# Myfuture CBC Revision

# power mechanics - Grade 10

Question Paper

1. Why should electrical panels and switches be installed at convenient heights and locations?

A. To be close to flammable storage for convenience

B. So they are hard to reach by workers

C. So they can be hidden behind machines

D. To allow safe and quick access in normal and emergency situations

2. What does the tyre load index number indicate?

A. The maximum load capacity the tyre can carry at the specified pressure

B. The recommended wheel alignment setting

C. The tyre's fuel efficiency grade

D. The tyre's age in months

3. What is the correct first step before removing a wheel from a parked vehicle?

A. Deflate the tyre completely

B. Start the engine to use power steering

C. Apply the parking brake and chock the opposite wheels

D. Remove all tyres from the vehicle

4. Which clothing is unsafe in the workshop?

A. Short hair tied back or hair net

B. Well-fitted coveralls and safety boots

C. Loose-fitting clothes, jewellery and long hanging sleeves

D. Gloves suitable for the task

5. Why are tyre treads important for driving in wet conditions?

A. They make the tyre heavier for better stability

B. They channel water away to reduce the risk of hydroplaning

C. They store heat to warm the brakes

D. They reduce tyre pressure automatically

6. A bulge or bubble appears on a tyre sidewall. What should you do?

A. Patch the inner tube and keep using it

B. Replace the tyre immediately

C. Drive only on country roads to avoid damage

D. Inflate the tyre to higher pressure and drive carefully

7. A worn wheel bearing is likely to produce which symptom?

A. The brakes locking permanently

B. A humming or growling noise that changes with vehicle speed

C. A sudden drop in engine oil level

D. Flickering dashboard lights

8. Which joining process uses a filler metal that melts at a temperature above 450°C but below the melting point of the base metals?

A. Resistance welding

B. Adhesive bonding

C. Soldering

D. Brazing

9. What is the correct sequence to tighten wheel nuts after placing a wheel on the hub?

A. Tighten the nearest nut fully, then the next clockwise

B. Tighten nuts randomly until they feel tight

C. Tighten only one nut and leave the others loose

D. Use a star (diagonal) tightening pattern

10. Why are side-impact beams fitted inside car doors?

A. To act as speakers for the car stereo

B. To store extra fuel

C. To strengthen the door and protect occupants in a side collision

D. To cool the brakes

11. Who invented the diesel engine, which offered higher efficiency for some vehicles and machines?

A. Gottlieb Daimler

B. Karl Benz

C. James Watt

D. Rudolf Diesel

12. Which part of the wheel holds and seals the tyre to the rim on modern cars?

A. Spoke

B. Hub cap

C. Bead

D. Wheel nut

13. What is the primary fuel used by most heavy buses and many public service vehicles in Kenya today?

A. Biogas

B. Kerosene

C. Hydrogen

D. Diesel

14. Which of these is the correct way to lift a heavy object safely?

A. Keep your legs straight and bend your back to lift

B. Bend your knees, keep your back straight and lift with your legs

C. Twist your body while lifting to save time

D. Lift quickly using only your arms

15. When two circles have equal radii, how many distinct common tangents do they have (if not overlapping)?

A. One tangent only

B. No tangents

C. Infinite tangents

D. Four tangents (two direct and two transverse)

16. How many piston strokes complete a full cycle in a two-stroke engine?

A. Four strokes — two up and two down

B. One stroke only

C. Two strokes — one up and one down

D. Three strokes — two up and one down

17. What does G2 continuity mean when blending two curve segments?

A. The curves meet with opposite slopes only

B. The curves are drawn on separate sheets

C. The curves share only one common point with differing tangents

D. The curves meet with continuous curvature (same curvature) at the join

18. Why are seams and joints on the vehicle body sealed and welded during manufacturing?

A. To make the vehicle heavier for stability

B. To keep out water and strengthen the structure

C. So the doors cannot be opened

D. To prevent the engine from overheating

19. Which component replaces valves in many two-stroke engines to allow gas flow?

A. Electronic fuel injectors

B. Turbocharger

C. Ports (openings) in the cylinder wall

D. Camshaft-operated poppet valves

20. In technical drawings, the term 'point of contact' between a circle and a tangent refers to:

A. The point farthest from the circle centre

B. The entire line segment inside the circle

C. The centre of the circle

D. The single point where they meet

21. If a general arrangement drawing is at 1:200 and a detail view is at 1:2, how do the sizes of the detail compare to the general arrangement?

