

**University of Wyoming
2016 Cowboy Classic**

You will have 60 minutes to complete this examination. Answer the multiple-choice questions by selecting the one best answer for each question and bubbling in the answer on the provided Scantron.

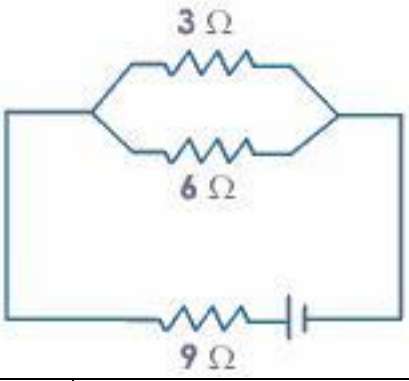
SECTION 1: Machinery & Equipment Systems Questions 1-10

1.	<u> B </u>	Liquids
		a. Cannot be compressed
		b. Do not occupy definite shape
		c. Are not affected by change in pressure and temperature
		d. None of these.
2.	<u> B </u>	The ratio of the inertia and gravitational force acting in any flow, ignoring other forces, is called
		a. Euler number
		b. Frode number
		c. Reynold number
		d. Weber number
3.	<u> C </u>	The velocity distribution of viscous fluid through a circular/pipe is :
		a. Hyperbolic
		b. Circular
		c. Parabolic
		d. Elliptical
4.	<u> C </u>	In a centrifugal pump casing, the flow of water leaving the impeller, is
		a. Rectilinear flow
		b. Radial flow
		c. Free vortex motion
		d. Forced vertex

5.	<u> D </u>	Capillary rise of water is
		a. Directly proportional to surface tension
		b. Inversely proportional to water density
		c. Inversely proportional to diameter of the tube
		d. All of these
6.	<u> C </u>	In flowing liquids pitot tubes are used measure
		a. Discharge
		b. Pressure
		c. Velocity
		d. Depth
7.	<u> C </u>	Barometers are used to measure
		a. Pressure in water channels, pipes etc.
		b. Difference in pressure at two points
		c. Atmospheric pressure
		d. Very low pressure
		e. Very high pressure
8.	<u> D </u>	In hydraulic flow, liquid particles may possess
		a. Potential energy
		b. Kinetic energy
		c. Pressure energy
		d. All of the above
9.	<u> A </u>	Hydraulic ram is a device
		a. For lifting water without an electric motor
		b. For accelerating water flow
		c. For lifting heavy loads
		d. None of these
10.	<u> A </u>	Gauge pressure is
		a. Absolute pressure - atmospheric pressure
		b. Absolute pressure + atmospheric pressure
		c. Atmospheric pressure - absolute pressure
		d. None of these

Section 2: Electrical Systems Questions 11 – 20

11.	<u> D </u>	Which of the following statements does not represent ohm's law?	
		a.	Current / potential difference = constant
		b.	Potential difference / current = constant
		c.	Potential difference = current x resistance
		d.	Current = resistance x potential difference
12.	<u> A </u>	The unit of current is _____.	
		a.	Ampere
		b.	Watt
		c.	Volt
		d.	Coulomb
13.	<u> B </u>	The potential difference required to pass a current 0.2 A in a wire of resistance 20W is _____.	
		a.	100 V
		b.	4 V
		c.	.01 V
		d.	40 V
14.	<u> C </u>	The unit of resistivity is _____.	
		a.	ohm
		b.	ohm / m
		c.	ohm-m
		d.	mho

15.	___D___	In the figure, 
		a. 6 W , 3 W and 9 W are in series
		b. 9 W and 6 W are in parallel and the combination is in series with 3 W
		c. 3 W , 6 W and W are in parallel
		d. 3 W , 6 W are in parallel and 9 W is in series
16.	___C___	Kilowatt - hour is the unit of _____.
		a. potential difference
		b. electric power
		c. electrical energy
		d. charge
17.	___D___	When a fuse is rated 8 A, it means _____.
		a. it will not work if current is less than 8 A
		b. it has a resistance of 8 W
		c. it will work only if current is 8 A
		d. it will melt if current exceeds 8 A
18.	___B___	Joule / Coulomb is same as _____.
		a. watt
		b. volt
		c. ampere
		d. ohm

19.	___C__	Ohm's law relates potential difference with _____.	
		a.	power
		b.	energy
		c.	current
		d.	Time
20.	___D__	Which of the following is not a type of service disconnect?	
		a.	Knife Blade switch
		b.	Fuse block
		c.	Circuit Breakers
		d.	Bus Bar

Section 3: Energy Systems Questions 21 – 30

21.	___B__	How many revolutions of the crank shaft are in a complete cycle for a 4-stroke-cycle engine?	
		a.	1
		b.	2
		c.	3
		d.	4
22.	___B__	How many revolutions of the crank shaft are in a complete cycle for a 2-stroke-cycle engine?	
		a.	0
		b.	1
		c.	4
		d.	12
23.	___A__	The crankshaft has large lobes which act as counterweights, continuing centrifugal force to keep the crank turning after the explosion of the fuel.	
		a.	True
		b.	False
		c.	Not enough information given
		d.	

