JONES COUNTY CAREER-TECHNICAL CENTER

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Dear Parents and Career Tech Students:

As we work towards the end of the school year the Faculty, Staff and Administration of the Jones County Career Technical Center, is providing additional enrichment activities for our students and support for our parents as we continue through these difficult times.

The following Part 2 enrichment activities will allow students to continue reviewing the instruction that they already have received this year.

Again you will find questions with answers for you to study and review. There are no assignments to be returned to school.

If the JCCTC can be of any assistance to our students and parents with the enrichment activities, please feel free to call us at 601-425-2378 between the hours of 9:00 a.m. and 1:00 p.m. or contact the instructor by email. Email addresses are located under the program name on our webpage.

Sincerely,

Rex Buckhaults

Rex Buckhaults
Director, JCCTC

1. All of the following are components of a typical wheel bearing, EXCEPT:
   A) inner race.
   B) outer race.
   C) bearing seat.
   D) bearing cage.

2. _____ play a critical role in the vehicle by allowing the wheels to roll with a minimum of friction while still maintaining accurate wheel positioning under all driving conditions.
   A) Dust caps
   B) Inner races
   C) Outer races
   D) Wheel bearings

3. Technician A states that "serviceable" and "sealed bearings" are typical categories of wheel bearings used in vehicles. Technician B states that sealed bearings require periodical maintenance. Who is correct?
   A) Technician A
   B) Technician B
   C) Both Technician A and Technician B
   D) Neither Technician A nor Technician B

4. Which of the following is not a typical type of wheel bearing?
   A) Ball bearing
   B) Tapered roller bearing
   C) Double-row ball bearing
   D) Needle bearing

5. Technician A says that tapered roller bearing assemblies are manufactured to have the proper running clearance between the roller and races, so they don't need to be adjusted. Technician B says that if the clearance adjustment is not correct, the bearing could prematurely fail. Who is correct?
   A) Technician A
   B) Technician B
   C) Both Technician A and Technician B
   D) Neither Technician A nor Technician B

6. With tapered roller bearing assemblies, the races and rollers are tapered in such a manner that all of the tapered angles meet together at a _____ point.
   A) maximum
   B) different
   C) common
   D) minimum

7. Tapered roller bearings are used typically in what configuration?
   A) Same direction pairs only (both facing the same direction)
   B) Opposing pairs only (both facing different directions)
   C) Both same direction pair and opposing pairs
   D) Neither same direction nor opposing pairs

8. When bearings are used in pairs, the individual tapered roller bearing assemblies are generally referred to as:
   A) bearing one and bearing two.
   B) inner (or inboard) and outer (or outboard).
   C) top and bottom.
   D) primary and secondary.

9. Technician A says that if a tapered roller bearing is adjusted too loose, the bearing will bind and overheat. Technician B says that if a taper roller bearing is adjusted too tight, it will have too much side-to-side and up-and-down movement. Who is correct?
   A) Technician A
   B) Technician B
   C) Both Technician A and Technician B
   D) Neither Technician A nor Technician B

10. Lubrication of serviceable tapered wheel bearing assemblies is accomplished in which way?
   A) Wheel bearing grease
   B) Gear lube
   C) Wheel bearing grease or gear lube depending on manufacturer recommendation
   D) Neither wheel bearing grease nor gear lube

11. Which of the following can be a design of a sealed bearing assembly?
   A) Ball bearing assembly
   B) Tapered bearing assembly
   C) Cylindrical bearing assembly
   D) All of these can be designed as a sealed bearing assembly

12. Technician A says that sealed bearing assemblies are prefilled with lubricant and have integrated grease seals built into them. Technician B says that sealed bearing assemblies make for a more reliable and consistent installation process since every unit comes preset at the proper clearance. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

13. Most automotive axle seals typically consist of all of the following, EXCEPT:
    A) stamped sheet metal case.
    B) flexible seal lip.
    C) garter spring.
    D) tongue-and-groove spring.

14. Which of the following axle designations is considered the lightest duty?
    A) Full-floating axle
    B) Semi-floating axle
    C) 3/4-floating axle
    D) Partial floating axle

15. In a semi-floating axle arrangement, the axle carries a twisting force as well as the _____ of the vehicle.
    A) full weight
    B) half weight
    C) quarter weight
    D) None of the answers listed

16. In a full-floating axle, the weight of the vehicle is fully carried by a pair of _____ bearing assemblies, which ride between the hub and axle tube.
    A) tapered roller
    B) needle
    C) sealed
    D) half-moon

17. Technician A says that if you add pre-lube to a sealing lip of an axle seal, it will cause the seal to leak causing the bearings to fail. Technician B says that when you install a seal, always remember to pre-lube the sealing lip with a small amount of oil or grease. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

