

Question Bank ME391H

Heat Engine Technology

Q1	Which of the following is NOT a basis for classifying internal combustion (IC) engines?
A.	Type of fuel used
B.	Number of wheels
C.	Method of ignition
D.	Number of strokes
Q2	A diesel engine is also called a:
A.	Spark ignition engine
B.	Compression ignition engine
C.	External combustion engine
D.	Rotary engine
Q3	Two-stroke engines are generally preferred in:
A.	Trucks
B.	Cars
C.	Motorcycles
D.	Trains
Q4	The main function of the piston is to:
A.	Store lubricating oil
B.	Seal the combustion chamber and transmit force
C.	Cool the engine
D.	Mix air and fuel
Q5	If the volume above the piston at BDC is 600 cm ³ and at TDC is 100 cm ³ , what is the compression ratio?
A.	4:1
B.	5:1
C.	6:1
D.	7:1
Q6	IC engines are commonly used in which of the following applications?
A.	Refrigerators
B.	Electric trains
C.	Automobiles
D.	Wind turbines
Q7	The cylinder head is located:
A.	Below the crankcase
B.	At the bottom of the piston
C.	On top of the engine block
D.	Inside the combustion chamber
Q8	Which component ensures proper timing for opening and closing of valves?
A.	Crankshaft
B.	Flywheel
C.	Camshaft

D.	Spark plug
Q9	In a two-stroke engine, power is produced in every:
A.	4 strokes
B.	3 strokes
C.	2 strokes
D.	1 stroke
Q10	The oil sump is located at the:
A.	Top of the engine
B.	Side of the cylinder
C.	Bottom of the crankcase
D.	Center of the piston
Q11	Which IC engine is best suited for use in portable generators where quick start and lightweight are priorities?
A.	Steam engine
B.	Diesel engine
C.	Two-stroke petrol engine
D.	Gas turbine
Q12	Which type of IC engine is widely used in agriculture for water pumping?
A.	Petrol engine
B.	Diesel engine
C.	Steam engine
D.	Gas turbine
Q13	Which engine part converts reciprocating motion into rotary motion?
A.	Cylinder
B.	Piston
C.	Crankshaft
D.	Camshaft
Q14	The function of piston rings is to:
A.	Provide lubrication
B.	Ignite the fuel
C.	Seal the combustion chamber and reduce friction
D.	Transfer coolant
Q15	A petrol engine is also known as a:
A.	Compression ignition engine
B.	Steam engine
C.	Spark ignition engine
D.	Control exhaust emissions
Q16	The crankshaft converts:
A.	Rotary motion to reciprocating motion
B.	Heat into sound
C.	Reciprocating motion to rotary motion
D.	Thermal energy to kinetic energy
Q17	Piston speed is calculated using the formula:
A.	Stroke × RPM
B.	(2 × Stroke × RPM) / 60
C.	Stroke / RPM
D.	Stroke × Time

Q18	Small petrol engines are commonly used in:
A.	Ships
B.	Power stations
C.	Two-wheelers
D.	Heavy-duty trucks
Q19	The connecting rod connects the:
A.	Piston to the valve
B.	Crankshaft to the camshaft
C.	Piston to the crankshaft
D.	Cylinder to the crankcase
Q20	Which component ensures proper timing for opening and closing of valves?
A.	Crankshaft
B.	Flywheel
C.	Camshaft
D.	Spark plug
Q21	The main difference between Otto and Diesel cycle is in the:
A.	Method of exhaust
B.	Type of fuel
C.	Heat addition process
D.	Number of strokes
Q22	The function of the spark plug is to:
A.	Open the valves
B.	Provide fuel
C.	Ignite the air-fuel mixture
D.	Remove exhaust gases
Q23	Which of the following conditions will result in increased piston speed?
A.	Decrease in RPM
B.	Shorter stroke length
C.	Increase in stroke length and engine RPM
D.	Lower compression ratio
Q24	If the piston is at the top dead center (TDC), what does this mean in practical terms?
A.	The piston is halfway in the cylinder
B.	The piston is at the start of the intake stroke
C.	The piston is at the extreme bottom position
D.	The piston is at the highest point and ready for ignition (in compression stroke)
Q25	In a four-stroke petrol engine, the power stroke occurs once every:
A.	One revolution of the crankshaft
B.	Two revolutions of the crankshaft
C.	Half revolution of the crankshaft
D.	Three revolutions of the crankshaft
Q26	Cut-off ratio is applicable in:
A.	Petrol engines
B.	Steam engines
C.	Diesel engines
D.	Gas turbines

