Q#1) The alarm battery should be replaced:
   A) After 6-months;
   B) After the low battery alarm Red/ Green/ Blue flashes with corresponding horn sounding;
   C) After 200-hours;
   D) Any of the above.

Q#2) The gases present in a mine following a disaster will vary according to:
   A) The type of equipment;
   B) The disaster situation;
   C) The type of mine;
   D) All of the above.

Q#3) The wearer shall retire to a safe location as quickly as possible to doff the 240R if the LED
    flashes ___ and/or the horn sounds.
   A) Green;
   B) Red;
   C) Blue;
   D) All 3 colors.

Q#4) The Operation-mode root menu for the MX6 has the following menu tabs, EXCEPT:
   A) Sensor;
   B) View;
   C) Bump test;
   D) Data.

Q#5) MSHA’s approval/certification for the use of the MX6 is under CFR30, _____.
   A) Part 62;
   B) Part 58;
   C) Part 46;
   D) Part 22.
Q#6) When handling the Bio 240R Oxygen cylinder do not allow ______ to come in contact with it to prevent a possible ignition.

A) Grease;
B) Other foreign materials;
C) Oil;
D) All of the above.

Q#7) A mechanical ventilator installed at the surface which operates by either exhausting or pushing to induce airflow through the mine is considered to be a:

A) Booster fan;
B) Auxiliary fan;
C) Radiator fan;
D) Main fan.

Q#8) The 240R is approved only when the oxygen cylinder is fully charged with compressed medical grade oxygen or _________.

A) Welding grade oxygen;
B) Aviation grade oxygen;
C) Both A & B;
D) None of the above.

Q#9) In order for a flammable gas to explode, there must be:

A) A source of ignition;
B) Enough oxygen;
C) Enough of the gas in the air;
D) All of the above.

Q#10) On the 240R to install the lid onto the top of the breathing chamber the ___ slide locks must be secures over the studs.

A) 2
B) 4
C) 6
D) 8

Q#11) When bump testing the MX6, once a sensor has passed the test, the word “Pass is displayed for:

A) 3 seconds;
B) 5 seconds;
C) 8 seconds;
D) 10 seconds.
Q#12) A medium-velocity anemometer for measuring velocities from 120 to 2,000 feet per minute is also referred to as a:

   A) Common anemometer;
   B) Standard anemometer;
   C) Regular anemometer;
   D) None of the above.

Q#13) Immediately after completion of the 240R use, disconnect the ________ to the center section to prevent migration of moisture into the manifold assembly.

   A) Demand and constant add lines;
   B) Input port of regulator;
   C) Oxygen cylinder;
   D) Breathing hoses.

Q#14) At ambient temperatures of 100 – 140 Degree F, the recommended safe duration of use of the 240 R is:

   A) 15-minutes;
   B) 30-minutes;
   C) 1-hour;
   D) 4-hours.

Q#15) The 240R can be used in temperatures as low as -5 Degrees F if:

   A) It does have the carbon dioxide scrubber pre-packed into the breathing chamber;
   B) The carbon dioxide scrubber is stored at temperature below 32 Degrees F;
   C) It does not have the carbon dioxide scrubber pre-packed into the breathing chamber;
   D) Both A & B.
   E) Both B & C.
   F) Both A & C.

Q#16) O-rings in the center section on the 240R should be inspected at least annually or after _____ use/s.

   A) Each;
   B) 10;
   C) 25;
   D) 50.

Q#17) Temporary bulkheads built in a passageway should be placed at least 4 to 6 feet into the passageway in order that:

   A) It will be protected from further explosions;
   B) It will provide a rest area for the team;
   C) It will not be affected by a fire;
   D) Sufficient space is available to construct a permanent bulkhead.
Q#18) Light gases such as Hydrogen will:
   A) Not diffuse rapidly;
   B) Be fairly easy to disperse;
   C) Not disperse easily;
   D) Be hard to remove.

Q#19) Each toxic gas has a TLV, which stands for:
   A) The Level Varies;
   B) Threshold Limit Value;
   C) Toxic Limit Value;
   D) Threshold Line Varies.

Q#20) After all the sensors installed in the MX6 have been bump tested the user must acknowledge this screen to continue, by selecting the ___ button.
   A) “Cancel”
   B) “OK”
   C) “Abort”
   D) Any

Q#21) If the barometric pressure falls, a gas will:
   A) Expand;
   B) Concentrate;
   C) Contract;
   D) Not change.

