Water Process Technician

Sample Practice Knowledge Assessment

Note: this sample test has 40 questions and duration of 70 minutes; the live test has 50 questions and duration of 90 minutes

Please write clearly in block capitals below	
Employer Name	
First Name (s)	
Last Name (s)	
Date of Birth	
Candidate Number	
Apprentice signature	
Date of Knowledge Test	

Level: 3

Standard: Water Process

Pathway: Water Treatment Technician

Duration: 70 minutes

Materials

For this paper you must have:

- Pens
- Scientific calculator (non-programmable)

Instructions

- Use black ink or black ball-point pen
- Fill in the boxes at the top of this page
- Answer **all** questions

- There are questions, possible answers as well as a column for you to mark your answer
- Mark your answer with an ☒ against the possible answer you think is correct- if you wish to change your answer please put a line through ☒ and re-select with another ☒
- Only one answer per question allowed. Answers which do not follow the rules of selection will be disallowed. This may impact on the grade awarded
- Do all rough work in this answer book

Below is a Sample:

Example Question		
London is the capital of…		
Possible answers		**Answer**
a)	Wales	~~X~~
b)	Scotland	
c)	Northern Ireland	
d)	England	**X**

Information

- There are **40** sample questions
- There will be 50 questions in the live knowledge assessment
- All questions should be attempted

Advice

- You are not permitted to leave the examination room for the first 45 minutes and the last 15 minutes of the examination
- Do not spend too long on one question
- Read all questions thoroughly before starting your examination
- Cheating: you will be asked to leave the examination room and will be classified an automatic fail and referred to your employer

Do not turn over the page or commence the knowledge test until the invigilator instructs you to

You may use this page for rough work.

This page must not be removed.

Question 1		
RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences) requires the reporting of dangerous occurrences at work, which **one** of the following is not reportable as a dangerous occurrence?		
Possible answers		**Answer**
a)	The collapse or over turning of a crane	
b)	Contact with an overhead power line	
c)	Escape of a biological agent likely to cause severe illness	
d)	Accidental damage to a drain or sewer	

Question 2		
An employee has to carry out a work activity which involves a substance that can be hazardous to health. What should they do?		
Possible answers		**Answer**
a)	Carry on with the work once they have identified the hazardous contents of the container	
b)	Carry out the work, providing they have been suitably trained and have the necessary COSHH assessment information	
c)	Carry out the work using their own initiative to change working procedures and reduce exposure	
d)	Carry out the work once the workplace has been sealed to allow disinfection	

Question 3		
Which ONE of the following is the most common cause of workplace injury?		
Possible answers		**Answer**
a)	Falling from height	
b)	Attacks by animals	
c)	Manual handling injuries	
d)	Electric shocks	

Question 4		
Which regulator do water companies need to inform of how much water they have abstracted from its sources?		
Possible answers		**Answer**
a)	Environment Agency	
b)	Consumer council for water	
c)	Drinking Water Inspectorate	
d)	OFWAT	

Question 5		
What is the minimum raw water monitoring required for a Water Treatment Works designed to treat water from a borehole?		
Possible answers		**Answer**
a)	Turbidity; Flow	
b)	Turbidity; pH	
c)	Cryptosporidium; Turbidity;	
d)	Conductivity; pH	

Question 6		
What is the standard Prescribed Concentration or Value (PCV) for aluminium in drinking water?		
Possible answers		**Answer**
a)	100 ug/l	
b)	200 ug/l	
c)	250 ug/l	
d)	300 ug/l	

Question 7		
What is the correct name for the thick-walled cryptosporidium spore which can resist chlorine disinfection?		
Possible answers		**Answer**
a)	Zygote	
b)	Ovum	
c)	Oocyst	
d)	Egg Cell	

Question 8		
Which ONE of the following statements is true about chlorine gas?		
Possible answers		**Answer**
a)	Chlorine gas is heavier than air	
b)	Chlorine gas is lighter than air	
c)	Chlorine gas is safe to breathe	
d)	Chlorine gas is colourless at high concentrations	

[Please turn over for question 9]

Question 9		
A contact tank has the following measured parameters: Dosed Cl2 = 1.25 mg/l, Final Cl2 = 1 mg/l, pH = 7.5, Contact time = 30 minutes, Dosed HOCl = 0.74 mg/l, Final HOCl = 0.63 mg/l. What is the **Ct** at this time?		
Possible answers		**Answer**
a)	37.5 mg.mins/l	
b)	30.0 mg.mins/l	
c)	22.2 mg.mins/l	
d)	18.9 mg.mins/1	