Q27	What is the function of a flywheel in an IC engine?
A.	Increase engine temperature
B.	Reduce friction
C.	Store rotational energy and smooth engine operation
D.	Control exhaust emissions
Q28	IC engines are classified based on:
A.	Number of gears
B.	Type of fuel used
C.	Colour of engine
D.	Size of fuel tank
Q29	An engine designer wants to increase the displacement of the engine. Which parameters must be increased?
A.	Compression ratio only
B.	Bore and/or stroke
C.	TDC and BDC
D.	Cut-off ratio
Q30	A farmer wants an engine for a water pump that runs for long hours with better fuel efficiency. Which engine should he prefer?
A.	Gas turbine
B.	Two-stroke petrol engine
C.	Four-stroke petrol engine
D.	Four-stroke diesel engine
Q31	Which part of the IC engine houses the crankshaft?
A.	Cylinder head
B.	Crankcase
C.	Piston
D.	Camshaft
Q32	Which of the following is NOT a moving part of an IC engine?
A.	Camshaft
B.	Piston
C.	Cylinder block
D.	Connecting rod
Q33	The efficiency of the Otto cycle is given by -
A.	$\frac{2\pi NT}{60 \times 1000}$
B.	$(P_m LAN/n \times 100)/60$
C.	$1 - (1/R_e^{(\gamma-1)})$
D.	$\pi/4 \times D^2 L$
Q34	In 4-stroke engine, if crankshaft rotates at 1000 rpm , the speed of camshaft will be:
A.	2000 rpm
B.	500 rpm
C.	1000 rpm
D.	1500 rpm
Q35	Calculate the stroke volume of 2-stroke engine if the stroke length 20 cm and bore 10 cm.
A.	2000 cc
B.	1570 cc (Stroke Volume = π/4D²L)

C.	3140 cc
D.	1830 cc
Q36	An aircraft manufacturer is selecting an engine for a lightweight drone. Which type of IC engine is most suitable?
A.	Two-stroke diesel engine
B.	Four-stroke steam engine
C.	Small gasoline engine
D.	Stirling engine
Q37	The valves in an IC engine are used to:
A.	A. Connect the piston and crankshaft
B.	B. Control intake and exhaust of gases
C.	C. Cool the engine
D.	D. Store lubricating oil
Q38	In a P–V diagram of the Otto cycle, the heat addition takes place between which two processes?
A.	1–2
B.	2–3
C.	3–4
D.	4–1
Q39	The efficiency of the Otto cycle increases with:
A.	Decreasing compression ratio
B.	Increasing compression ratio (Efficiency = $1 - (1/R_c^{(γ-1)})$), R_c → Comp. Ratio
C.	Increasing cut-off ratio
D.	Decreasing bore size
Q40	Which thermodynamic process represents the heat addition in the Diesel cycle?
A.	Constant pressure
B.	Constant volume
C.	Isothermal
D.	Adiabatic
Q41	Which of the following conditions will result in increased piston speed?
A.	Decrease in RPM
B.	Shorter stroke length
C.	Increase in stroke length and engine RPM
D.	Lower compression ratio
Q42	In an engine with high piston speed, what is a likely consequence if not managed properly?
A.	Improved fuel economy
B.	Lower engine temperature
C.	Higher wear and reduced engine life
D.	Slower engine response
Q43	The camshaft is responsible for:
A.	Moving the piston
B.	Rotating the crankshaft
C.	Opening and closing the valves
D.	Igniting the mixture
Q44	The flywheel is used to:
A.	Start the engine
B.	Mix air and fuel

C.	Maintain rotational inertia
D.	Cool the engine
Q45	What does 'Bore' refer to in an IC engine?
A.	Distance between two pistons
B.	Diameter of the cylinder
C.	Length of connecting rod
D.	Thickness of piston ring
Q46	Cut-off ratio is the ratio of:
A.	Crankshaft speed to camshaft speed
B.	Volume after combustion to volume before combustion
C.	Volume after cut-off to volume before cut-off
D.	Bore to stroke
Q47	If an engine has a larger bore and shorter stroke, what kind of performance will it typically provide?
A.	Higher torque at low RPM
B.	Higher speed with less torque
C.	Lower power output
D.	Better fuel efficiency
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D.	Igniting the mixture
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A.	Start the engine
B.	Mix air and fuel
C.	Maintain rotational inertia
D.	Cool the engine
Q51	Engine pistons 'are usually made of aluminium alloy because it
A.	is lighter
B.	wears less
C.	absorbs shocks
D.	is stronger
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A.	Crankshaft speed to camshaft speed
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A.	Two-stroke diesel engine
B.	Two-stroke petrol engine
C.	Four-stroke petrol engine
D.	Four-stroke diesel engine
Q61	In a 4-stroke engine, how many strokes are required to complete one cycle?
A.	1
B.	2
C.	3
D.	4
Q62	In the theoretical valve timing of a 4-stroke SI engine, the inlet valve opens at:
A.	10° before TDC
B.	Exactly at TDC