18. Technician A says that the wheel bearing grease seal is designed to contain the lubricant. Technician B says that the wheel bearing grease seal is designed to keep out contaminants. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

19. In many rear-wheel drive vehicles, the wheel bearings are lubricated with _____ that also lubricates the differential assembly.
    A) engine oil
    B) automatic transmission fluid
    C) gear lube
    D) compressor lube

20. Which of the following organizations classifies the service grade of a gear lube?
    A) Society of Automotive Engineers (SAE)
    B) American Petroleum Institute (API)
    C) National Lubricating Grease Institute (NLGI)
    D) Lube America

21. Which of the following gear lubrications is typically recommended for differentials that use hypoid-type gears?
    A) GL-5
    B) GL-4
    C) GL-1
    D) None of these are recommended

22. Which of the following organizations grades the thickness of grease?
    A) Society of Automotive Engineers (SAE)
    B) American Petroleum Institute (API)
    C) National Lubricating Grease Institute (NLGI)
    D) Lube America

23. All wheel bearings need the proper end play or _____ to operate correctly.
    A) preload
    B) packing
    C) balance
    D) plating

24. Technician A says that gear lube and bearing grease cannot be substituted due to the different housing and seal designs each lubricant demands in a vehicle. Technician B says that gear lube is thicker than bearing grease. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

25. Technician A says that packing a wheel bearing assembly can be done by hand by smearing some grease around the outside of the bearing. Technician B says that a wheel bearing assembly can be done by hand or with a bearing packer. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

26. Which of the following wheel bearing locking components are used on a typical four-wheel drive vehicle?
    A) Keyed washer (hardened)
    B) Adjustable nut
    C) Keyed lock washer (or tang washer)
    D) All of the answers listed

27. Grease with an NLGI rating of 1 has a _____ consistency.
    A) semifluid
    B) very soft
    C) semisoft
    D) soft

28. Technician A says that you should suspect a faulty wheel bearing whenever an unusual howling or rough sound comes from the wheel areas when the vehicle is being driven. Technician B says that you should suspect a faulty wheel bearing whenever an unusual screeching sound comes from the wheel areas when the vehicle is being braked. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

29. All of the following can be caused by a loose or worn wheel bearing, EXCEPT:
    A) vehicle wander.
    B) vehicle engine oil leak.
    C) vehicle shimmy.
    D) vehicle vibration.

30. Technician A says that the best approach to isolating a wheel bearing noise from a transmission noise is to drive the vehicle at the speed at which it occurs and then shift into a higher or lower transmission gear while maintaining the same speed. Technician B says that the best approach to determining which side the bearing noise is coming from is to drive the vehicle at the speed at which it is making the noise and then lightly rock the car side to side using the steering wheel. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

31. Technician A says that you should always reuse as much of the old grease as possible to prevent waste. Technician B says that you should always use new grease seals and cotter pins when servicing wheel bearings. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

32. When installing the locking mechanism, Technician A says that the long leg of the cotter pin should be against the castellated nut. Technician B says that the short leg of the cotter pin should be toward you. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

33. Which of the following are common tools used to maintain and repair wheel bearings?
    A) Bearing packer
    B) Seal puller
    C) Cotter pin removal tool
    D) All of the answers listed

34. Technician A says that on most front wheels the replaceable sealed bearing is pressed between the hub and the wheel flange and is the more difficult to replace. Technician B says that the unitized wheel hub includes a sealed wheel bearing, a removable wheel hub, and possibly the wheel flange. This type can be unbolted. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

35. All of the following are methods of diagnosing wheel bearing assemblies, EXCEPT:
    A) wiggling the tire.
    B) test-driving.
    C) rotating the wheel.
    D) diagnostic scan tool.

36. Technician A says that you should always compare the new hub to the old one to make sure the new hub is correct for the application. Technician B says that you should always make sure the hub is fully seated and impact the mounting bolts as tight as you can to make sure the hub does not come loose. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

37. Technician A says that you should always check the manufacturer's information to see whether a hub nut can be reused or whether a new one must be installed. Technician B says that virtually all hub nuts are reusable and must be torqued to the manufacturer's specifications. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

38. _____ provide excellent side thrust-carrying capacity and at the same time excellent load-carrying capacity.
    A) Double-row tapered roller bearing assemblies
    B) Tapered roller bearing assemblies
    C) Double-row ball bearing assemblies
    D) Deeply grooved ball bearing assemblies

39. Wheel bearing side load conditions occur when the vehicle is:
    A) stationary.
    B) in reverse.
    C) moving forward.
    D) cornering.