Question 10		
If ammonia is dosed at the end of the disinfection process what chemical compound is formed?		
Possible answers		**Answer**
a)	Trihalomethane	
b)	Trichloramine	
c)	Chloramine	
d)	Dichloramine	

Question 11		
What is the main purpose of a service reservoir?		
Possible answers		**Answer**
a)	To meet the minimum storage required by the water supply regulations	
b)	To provide stable and adequate mains pressure within the distribution network	
c)	To ensure minimum contact time in the network	
d)	To maintain network chlorine residuals by use of secondary disinfection	

Question 12		
If a screen is bypassed, what impact might this have on the downstream process?		
Possible answers		**Answer**
a)	Debris will pass into the processes, causing possible treatment issues and increased wear and tear on assets	
b)	Any on site chemical dosing will be reduced as a result of increased flow	
c)	The performance of the downstream assets and treatment process will improve	
d)	There will be increased cryptosporidium loading on the treatment process	

Question 13		
PPE equipment must be:		
Possible answers		**Answer**
a)	Worn at all times	
b)	Stored to prevent damage when not in use.	
c)	Replaced every 3 to 5 years.	
d)	Cleaned before use.	

Question 14		
Why are clarification processes used?		
Possible answers		**Answer**
a)	To optimise pH	
b)	To kill E. coli	
c)	To kill cryptosporidium	
d)	To reduce solids loading	

Question 15		
Anthracite is often used in rapid gravity filters. What is the purpose of this media?		
Possible answers		**Answer**
a)	To remove fine particles	
b)	To remove large particles	
c)	To remove taste and odour	
d)	To remove pesticides	

Question 16		
What did the Badenoch and Bouchier report recommend that filters should have?		
Possible answers		**Answer**
a)	Continuous monitoring of individual filters for turbidity	
b)	Level probes	
c)	Particle counters for individual filters	
d)	UV 254 DOC monitors	

Question 17		
Which of the following may lead to dangerous bacteria getting into the water supply		
Possible answers		**Answer**
a)	Not storing fuel in robust, properly sized bund	
b)	Not storing chemicals in secure, properly labelled containers	
c)	Eating in an excavation without hand washing facilities	
d)	Using the same equipment at water and wastewater sites	

Question 18		
What is the main reason sludge cake should be stockpiled in a bunded area?		
Possible answers		**Answer**
a)	To prevent run off and potential environmental pollution	
b)	To prevent slips, trips and falls within the working area	
c)	To facilitate easier loading for removal from site	
d)	To keep the workplace tidy	

Question 19		
What is the turbidity standard, recommended in the Badenoch Bouchier report, for filter backwash water to be returned to the head of works?		
Possible answers		**Answer**
a)	1 NTU	
b)	2 NTU	
c)	5 NTU	
d)	10 NTU	

Question 20		
Which **ONE** of the following would be the first thing a technician should do if a section of perimeter fencing has been removed or damaged?		
Possible answers		**Answer**
a)	Temporarily secure the broken or damaged area	
b)	Search the site alone to check for intruders	
c)	Report the next working day	
d)	Report immediately and remain in a safe place	

Question 21		
Which of the following are indicators of high manganese in the water supply?		
Possible answers		**Answer**
a)	Orange water with suspended particles	
b)	Earthy taste and odour	
c)	White or aerated water	
d)	Black water, slime and looks like tea leaves	

Question 22		
When working alone on site, what should a technician do?		
Possible answers		**Answer**
a)	Follow company lone worker procedures	
b)	Tell their manager, if they are available	
c)	Contact a work colleague at their base	
d)	Notify a relative or friend	

Question 23		
How much time can elapse before a sample can no longer be analysed?		
Possible answers		**Answer**
a)	1 hour	
b)	48 hours	
c)	3 days	
d)	24 hours	

Question 24			
What does this blue sign indicate?			
Possible answers		**Answer**	
a)	Warning		
b)	Prohibited behaviour		
c)	Information		
d)	Mandatory behaviour		

Question 25		
Which ONE of the following weather conditions is classed, by the EA (Environment Agency), as unusual weather under the unusual weather condition in a permit?		
Possible answers		**Answer**
a)	Significant snow deposits	
b)	A period of 2 months with no rainfall	
c)	Temperatures above 34 degrees Celsius	
d)	High winds exceeding 70 mph	

Question 26		
Ion exchange is often used to remove nitrate from water. What ion is exchanged with the nitrate during the process?		
Possible answers		**Answer**
a)	Chloride	
b)	Bromide	
c)	Chlorate	
d)	Bromate	

Question 27		
When handling chemical coagulants on site where would a technician get information on what PPE they are required to wear?		
Possible answers		**Answer**
a)	Generic risk assessment	
b)	COSHH assessment	
c)	Site safety induction	
d)	Internal Permit to Work	