C.	10° after TDC
D.	5° before BDC
Q63	Which combustion phase in an SI engine is most affected by ignition timing?
A.	Exhaust stroke
B.	Afterburn phase
C.	Flame front propagation
D.	Compression phase
Q64	A fuel with a higher octane number is more resistant to:
A.	Pre-ignition
B.	Fuel atomization
C.	Engine cooling
D.	Compression
Q65	Detonation can lead to:
A.	Smoother engine operation
B.	Lower thermal efficiency
C.	Engine damage such as piston erosion
D.	Improved combustion timing
Q66	Which of the following is a major drawback of a simple carburetor?
A.	High fuel pressure requirement
B.	Inability to maintain correct mixture under all conditions
C.	Overcooling of engine
D.	No air filtration
Q67	Motor Octane Number (MON) is measured under:
A.	Low temperature
B.	Severe engine operating conditions
C.	Idle engine conditions
D.	Open throttle conditions
Q68	In a carburetor, the component that maintains fuel level is the:
A.	Nozzle
B.	Float chamber
C.	Venturi
D.	Throttle
Q69	Which stroke is responsible for fuel-air mixture intake in a 4-stroke SI engine?
A.	Power stroke
B.	Exhaust stroke
C.	Compression stroke
D.	Suction stroke
Q70	Valve overlap is a condition where:
A.	Both valves are closed
B.	Only inlet valve is open
C.	Both valves are open
D.	Both valves are damaged
Q71	A common cause of detonation is:
A.	Late ignition
B.	Poor fuel atomization
C.	Low-octane fuel
D.	High engine oil temperature

Q72	Which phase of combustion in SI engines is most rapid?
A.	Ignition delay
B.	Flame front propagation
C.	Afterburning
D.	Compression
Q73	During cold starts, engines require:
A.	Leaner air-fuel mixture
B.	Richer air-fuel mixture
C.	Pure air
D.	Pure fuel
Q74	If weight and cost are the main constraints for a bike engine, which is a better design choice?
A.	4-stroke CI
B.	2-stroke SI
C.	4-stroke SI
D.	2-stroke CI
Q75	If a mechanic wants to recommend an engine for a chainsaw that is compact, lightweight, and used for short durations, the best option is:
A.	2-stroke CI engine
B.	4-stroke CI engine
C.	2-stroke SI engine
D.	4-stroke SI engine
Q76	A sharp rectangular area on a P–V diagram of an engine cycle suggests:
A.	Heat loss
B.	Friction losses
C.	Abrupt pressure changes like constant-volume heat addition
D.	Poor thermal efficiency
Q77	A major advantage of a 4-stroke engine over a 2-stroke engine is:
A.	Higher power-to-weight ratio
B.	Lower thermal efficiency
C.	Better fuel efficiency and less emissions
D.	More complexity and weight
Q78	Why is the exhaust valve opened before BDC in the power stroke in actual valve timing?
A.	To reduce knocking
B.	To cool the piston
C.	To use exhaust blowdown and improve scavenging
D.	To increase compression
Q79	Octane number of a fuel indicates its resistance to:
A.	Detonation
B.	Pre-ignition
C.	Viscosity changes
D.	Evaporation
Q80	Which one of the following will most likely to reduce knocking in an SI engine?
A.	Increasing compression ratio
B.	Retarding ignition timing
C.	Using a hotter spark plug
D.	Running a leaner mixture

Q81	A fuel with a higher octane number is more resistant to:
A.	Pre-ignition
B.	Fuel atomization
C.	Engine cooling
D.	Compression
Q82	Why are 4-stroke CI engines widely used in commercial vehicles like buses and trucks?
A.	They are cheaper to manufacture
B.	They have higher thermal efficiency and durability
C.	They produce more pollution
D.	They operate at higher RPM
Q83	Which engine will be more suitable for long highway driving due to fuel efficiency and
A.	durability?
B.	2-stroke SI engine
C.	4-stroke SI engine
D.	4-stroke CI engine
Q84	An engineer is analysing the efficiency of two engines using T-S diagrams. If engine A has a larger area under the curve than engine B, what can be concluded?
A.	Both engines are equal
B.	Engine A has lower power
C.	Engine A performs more net work
D.	Engine B is more efficient
Q85	The area enclosed by a cycle on a P-V diagram represents:
A.	Fuel consumption
B.	Friction losses
C.	Net work done
D.	Efficiency
Q86	The simple carburetor fails particularly under:
A.	Constant speed driving
B.	Varying speed and load conditions
C.	Stationary engine use
D.	Turbocharged engines
Q87	Which one of the following will most likely to reduce knocking in an SI engine?
A.	Increasing compression ratio
B.	Retarding ignition timing
C.	Using a hotter spark plug
D.	Running a leaner mixture
Q88	A researcher compares two fuels: Fuel A with RON 91 and Fuel B with RON 97. Which fuel is more suitable for high-performance engines?
A.	Fuel A
B.	Fuel B
C.	Both are equal
D.	Depends on compression ratio
Q89	Which engine will be more suitable for long highway driving due to fuel efficiency and durability?
A.	2-stroke SI engine