40. When removing hub assemblies from a drive axle, you should loosen the axle with a(n) _____ hammer.
    A) claw
    B) dead blow
    C) air
    D) sledge

Answer Key

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

1. All of the following are primary components of the disc brake system, EXCEPT:
   A) rotors.
   B) calipers.
   C) wheel hubs.
   D) brake pads.

2. Technician A says that the brake calipers use hydraulic pressure from the master cylinder to apply the brake pads. Technician B says that when the brake pedal is depressed, a push rod transfers the force through a brake booster to a hydraulic master cylinder. Who is correct?
   A) Technician A
   B) Technician B
   C) Both Technician A and Technician B
   D) Neither Technician A nor Technician B

3. Technician A says that disc brake pads require much higher application pressure to operate than drum brake shoes because they are not self-energized. Technician B says that the square-cut O-ring (rather than springs) is what retracts the caliper piston when the brake pedal is released. Who is correct?
   A) Technician A
   B) Technician B
   C) Both Technician A and Technician B
   D) Neither Technician A nor Technician B

4. All of the following are disadvantages of disc brake systems, EXCEPT:
   A) water dissipation.
   B) rotor warpage.
   C) squeals.
   D) squeaks.

5. Technician A says that a disc brake thickness variation of 0.0003" (0.0076 mm) can cause brake pedal pulsations, requiring resurfacing or replacement of the brake rotors. Technician B says that disc brake systems need higher clamping force, which requires a brake booster. Who is correct?
   A) Technician A
   B) Technician B
   C) Both Technician A and Technician B
   D) Neither Technician A nor Technician B

6. All of the following are types of disc brake calipers, EXCEPT:
   A) rotating caliper.
   B) fixed caliper.
   C) floating caliper.
   D) sliding caliper.

7. Technician A says that fixed calipers are rigidly bolted in place and cannot move or slide. Technician B says that sliding or floating calipers are the most common type used in passenger vehicles. Who is correct?
   A) Technician A
   B) Technician B
   C) Both Technician A and Technician B
   D) Neither Technician A nor Technician B

8. Technician A says that in disc brake calipers, the pistons are sealed by a stationary round section sealing ring, also called a round cut O-ring. Technician B says that in disc brake calipers, the piston is sealed by a stationary square section sealing ring, also called a square cut O-ring. Who is correct?
   A) Technician A
   B) Technician B
   C) Both Technician A and Technician B
   D) Neither Technician A nor Technician B

9. Technician A says that manufacturers have dealt with caliper brake piston corrosion by making pistons out of a phenolic resin. Technician B says that even though the phenolic pistons themselves do not corrode, the cast iron bore of the caliper does corrode and rust, and can therefore cause a phenolic piston to seize in the bore. Who is correct?
   A) Technician A
   B) Technician B
   C) Both Technician A and Technician B
   D) Neither Technician A nor Technician B

10. Technician A says that riveted linings are more common on light-duty vehicles since they are less expensive to build and the rivets can fail under very high temperatures of heavy-duty use. Technician B says that bonded linings are preferred on heavier-duty or high-performance vehicles. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

11. To address the problem of brake squealing, manufacturers have done all of the following EXCEPT:
    A) used softer linings with a higher coefficient of friction.
    B) added brake shims and guides to the brake pads.
    C) used harder linings with a lesser coefficient of friction.
    D) incorporated bendable tangs on the brake pad backing plate.

12. Technician A says that some manufacturers provide a means of notifying the driver that the brake pad linings are worn to their minimum limits. Technician B says that manufacturers are required to equip their vehicles with an electronic brake lining wear sensor to warn the driver of worn brakes. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

13. All of the following types of parking brake systems on a vehicle, EXCEPT:
    A) top hat drum style.
    B) electric pull-cable style.
    C) electric motor caliper style.
    D) hydraulic fluid lock.

14. _____ are designed to maintain a larger brake-pad-to-rotor clearance by retracting the pistons a little bit farther than other calipers.
    A) Clearance-drag calipers
    B) High-drag calipers
    C) Low-drag calipers
    D) High-fluid calipers

15. Technician A says that caliper pins or slides should be lubricated with high temperature, waterproof disc brake caliper grease. Technician B says that if caliper pins are not lubricated, it could lead to caliper binding or sticking and uneven pad wear. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither Technician A nor Technician B

16. Technician A says most disc brake rotors are stamped with manufacturer's minimum thickness specification. Technician B says that if rotor is below the minimum thickness specification, the piston could be pushed out beyond the edge of the sealing ring, which would cause the brakes to lose hydraulic pressure and fail. Who is correct?
    A) Technician A
    B) Technician B
    C) Technician A and Technician B
    D) Neither Technician A nor Technician B

17. Disc brake rotors can fail in two ways: parallelism and:
    A) lateral runout.
    B) tire runout.
    C) excessive brake pressure.
    D) low tire pressure.

