cores.

Compared to reactor A, the critical power ratio (CPR) in the central fuel bundles of reactor B is _____; and the average power in the peripheral fuel bundles of reactor B is _____.

A. smaller; smaller

B. smaller; larger

C. larger; smaller

D. larger; larger

QUESTION: 47

Maintaining the average planar linear heat generation rate (APLHGR) below the technical specification limiting condition for operation (LCO) ensures that...

A. plastic strain (deformation) of the cladding will not exceed 1%.

B. axial peaking factors will not exceed those assumed in the safety analyses.

C. during transients, more than 99.9% of the fuel rods are expected to avoid transition boiling.

D. peak clad temperature after the design basis loss of coolant accident will not exceed 2,200°F.

QUESTION: 48

Which one of the following is most likely to result in fuel failure due to pellet-clad interaction?

A. Increasing reactor power from 20% to 50% near the beginning of a fuel cycle.

B. Increasing reactor power from 20% to 50% near the end of a fuel cycle.

C. Increasing reactor power from 70% to 100% near the beginning of a fuel cycle.

D. Increasing reactor power from 70% to 100% near the end of a fuel cycle.

QUESTION: 49

If reactor feedwater temperature suddenly decreases by 10°F during operation at 75% power, critical power will initially _____ and bundle power will initially _____. (Assume the reactor does not scram.)

A. increase; increase

B. decrease; increase

C. increase; decrease

D. decrease; decrease

QUESTION: 50

Which one of the following comparisons will result in a higher probability of brittle fracture of the reactor vessel?

A. A high reactor gamma flux rather than a high neutron flux.

B. A high reactor vessel material strength rather than a high material ductility.

C. A high reactor coolant oxygen content rather than a low oxygen content.

D. A rapid 100°F reactor cooldown at a high temperature rather than a low temperature.

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

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

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