B.	4-stroke SI engine
C.	4-stroke CI engine
D.	2-stroke CI engine
Q90	Which is a key difference between SI and CI engines?
A.	SI engines compress only air
B.	CI engines require a spark for ignition
C.	CI engines inject fuel directly into the combustion chamber
D.	SI engines use high-pressure fuel pumps
Q91	For maximum power output, the air-fuel mixture is usually:
A.	Lean
B.	Rich
C.	Stoichiometric
D.	Pure fuel
Q92	Valve overlap in a 4-stroke SI engine helps in:
A.	Increasing knocking
B.	Better fuel economy
C.	Cooling the engine
D.	Effective removal of exhaust gases and intake of fresh charge
Q93	In a 2-stroke engine, one power stroke occurs every:
A.	Two revolutions of crankshaft
B.	Four revolutions
C.	One revolution of crankshaft
D.	One valve cycle
Q94	In actual practice, the inlet valve opens:
A.	At TDC
B.	Slightly before TDC
C.	Slightly after TDC
D.	At BDC
Q95	An engineer observes knocking in a spark ignition engine at higher engine load. What is the most probable reason?
A.	Weak spark
B.	Rich mixture
C.	Abnormal combustion causing detonation
D.	Low engine temperature
Q96	In real-world engine performance, which of the following is better for evaluating fuel quality under load?
A.	RON
B.	MON
C.	Cetane Number
D.	Specific Gravity
Q97	Pre-ignition typically occurs due to:
A.	Late spark timing
B.	Over-cooled spark plug
C.	Hot spots inside
D.	Weak mixture
Q98	A faulty carburetor may cause which of the following issues in engine performance?
A.	Overheating only

B.	Lean or rich air-fuel mixture
C.	Battery failure
D.	Improper exhaust valve timing
Q99	Research Octane Number (RON) is measured at:
A.	Low speed and mild conditions
B.	High speed and severe conditions
C.	Variable load
D.	Cold start
Q100	Why are modern vehicles replacing simple carburetors with fuel injection systems?
A.	Carburetors are cheaper
B.	Fuel injection gives better control over air-fuel ratio and reduces emissions
C.	Fuel injectors are simpler to repair
D.	Carburetors provide more power
Q101	The octane number of iso-octane is:
A.	0
B.	50
C.	100
D.	120
Q102	Which of the following air-fuel ratios is closest to the stoichiometric ratio for gasoline?
A.	8:1
B.	12:1
C.	14.7:1
D.	18:1
Q103	In carburetion, the fuel is mixed with air before entering the:
A.	Exhaust valve
B.	Carburetor float chamber
C.	Combustion chamber
D.	Spark plug gap
Q104	Why is the carburetor placed above the intake manifold?
A.	To increase exhaust flow
B.	To create vacuum for suction
C.	For better mixing and gravity-assisted fuel flow
D.	To reduce compression ratio
Q105	Pre-ignition typically occurs due to:
A.	Late spark timing
B.	Over-cooled spark plug
C.	Hot spots inside the combustion chamber
D.	Weak mixture
Q106	If an engine has no valve overlap, it may suffer from:
A.	Lower compression
B.	Overheating
C.	Poor scavenging and reduced performance
D.	Fuel knocking
Q107	Which type of engine is commonly used in marine applications where reliability and high torque are required?
A.	4-stroke electric motor

B.	2-stroke CI engine
C.	4-stroke SI engine
D.	2-stroke SI engine
Q108	If an engineer wants to design a high-speed engine with quick acceleration for a petrol car, which thermodynamic cycle is more appropriate?
A.	Diesel cycle
B.	Rankine cycle
C.	Otto cycle
D.	Duel cycle
Q109	Combustion in compression ignition engines is
A.	Homogeneous
B.	Heterogeneous
C.	Turbulent.
D.	Laminar
Q110	A simple carburetor works well only under:
A.	All engine loads
B.	Constant speed and load
C.	Variable throttle conditions
D.	High altitude
Q111	Which of the following is a modern alternative to the simple carburetor?
A.	Distributor
B.	Fuel injector
C.	Turbocharger
D.	Air filter
Q112	Pre-ignition occurs when:
A.	Air-fuel mixture burns after the spark
B.	Combustion happens before the spark is fired
C.	Engine is overcooled
D.	There is excess lubrication
Q113	During cold starts, engines require:
A.	Leaner air-fuel mixture
B.	Richer air-fuel mixture
C.	Pure air
D.	Pure fuel
Q114	The fuel air ratio in a petrol engine fitted with suction carburettor, operating with dirty air filter as compared to clean filter will be
A.	Higher
B.	Lower
C.	Remain unaffected
D.	Unpredictable
Q115	The air-fuel ratio in petrol engines-is controlled by
A.	Controlling valve opening/closing
B.	Governing
C.	Injection
D.	Carburettion
Q116	A stoichiometric air-fuel ratio is
A.	Chemically correct mixture
B.	Lean mixture