18. Brake pads are manufactured from all of these materials, EXCEPT:
    A) non-asbestos organic.
    B) semimetallic.
    C) ceramic.
    D) copper resin.

19. Brake diagnosis usually starts with understanding the customer's:
    A) position.
    B) concern.
    C) own diagnosis.
    D) cause.

20. Lateral runout, also called _____, is the side–to-side movement of the rotor surfaces as the rotor turns.
    A) warpage
    B) thickness variation
    C) parallelism
    D) looseness

21. Thickness variation, also called parallelism, causes the disc brake pads to be pushed _____ at any high spots.
    A) side to side
    B) outward
    C) inward
    D) up and down

22. Technician A says that many wheels use a tapered hole that matches the tapered end of the lug nut and centers the wheel on the wheel flange. Technician B says that manufacturers usually suggest tightening wheel lugs in a circular pattern. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither technician A nor Technician B

23. The _____ is used to measure the thickness and parallelism of a rotor.
    A) brake disc rotor micrometer
    B) brake disc retracting tool
    C) C-clamp
    D) off-car brake lathe

24. Poor stopping is likely caused by all of the following, EXCEPT:
    A) the power booster not operating properly.
    B) the metering valve or proportioning valve blocking fluid flow.
    C) contaminated linings.
    D) warped rotor.

25. Manufacturers are required to design the vehicle so the _____ will hold the vehicle for a given amount of time on a specified grade in both directions.
    A) electric motor
    B) parking brake
    C) C-clamp
    D) hubless-style rotor

26. The wear indicator system should be a _____ type.
    A) scratcher
    B) sensor
    C) Both A and B
    D) Neither A nor B

27. Technician A says that it is not necessary to clean any nicks, burrs, or debris from a brake drum surface before mounting the brake drum on a brake lathe. Technician B says that you should research the brake lathe manufacturer's procedure for properly refinishing a brake drum. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither technician A nor Technician B

28. A(n) _____ band should be installed on a brake drum before refinishing its surface.
    A) broad
    B) anti-chatter
    C) coarse
    D) hypoid

29. The amount of friction between two surfaces is expressed as a ratio and is called the:
    A) motion.
    B) friction ratio.
    C) coefficient of friction.
    D) thermal ratio.

30. A _____ is used to measure the lateral runout (side to side) of the rotor.
    A) plastic-clamp
    B) dial indicator
    C) micrometer
    D) thickness gauge

31. In a disc brake system, the _____ straddles the rotor and houses the disc brake pads and an activating piston(s).
    A) pushrod
    B) brake booster
    C) steering knuckle
    D) caliper

32. Disc brake pads and drum brake linings are made from materials that have a _____ coefficient of friction.
    A) low
    B) high
    C) moderate
    D) Answers will vary depending on the manufacturer.

33. The optimum brake composition for any given vehicle or use is a combination of weighted qualities including:
    A) stopping power.
    B) heat absorption and dispersion.
    C) resistance to fade.
    D) All of the answers listed

34. Vibration is likely caused by all of the following, EXCEPT:
    A) improper friction lining material.
    B) plugged or restricted brake hose.
    C) warped rotor.
    D) ABS operating.

35. Technician A states that wheel studs need to be replaced when they have been damaged or broken off due to improper installation or normal wear. Technician B states that wheel studs will not break, even if they are overtightened. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither technician A nor Technician B

36. Technician A states that overtighening the lug nuts can cause wheel studs to break either immediately or worse, after the vehicle has been driven for a period of time. Technician B states that undertightening can cause warpage of the rotors. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither technician A nor Technician B

37. _____ rotors are used to improve heat transfer to the atmosphere.
    A) Solid
    B) Directional
    C) Top hat
    D) Ventilated

38. Technician A states that bendable tangs are small tabs on the brake pad backing plate that are crimped on to the caliper, creating a secure fit and reducing noise. Technician B states that bendable tangs are hardened metal surfaces that roller or ball bearings fit into when a bearing is properly assembled. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither technician A nor Technician B

39. Technician A states to tighten the lug nuts substantially tighter than specifications to make sure that the wheels don't fall off. Technician B states that under tightening of the lug nuts can cause the wheel to come off and cause serious injury. Who is correct?
    A) Technician A
    B) Technician B
    C) Both Technician A and Technician B
    D) Neither technician A nor Technician B

40. A _____ wrench should be used to tighten each lug nut to manufacturer specification and in proper sequence.
    A) brake
    B) torque
    C) impact
    D) flare

Answer Key

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