Q#22) During the MX6 zeroing operation the following sensor is calibrated:
   A) Oxygen;
   B) Nitrates of Oxygen;
   C) Carbon Monoxide;
   D) Carbon Dioxide.

Q#23) A device used to control and adjust the quantity of airflow in a mine is called a:
   A) Bulkhead;
   B) Line Brattle;
   C) Regulator;
   D) Auxiliary fan.

Q#24) The MX6 Low-level audio gas alarm is a:
   A) High frequency with short delays;
   B) Continuous claxon;
   C) Low frequency beeps with a long delay;
   D) Vibration only.
Q#25) The calibration complete screen could show what results for each sensor once the calibration is finished?

A) Failed;
B) Marginal;
C) Passed;
D) Any of the above.

Q#26) Collapsible tubing for auxiliary fans should be used for:
A) Forcing systems;
B) Exhausting systems;
C) Neither of the above;
D) Both of the above.

Q#27) Prior to each day’s use the MX6 should:
A) Have a bump test performed;
B) Be calibrated;
C) Be serviced;
D) Have sensor’s replaced.

Q#28) On the MX6 the High-level visual alarm is:
A) No change in LEDs;
B) LEDs are pulsed with a long delay;
C) LEDs are pulsed with a short delay;
D) None of the above.

Q#29) When doing the constant flow test on the 240R if below 5280 feet of elevation and using a cylinder pressure of 2000-3000 psi the flow should read _____ lpm.
A) 1.0 – 1.8;
B) 1.9 – 2.5;
C) 2.0 – 2.8;
D) 1.5 – 1.9.

Q#30) On the MX6 gas-monitoring display screen in numeric format, each sensor will display its reading in the following order:
A) Gas concentration; Unit of measure; Sensor type.
B) Sensor Type; Gas concentration; Unit of measure.
C) Sensor type; Unit of measure; Gas concentration.
D) Depends on the type of sensor.
2019 Missouri Regional Mine Rescue Contest
Rolla, MO
Written Test Answers – Team Tech (Bio 240R) Competition

A#1) D) BioPak 240R Benchman Manuel rev M; pg.18 – Section 3.4.
A#2) D) Module 2; Page 12; Paragraph 7.
A#3) B) BioPak 240R User Instructions rev K; pg.19 Section 5.3 3rd paragraph.
A#4) C) MX6 iBird Op’s Guide (ED 17; Aug 10, 2018) Pg.21; Paragraph #2.
A#5) D) MX6 iBird Op’s Guide (ED 17; Aug 10, 2018) Pg.2; MSHA.
A#6) D) BioPak 240R Benchman Manuel rev M; pg.7- Compressed Oxygen Hazard
A#7) D) Module 3; Page 54; Paragraph 4.
A#8) B) BioPak 240R Benchman Manuel rev M; pg.8 – 1st bullet
A#9) D) Module 2; Page 7; Paragraph 5.
A#10) D) BioPak 240R User Instructions rev K; pg.15 Section 3.6.
A#12) C) Module 3; Page 16; Paragraph 7.
A#13) A) BioPak 240R Benchman Manuel rev M; pg.10 – Section 1.2 Disassembly
A#14) D) BioPak 240R User Instructions rev K; pg.16 Section 3.7 Coolant Canister Installation
A#15) C) BioPak 240R Benchman Manuel rev M; pg.7 – Low Temperature Operation
A#16) C) BioPak 240R Benchman Manuel rev M; pg.17 – Top of 2nd Column
A#17) D) Module 3; Page 22; Paragraph 1.
A#18) B) Module 2; Page 7; Paragraph 2.
A#19) B) Module 2; Page 9; Paragraph 4
A#20) B) MX6 iBird Op’s Guide (ED 17; Aug 10, 2018) Pg.38; Paragraph #5.
A#21) A) Module 2; Page 6; Paragraph 2.
A#22) A) MX6 iBird Op’s Guide (ED 17; Aug 10, 2018) Pg.36; 6th Paragraph
A#23) C) Module 3; Page 14; Paragraph 7.
A#24) C) MX6 iBird Op’s Guide (ED 17; Aug 10, 2018) Pg.6; Audio Indicator.
A#26) A) Module 3; Page 10; Paragraph 8.
A#27) A) MX6 iBird Op’s Guide (ED 17; Aug 10, 2018) Pg.3; last Warning.
A#29) B) BioPak 240R Benchman Manuel rev M; pg.12 – Section 1.8 - chart