C.	Rich mixture for idling
D.	Rich mixture for over loads
Q117	The term “knocking” in an SI engine refers to:
A.	The piston hitting the cylinder head
B.	Pre-ignition or uncontrolled detonation of the air-fuel mixture
C.	Normal combustion
D.	Spark plug misfiring
Q118	The inlet valve of a four stroke cycle I.C engine remains open for nearly
A.	180°
B.	125°
C.	235°
D.	200°
Q119	The air requirement of a petrol engine during starting compared to theoretical air required for complete combustion is
A.	More
B.	Less
C.	Same
D.	May be more or less depending on engine capacity
Q120	Detonation in SI engines is also known as:
A.	Spark knock
B.	Cold start
C.	Valve bouncing
D.	Fuel starvation
Q121	For maximum power output, an SI engine requires:
A.	Stoichiometric mixture
B.	Slightly rich mixture
C.	Slightly lean mixture
D.	Pure air
Q122	Pick up the false statement
A.	Thermal efficiency of diesel engine is about 34%
B.	Theoretically correct mixture of air am petrol is approximately 15 : 1
C.	S.I. engines are quality-governed engines.
D.	Diesel engines are compression ignition engines
Q123	For the same compression ratio
A.	Otto cycle is more efficient than the Diesel
B.	Diesel cycle is more efficient than Otto
C.	both Otto and Diesel cycles are, equally efficient
D.	compression ratio has nothing to do with efficiency
Q124	A spark ignition engine with a carburetor shows poor starting in cold weather. Which adjustment is commonly used?
A.	Increasing the compression ratio
B.	Using a choke to enrich the air-fuel mixture
C.	Decreasing spark intensity
D.	Removing the carburetor
Q125	The octane number of fuel in an SI engine primarily indicates:
A.	Its ability to ignite under compression without knocking
B.	Its calorific value

C.	Its density
D.	Its lubricating properties
Q126	The inlet valve of a four stroke cycle I.C engine remains open for nearly
A.	180°
B.	125°
C.	235°
D.	200°
Q127	The mean effective pressure obtained from engine indicator indicates the
A.	Maximum pressure developed
B.	Minimum pressure
C.	Instantaneous pressure at any instant
D.	Average pressure.
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C.	both Otto and Diesel cycles are, equally efficient
D.	compression ratio has nothing to do with efficiency
Q132	An SI engine is designed to run on petrol but needs to run on ethanol-petrol blend. Which parameter is likely to be adjusted for smooth operation?
A.	Engine displacement
B.	Spark timing
C.	Cylinder head material
D.	Piston stroke
Q133	In a 2-stroke engine, one power stroke occurs every:
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C.	Fuel injectors are simpler to repair
D.	Carburetors provide more power
Q141	What is the primary function of a fuel injection system in CI engines?
A.	Spark timing
B.	Mixing air and fuel before intake
C.	Supplying pressurized fuel directly into the combustion chamber
D.	Heating the intake manifold
Q142	A high cetane number indicates:
A.	Longer ignition delay
B.	Poor combustion quality
C.	Shorter ignition delay and better combustion
D.	Higher fuel consumption
Q143	The fuel injector in a CI engine functions to:
A.	Mix fuel with air
B.	Atomize and inject fuel at high pressure

C.	Create spark
D.	Cool the engine
Q144	Which of the following is a major benefit of electronic injection systems in diesel engines?
A.	Increased exhaust emissions
B.	Improved fuel efficiency and reduced noise
C.	Simpler maintenance
D.	Elimination of fuel pumps
Q145	In a CRDI system, the fuel is:
A.	Injected at low pressure
B.	Supplied only during idle
C.	Stored in a common rail at high pressure
D.	Injected without atomization
Q146	Which type of fuel injection system offers the best control of timing and quantity of fuel?
A.	Single-point injection
B.	Port fuel injection
C.	Common Rail Direct Injection (CRDI)
D.	Carburetion
Q147	A four-stroke engine is generally preferred in cars because:
A.	It produces more noise
B.	It has more power per stroke
C.	It offers better fuel economy and durability
D.	It completes the cycle faster
Q148	Why are four-stroke CI engines not commonly used in small vehicles?
A.	Poor combustion control
B.	Higher compression ratio
C.	Heavier and more complex design
D.	Lack of fuel injectors
Q149	In CRDI systems, the fuel pressure is:
A.	Controlled mechanically
B.	Constant at all speeds
C.	Generated and stored at high pressure independently of engine speed
D.	Lower than in traditional systems
Q150	Cetane number is an indicator of:
A.	Octane rating
B.	Ignition delay of diesel fuel
C.	Air-fuel ratio
D.	Engine temperature
Q151	A key advantage of a Bosch fuel injection pump is:
A.	Fuel economy at low pressure
B.	Accurate fuel metering and timing
C.	Higher octane fuel usage
D.	Simplicity over electronic systems
Q152	Electronic fuel injection systems are preferred over mechanical ones because they:
A.	Increase engine noise
B.	Are cheaper