A. They are the same size on paper

B. The detail is smaller on paper than the general arrangement
C. The general arrangement is an enlargement of the detail

D. The detail is much larger on paper than the same area in the general arrangement

22. Why did early electric cars (late 1800s–early 1900s) lose popularity compared to petrol cars?

A. They were too fast for roads at the time

B. Electric cars were banned worldwide

C. Limited battery range and the rise of cheap petrol

D. They produced more pollution than petrol cars

23. In a four-stroke petrol engine, which stroke occurs immediately after the intake stroke?

A. Power stroke

B. Scavenging stroke

C. Exhaust stroke

D. Compression stroke

24. What is the advantage of galvanizing steel body panels?

A. It makes the steel magnetic so doors open by themselves

B. Zinc coating prevents corrosion and extends the life of panels
C. It turns steel into aluminium

D. It increases engine horsepower

25. Which property is most important to check when two curves are blended for aerodynamic parts?

A. Average colour of the pencil marks

B. Number of construction lines removed

C. Thickness of the drawing paper

D. Smooth curvature transition (no sudden change in curvature)

26. Which of these is true about lubrication in many two-stroke engines commonly used in older Kenyan boda bodas and small chainsaws?

A. Lubrication is not required because parts are small

B. They use a separate pressurized oil sump like four-strokes

C. Oil is mixed with the fuel (pre-mix) to lubricate moving parts
D. They use only water cooling for lubrication

27. Which engine component converts the piston's up-and-down motion into rotary motion?

A. Camshaft

B. Spark plug

C. Crankshaft

D. Piston ring

28. Which type of safety glass is normally used for windscreens in cars?

A. Laminated glass that holds together when cracked

B. Ordinary window glass from houses

C. Tempered (toughened) glass that shatters into small pieces
D. Tinted film-only with no glass

29. How can you identify a directional tyre when fitting it to a vehicle?

A. By the colour of the tyre, which must be blue

B. By an arrow or rotation marking on the tyre sidewall showing the correct rolling direction
C. By a metal sticker glued on the tread

D. By the tyre being larger than other tyres on the vehicle

30. What is a common internal tangent to two circles?

A. A line that touches only one circle

B. A line that goes through both circle centres

C. A line that touches both circles without crossing the line joining their centres
D. A line that touches both circles and crosses the line joining their centres

31. A drawing is annotated with scale 1:25 and units are millimetres. A dimension shows 250. What is the actual measurement and its unit?

A. 10 mm

B. 250 mm

C. 6250 cm

D. 6250 mm (6.25 m)

32. How often should tyres be rotated to extend tyre life on a typical family car?

A. Never; rotating tyres shortens life

B. About every 8,000 to 12,000 km (5,000 to 8,000 miles)

C. Only when a puncture occurs

D. Every time you refuel

33. What is the purpose of the vehicle firewall (bulkhead) between the engine bay and passenger compartment?

A. To help the engine get more air

B. To lock the doors automatically

C. To reduce noise, heat and prevent fumes or fire from entering the cabin

D. To change the radio stations

34. On an illustration of a four-stroke engine, which valve is open during the exhaust stroke?

A. Intake valve

B. Spark plug valve

C. Both intake and exhaust valves closed

D. Exhaust valve

35. What is a key advantage of battery electric vehicles (EVs) compared with petrol cars when we consider tailpipe emissions?