Question 28		
What name is given to the process of restoring the activity to spent GAC?		
Possible answers		**Answer**
a)	Reactivation	
b)	Rehydration	
c)	Washing	
d)	Sieving	

Question 29		
What is the chlorine demand of the following site, where the gas flow is 75 mg/sec and the water flow is 50 l/sec? The free chlorine residual on the outlet of the contact tank is 1.1 mg/l		
Possible answers		**Answer**
a)	0.04mg/l	
b)	0.043mg/l	
c)	0.4mg/l	
d)	0.43mg/l	

Question 30		
Which of the following might be used to produce Granular Activated Carbon (GAC)?		
Possible answers		**Answer**
a)	Coal and brick	
b)	Coal and wood	
c)	Coal and water	
d)	Coal and wax	

Question 31		
What could cause a low chlorine residual in a potable water storage structure		
Possible answers		**Answer**
a)	Low network pressure	
b)	Increased customer use	
c)	Reduced temperatures	
d)	Poor turnover	

Question 32		
Why must all guards and covers be in place on all types of inlet screens at all times?		
Possible answers		**Answer**
a)	To prevent accidentally coming into contact with moving parts	
b)	To prevent exhaust fumes from the screens entering the local area	
c)	To increase the structural strength of the screen	
d)	To improve the efficiency of the screen	

Question 33		
As a screen blinds with debris, what is the main resulting consequence?		
Possible answers		**Answer**
a)	The operation of the screen becomes increasingly efficient	
b)	An increase in differential pressure across the screen and reduced flow to the downstream process	
c)	A decrease in differential pressure across the screen, and an increase flow to the downstream process	
d)	The differential pressure and flow will be unaffected	

Question 34		
Many screens use wash water. Why is it important to check this wash water on a regular basis?		
Possible answers		**Answer**
a)	To ensure the wash water is driving the rotation of the screen mechanism	
b)	To ensure the wash water is keeping the drive mechanism cool	
c)	Wash water is not critical to the operation of the screen, and there is no need to check regularly	
d)	To ensure the wash water is effectively cleaning the screen, reducing the likelihood of blockages	

Question 35		
Which of the following raw water flows is recorded for the annual return to the Environment Agency?		
Possible answers		**Answer**
a)	Compensation flow	
b)	Daily abstraction flow	
c)	Permanent discharge flow	
d)	Temporary discharge flow	

Question 36		
What is the primary purpose of a saturator in a Dissolved Air Floatation (DAF) plant?		
Possible answers		**Answer**
a)	To increase the concentration of air into the recycle water	
b)	To reduce the concentration of air into the recycle water	
c)	To reduce the raw water pH	
d)	To mix coagulants effectively	

Question 37		
A Service Reservoir (SR) has become empty. What action should be taken next?		
Possible answers		**Answer**
a)	Refill and return SR back to service ASAP	
b)	Attempt reversing flows back into the SR to refill	
c)	Enter the SR to investigate the problem	
d)	Clean and sample before being put back into supply	

Question 38		
Why do centrifuges go through a flushing cycle post operation?		
Possible answers		**Answer**
a)	To leave in a clean state ready for future operation	
b)	To prevent build up of solids in the bowl	
c)	To prevent corrosion of the internal surfaces	
d)	To improve performance and volume of sludge treated	

Question 39		
Why is de-sludging optimised on thickener tanks?		
Possible answers		**Answer**
a)	To maximise the quality of supernatant	
b)	To minimise the quality of supernatant	
c)	To decrease the volume of sludge	
d)	To prevent tanks from blocking	

Question 40		
What safety mechanism stops a sludge press from operating when it is accessed?		
Possible answers		**Answer**
a)	Light curtain/Infra-red beam	
b)	Railings	
c)	Human Machine Interface (HMI)	
d)	E-stop button	

End of Sample Practice Assessment

ENERGY & UTILITIES INDEPENDENT ASSESSMENT SERVICE

Sample Practice Knowledge Assessment

Answer scheme

Question	Answer	Question	Answer
1	D	**21**	D
2	B	**22**	A
3	C	**23**	D
4	A	**24**	D
5	A	**25**	A
6	B	**26**	A
7	C	**27**	B
8	A	**28**	A
9	D	**29**	C
10	C	**30**	B
11	B	**31**	D
12	A	**32**	A
13	B	**33**	B
14	D	**34**	D
15	B	**35**	A
16	A	**36**	A
17	D	**37**	D
18	A	**38**	B
19	D	**39**	A
20	D	**40**	A