C.	Offer better control of injection timing and quantity
D.	Require less battery voltage
Q153	In terms of ignition, the key difference between SI and CI engines is:
A.	CI uses spark plug
B.	SI uses compression ignition
C.	CI relies on high temperature of compressed air
D.	SI relies on fuel injection timing
Q154	Which of the following is true in comparing SI and CI engines?
A.	SI engines use compression ignition
B.	CI engines are generally more fuel-efficient
C.	SI engines use diesel as fuel
D.	CI engines operate at lower compression ratios
Q155	The Bosch fuel pump works on the principle of:
A.	Diaphragm suction
B.	Centrifugal force
C.	Plunger and barrel mechanism
D.	Vacuum pressure
Q156	What initiates combustion in a compression ignition (CI) engine?
A.	Spark plug
B.	Glow plug
C.	Compression of air to high temperature
D.	Fuel vaporization
Q157	The Venturi in a carburetor helps in:
A.	Heating the air-fuel mixture
B.	Increasing fuel pressure
C.	Creating vacuum to draw fuel
D.	Compressing the fuel
Q158	A major advantage of the Bosch-type fuel pump is:
A.	Spark-free operation
B.	High-voltage ignition
C.	Precise fuel delivery at high pressure
D.	Less fuel filtration
Q159	In CRDI systems, the fuel pressure is:
A.	Controlled mechanically
B.	Constant at all speeds
C.	Generated and stored at high pressure independently of engine speed
D.	Lower than in traditional systems
Q160	Which of the following is a type of fuel injection system?
A.	Single point injection
B.	Multi-point injection
C.	Common rail direct injection (CRDI)
D.	All of the above
Q161	In the actual valve timing of a 4-stroke CI engine, the inlet valve opens:
A.	Exactly at TDC
B.	Before TDC
C.	After BDC
D.	After TDC

Q162	Which of the following is a disadvantage of a two-stroke engine compared to a four-stroke engine?
A.	Fewer parts
B.	Lower power output
C.	Higher fuel consumption and emissions
D.	Simpler construction
Q163	In a Bosch-type fuel injector, what ensures atomization of fuel?
A.	Spark ignition
B.	High-pressure spring and nozzle design
C.	Air blast at the nozzle
D.	Pump-assisted vaporization
Q164	Why are 4-stroke CI engines widely used in commercial vehicles like buses and trucks?
A.	They are cheaper to manufacture
B.	They have higher thermal efficiency and durability
C.	They produce more pollution
D.	They operate at higher RPM
Q165	Which of the following is a common application of four-stroke CI engines?
A.	Scooters
B.	Heavy trucks and buses
C.	Petrol generators
D.	Lawn mowers
Q166	Why do four-stroke engines generally have better emission control than two-stroke engines?
A.	They use more lubricating oil
B.	They operate at higher RPMs
C.	They complete the cycle in two revolutions, reducing unburnt fuel loss
D.	They mix fuel and oil together
Q167	Electronic fuel injection systems are preferred over mechanical ones because they:
A.	Increase engine noise
B.	Are cheaper
C.	Offer better control of injection timing and quantity
D.	Require less battery voltage
Q168	In a Bosch-type fuel pump, fuel is pressurized using:
A.	Spark ignition
B.	Plunger-type pump mechanism
C.	Electric motor
D.	Suction from intake manifold
Q169	Cetane number is an indicator of:
A.	Octane rating
B.	Ignition delay of diesel fuel
C.	Air-fuel ratio
D.	Engine temperature
Q170	What is the primary function of a fuel injection system in CI engines?
A.	Spark timing
B.	Mixing air and fuel before intake
C.	Supplying pressurized fuel directly into the combustion chamber

D.	Heating the intake manifold
Q171	Why is there valve overlap in actual valve timing diagrams of CI engines?
A.	To increase fuel injection
B.	To assist in complete scavenging
C.	To reduce pumping losses
D.	To delay ignition
Q172	Which application best suits a four-stroke CI engine?
A.	Lightweight motorcycles
B.	High-speed sports cars
C.	Heavy-duty trucks and buses
D.	Toy engines
Q173	In a T-S diagram of a Diesel cycle, the vertical line from point 2 to 3 represents:
A.	A) Isothermal compression
B.	B) Isentropic compression
C.	C) Isentropic expansion
D.	D) Constant pressure heat addition
Q174	Cetane number of diesel fuel indicates its:
A.	A) Cetane rating
B.	B) Ignition delay
C.	C) Knocking resistance
D.	D) Density of diesel
Q175	In IC engine fuel injection, the process of breaking up or a liquid into fine droplets by spraying is called
A.	(a) Vaporisation
B.	(b) Carburetion
C.	e) Atomisation
D.	(d) Injection
Q176	In a CRDI system, the fuel is:
A.	A) Injected at very low pressure
B.	B) Supplied only during idle
C.	C) Stored in a common rail at high pressure
D.	D) Injected without atomization
Q177	One key advantage of electronic over mechanical fuel injection is:
A.	A) Better ignition control
B.	B) Lower fuel pressure
C.	C) Adaptive fuel delivery based on engine conditions
D.	D) No need for sensors
Q178	The duration of the fuel delivery during each stroke of plunger of Bosch fuel pump is more or less according to the time at which the spill port is made to communicate with high pressure fuel in the barrel depends upon
A.	the position of the vertical groove.
B.	the position of the helical groove.
C.	Speed of the plunger.
D.	None of the above.
Q179	Which of the following is a disadvantage of a two-stroke engine compared to a four-stroke engine?
A.	Fewer parts
B.	Lower power output