24.	<u> B </u>	Three key differences between the diesel and the gasoline 4-stroke-cycle engines are: Diesel is heavier construction, Diesel has a higher compression ratio, and _____
		a. Diesel always uses a carburetor
		b. Diesel combustion occurs because of intense heat and pressure added to the fuel and air
		c. Gasoline combustion requires a fuel injector to create the spark
		d. Diesel engines have oversized spark plugs
25.	<u> E </u>	Air cooled small gas engines are cooled by:
		a. Oil
		b. Fins
		c. Flywheel
		d. Air
		e. All of the Above
26.	<u> A </u>	The four strokes in order for a 4-stroke-cycle engine are:
		a. Intake, compression, power, exhaust
		b. Intake, exhaust, power, compression
		c. Exhaust, compression, intake, power
		d. None of the above
27.	<u> B </u>	A 2-stroke-cycle engine is likely to be found on:
		a. Subcompact cars built in Greenland
		b. Chainsaws and weed trimmers
		c. Mazda RX-9
		d. Most lawnmowers and snowblowers
28.	<u> A </u>	To describe a 2-stroke-cycle engine function, understand that:
		a. The piston lowers allowing exhaust to exit the exhaust port just prior to intake port opening to allow air/fuel/oil into the cylinder.
		b. The piston raises to the top allowing exhaust to exit the exhaust port just prior to intake port opening to allow air/fuel/oil into the cylinder.
		c. Blue and Yellow make Green
		d. The piston is attached to the head by the valve keeper.

29.	__A__	Two parts of the camshaft are: timing gear and _____.
		a. cam lobes
		b. timing chain
		c. balancer shaft gear
		d. none of the above
30.	__B__	A _____ or supercharger uses the exhaust to blow in more air into the cylinder.
		a. EGR valve (exhaust gas recirculation valve)
		b. turbo
		c. exhaust bypass valve
		d. All of the above
Section 4: Structural Systems Questions 31 – 40		
31.	__A__	What is the major function of the coating on an arc welding electrode?
		a. Acts as a scavenger, removes oxides and impurities
		b. Influences incomplete penetration
		c. Liquefies the base metal
		d. Adds moisture and accelerates the cooling rate
32.	__C__	Square wave refers to the _____.
		a. shape of the filler metal
		b. shape of the tungsten electrode
		c. shape of the output power
		d. shape of the power source control box
33.	__B__	Shielding gases are used to protect the molten metal from _____.
		a. being overheated and cooling to fast
		b. porosity and brittleness
		c. heat and distortion
		d. being too cold and not penetrating

34.	__B__	If the weld does not combine with another weld or the base metal it is referred to as:
		a. incomplete penetration
		b. incomplete fusion
		c. incomplete bonding
		d. incomplete inclusion
35.	__B__	Which term best describes the operation where a welder or welding operator has control of a molten weld pool and the weld pool has a side to side motion that is transverse to the travel direction?
		a. Oscillation
		b. Weaving
		c. Whipping
		d. Both a and c
36.	__A__	Arc time is:
		a. the time the arc is on during the arc welding operation.
		b. the total time the welder is clocked into work.
		c. the non-arc time.
		d. the total arc and non-arc time.
37.	__B__	What is the difference between back and backing welds?
		a. Equipment used
		b. Sequence of when the welds are made
		c. Materials used
		d. None of the above
38.	__C__	Normal pant and shirt material worn around welding should be of what material?
		a. Polyester
		b. Rayon
		c. Cotton
		d. Synthetics
39.	__B__	Gas tungsten arc welding most commonly used when?
		a. welding on thick materials.
		b. welding on thin or alloy material.
		c. high heat input is desirable.
		d. high deposition rates are required.

40.	___A__	A butt weld joint in carbon steel that is restrained during welding and cooling will?
		a. have a high residual stress
		b. be stronger
		c. will never crack
		d. none of the above

Section 5: Environmental and Natural Resource Systems Questions 41 – 50

41.	___B__	_____ is a square tract of land measuring 1 mile on each side and contains 640 acres.
		a. hectare
		b. section
		c. quadrangle
		d. bearing

42.	___D__	A _____ is the amount of separation between two points along a given line on a plat of survey.
		a. direction
		b. location
		c. plat
		d. distance

43.	___C__	A/an _____ rod is a leveling rod graduated in feet, inches, and eighths of an inch.
		a. plumb
		b. surveying
		c. architect's
		d. engineer's

44.	___B__	_____ is the process of determining the difference in elevation between points.
		a. Rod reading
		b. Leveling
		c. Platting
		d. Turning

45.	___A___	A _____ is an instrument that uses a telescope that can be adjusted vertically and horizontally to establish straight line references.	
		a.	Transit level
		b.	Plumb bob
		c.	Engineer's rod
		d.	Plat
46.	___B___	_____ is the process of measuring land by recording elevations, directions, and lengths of property lines and sizes of structures.	
		a.	Topography
		b.	Surveying
		c.	Geography
		d.	Mapping
47.	___A___	_____ is a horizontal direction from one point to another with respect to true north on a plat of survey.	
		a.	bearing
		b.	level
		c.	line
		d.	distance
48.	___B___	The sprayer pump that is most popular for applying wettable powder spray materials on large acreage such as might be common for a custom applicator.	
		a.	Piston
		b.	Centrifugal
		c.	Diaphragm
		d.	Roller
49.	___C___	Sprayer tanks made of this material are most popular for corrosive liquid fertilizer application by commercial applicators.	
		a.	fiberglass
		b.	metal with epoxy lining
		c.	stainless steel
		d.	aluminum

50.	<u> B </u>	The application rate for field sprayers is usually given in:	
		a.	MPH
		b.	GPA
		c.	PSI
		d.	None of the above