A. They run on petrol as a backup

B. They emit no tailpipe pollutants during driving

C. They never need electricity

D. They always cost less to buy

36. If an illustration shows a piston at bottom dead centre (BDC) with ports open in a two-stroke engine, what is likely happening?

A. Valves closing to lock gases in

B. Spark plug firing to start power stroke

C. Compression reaching its peak right before ignition

D. Transfer of fresh mixture into the cylinder and exhaust leaving

37. Why are four-stroke engines usually preferred over two-stroke engines for modern cars?

A. They are lighter and need no oil

B. They produce a louder noise which drivers prefer

C. They always use electric power only

D. They are cleaner and more fuel-efficient

38. What is the general approach to construct a tangent to two unequal circles that are separated by a large distance (external tangents)?

A. Draw random lines until they touch both circles

B. Place the ruler through one circle centre only and extend

C. Make both circles the same colour

D. Construct homothetic centre by connecting centres and use reduced circle technique to

39. Why might a drawing use different scales for general arrangement and detail drawings?

A. To avoid writing dimensions

B. To confuse the manufacturer

C. To make the title block longer

D. To show the whole assembly and also give clear enlarged views of small or critical parts

40. When teaching with illustrations about timing, what does 'TDC' stand for and why is it important?

A. Top Dead Centre, the piston position where many timing events occur

B. Thermal Dissipation Constant, for cooling design

C. Torque Delivery Cycle, a specific stroke

D. Total Drive Capacity, how much power the engine has

41. Which diagram label would you use to show when the exhaust valve begins to open in a four-stroke engine?

A. During spark plug removal

B. Near the end of the power stroke/start of the exhaust stroke
C. At the very start of the intake stroke before piston moves

D. Only during the compression stroke

42. Why is wheel balancing important?

A. To improve brake pad life by cooling them

B. To increase the tyre tread depth

C. To prevent vibrations by making the wheel and tyre assembly rotate evenly
D. To keep the battery charged while driving

43. How often is it generally recommended to rotate tyres to even out wear?

A. When the engine oil is replaced weekly

B. Every 8,000 to 10,000 km (or as the vehicle manufacturer advises)
C. Only when a tyre has a puncture

D. Once every five years no matter the distance

44. What is 'camber' in wheel geometry?

A. The forward or backward tilt of the steering wheel

B. The angle between the tyre tread grooves

C. The inward or outward tilt of the top of the wheel when viewed from the front
D. The speed rating stamped on the tyre

45. What is the effect of excessive toe-in or toe-out on tyres?

A. Improved radio reception

B. Better fuel economy and longer engine life

C. Uneven and rapid tyre wear and poorer steering response

D. Cooler brake discs and longer brake life

46. Which labelled arrow on an illustration would show the direction of fresh mixture entering a two-stroke cylinder during scavenging?

A. Arrow pointing from exhaust pipe into the fuel tank

B. Arrow pointing from spark plug into the cylinder

C. Arrow pointing from transfer port into the cylinder

D. Arrow pointing from oil sump into the piston rings

47. Which statement about two tangent circles is correct when they touch externally at one point?

A. The tangent at the point of contact is common to both circles
B. Their centres coincide

C. They intersect at two points

D. They have no tangent at that point

48. What is the boot (trunk) of a car used for?

A. Housing the engine

B. Storing luggage and cargo

C. Mounting the windscreen wipers

D. Fitting the headlights

49. In a simple geometrical problem, the length of a tangent from an external point to a circle depends on:

A. Only the diameter of the circle

B. The distance from the external point to the circle centre and the circle radius
C. Only the compass opening used for other arcs

D. Only the colour of the drawing

50. What is the correct way to tighten wheel nuts when fitting a wheel?

A. Leave nuts finger-tight only

B. Tighten in a star or crisscross pattern to seat the wheel evenly
C. Tighten each nut fully in clockwise order around the wheel

D. Tighten only one nut and drive a short distance