C.	Higher fuel consumption and emissions
D.	Simpler construction
Q180	In actual valve timing of a 4-stroke CI engine, the exhaust valve opens:
A.	Exactly at TDC
B.	12° before BDC
C.	40° before BDC
D.	25° after TDC
Q181	In a CI engine, fuel is injected into:
A.	The carburetor
B.	The intake manifold
C.	The combustion chamber directly
D.	The exhaust manifold
Q182	Compared to a petrol engine, a CI engine usually has:
A.	Lower efficiency
B.	Higher fuel consumption
C.	Higher torque at low speed
D.	Lower compression ratio
Q183	The ignition delay in a CI engine refers to:
A.	Time taken for spark to occur
B.	Time between fuel injection and start of combustion
C.	Time for air intake
D.	Time to exhaust gases
Q184	Why is electronic fuel injection preferred over carburetor systems?
A.	It is cheaper to manufacture
B.	It does not require any sensors
C.	It provides precise fuel delivery for better efficiency and reduced emissions
D.	It requires less battery voltage and work without fuel
Q185	What is the primary function of a Bosch fuel pump in a fuel injection system?
A.	To ignite the fuel in the combustion chamber
B.	To deliver fuel to the engine at the required pressure
C.	To regulate the air-fuel ratio automatically
D.	To clean the fuel before it reaches the engine
Q186	A diesel engine shows delayed ignition and rough running. Which fuel property is most likely responsible?
A.	High RON
B.	Low Cetane number
C.	High viscosity
D.	Low Sulphur content
Q187	If a driver wants to reduce emissions and improve fuel efficiency in an old carbureted engine, which modification is most appropriate?
A.	Installing a larger fuel tank
B.	Replacing the carburetor with an electronic fuel injection system
C.	Using thicker engine oil
D.	Replacing spark plugs with standard ones
Q188	A farmer notices black smoke coming out of his diesel tractor. What is the most likely cause?
A.	Overheating of engine
B.	Incomplete combustion due to excess fuel

C.	Low compression ratio
D.	Spark plug failure
Q189	Which component in a fuel injection system regulates the timing and quantity of fuel?
A.	Fuel filter
B.	Electronic Control Unit (ECU)
C.	Fuel tank
D.	Air intake sensor
Q190	What does "CI" stand for in CI engine?
A.	Combustion Ignition
B.	Compression Ignition
C.	Controlled Ignition
D.	Continuous Ignition
Q191	In a CI engine, increasing the fuel injection pressure:
A.	Decreases atomization
B.	Increases atomization and better mixing
C.	Delays ignition
D.	Reduces the engine efficiency
Q192	Compared to a petrol engine, a CI engine usually has:
A.	Lower efficiency
B.	Higher fuel consumption
C.	Higher torque at low speed
D.	Lower compression ratio
Q193	Which of the following is a disadvantage of a CI engine?
A.	High thermal efficiency
B.	Low emissions
C.	Heavy and noisy
D.	Can run on diesel
Q194	During diagnostic testing, a mechanic finds that the Bosch fuel pump is working but fuel is not reaching the injectors. Which system component should be checked next?
A.	Fuel injectors and fuel lines
B.	Battery terminals
C.	Engine coolant sensor
D.	Timing belt
Q195	A vehicle equipped with a Bosch electronic fuel injection system is experiencing hard starting and poor acceleration. Which component is most likely causing this issue?
A.	Spark plug
B.	Fuel pump
C.	Radiator
D.	Brake master cylinder
Q196	A vehicle designed for long-distance heavy-load transport should ideally use which engine cycle?
A.	Otto cycle
B.	Diesel cycle
C.	Dual cycle
D.	Atkinson cycle

Q197	Which of the following statements correctly describes CI engine?
A.	It operates only on a two-stroke cycle.
B.	It ignites the air-fuel mixture using a spark from a spark plug.
C.	It uses petrol fuel for combustion.
D.	It ignites the air-fuel mixture by compression only.
Q198	Which of the following is NOT a type of CI engine?
A.	Direct injection
B.	Indirect injection
C.	Spark-ignition injection
D.	Common rail injection
Q199	Which of the following is NOT an advantage of electronic fuel injection?
A.	Better fuel efficiency
B.	Lower emissions
C.	Engine starts easily in all conditions
D.	Complete elimination of engine maintenance
Q200	Which problem is most effectively solved by an electronic injection system?
A.	Fuel contamination
B.	Inconsistent fuel atomization
C.	Engine oil leakage
D.	Radiator overheating
Q201	Which property of diesel fuel primarily determines the ignition quality in a compression ignition engine?
A.	Viscosity
B.	Cetane number
C.	Flash point
D.	Calorific value
Q202	A diesel generator set uses a four-stroke CI engine. If the engine is running at 1500 RPM, how many power strokes occur per minute per cylinder?
A.	1500
B.	750
C.	3000
D.	375
Q203	A vehicle powered by a four-stroke CI engine emits lower CO compared to a petrol engine. This is mainly due to:
A.	Higher operating temperature and leaner air-fuel mixture
B.	Spark ignition timing
C.	Two-stroke operation
D.	Turbocharging only
Q204	A vehicle designed for long-distance heavy-load transport should ideally use which engine cycle?
A.	Otto cycle
B.	Diesel cycle
C.	Dual cycle
D.	Atkinson cycle
Q205	Which of the following is a common application of four-stroke CI engines?
A.	Scooters
B.	Heavy trucks and buses
C.	Petrol generators

D.	Lawn mowers
Q206	Which of the following is true in comparing SI and CI engines?
A.	SI engines use compression ignition
B.	CI engines are generally more fuel-efficient
C.	SI engines use diesel as fuel
D.	CI engines operate at lower compression ratios
Q207	Electronic fuel injection systems are preferred over mechanical ones because they:
A.	Increase engine noise
B.	Are cheaper
C.	Offer better control of injection timing and quantity
D.	Require less battery voltage
Q208	In a Bosch-type fuel pump, fuel is pressurized using:
A.	Spark ignition
B.	Plunger-type pump mechanism
C.	Electric motor
D.	Suction from intake manifold
Q209	Cetane number is an indicator of:
A.	Octane rating
B.	Ignition delay of diesel fuel
C.	Air-fuel ratio
D.	Engine temperature
Q210	What is the primary function of a fuel injection system in CI engines?
A.	Spark timing
B.	Mixing air and fuel before intake
C.	Supplying pressurized fuel directly into the combustion chamber
D.	Heating the intake manifold
Q211	Why is there valve overlap in actual valve timing diagrams of CI engines?
A.	To increase fuel injection
B.	To assist in complete scavenging
C.	To reduce pumping losses
D.	To delay ignition
Q212	Which application best suits a four-stroke CI engine?
A.	Lightweight motorcycles
B.	High-speed sports cars
C.	Heavy-duty trucks and buses
D.	Toy engines
Q213	In the actual valve timing of a 4-stroke CI engine, the inlet valve opens:
A.	Exactly at TDC
B.	Before TDC
C.	After BDC
D.	After TDC
Q214	In terms of ignition, the key difference between SI and CI engines is:
A.	CI uses spark plug
B.	SI uses compression ignition
C.	CI relies on high temperature of compressed air

D.	SI relies on fuel injection timing
Q215	Which of the following is a major benefit of electronic injection systems in diesel engines?
A.	Increased exhaust emissions
B.	Improved fuel efficiency and reduced noise
C.	Simpler maintenance
D.	Elimination of fuel pumps
Q216	The fuel injector in a CI engine functions to:
A.	Mix fuel with air
B.	Atomize and inject fuel at high pressure
C.	Create spark
D.	Cool the engine
Q217	The combustion in CI engines is initiated by:
A.	Spark plug
B.	Fuel-air pre-mixing
C.	Compression of air to high temperature
D.	Glow plug only
Q218	Why is there valve overlap in actual valve timing diagrams of CI engines?
A.	To increase fuel injection
B.	To assist in complete scavenging
C.	To reduce pumping losses
D.	To delay ignition
Q219	In actual valve timing of a 4-stroke CI engine, the exhaust valve opens:
A.	Exactly at BDC
B.	10° before BDC
C.	40° before BDC
D.	20° after BDC
Q220	Why are four-stroke CI engines not commonly used in small vehicles?
A.	Poor combustion control
B.	Higher compression ratio
C.	Heavier and more complex design
D.	Lack of fuel injectors
Q221	In a pressure lubrication system, oil is delivered to parts using:
A.	Capillary action
B.	Splashing motion
C.	Oil pump
D.	Manual feed
Q222	Which of the following is an important function of the lubrication system?
A.	Cooling the radiator
B.	Preventing fuel knock
C.	Cleaning, sealing, and cushioning engine parts
D.	Air-fuel mixing
Q223	Which of the following is not commonly used as a coolant in IC engines?
A.	Ethylene glycol
B.	Distilled water
C.	Engine oil
D.	Brake fluid

Q224	Thermo-syphon cooling relies on:
A.	External fan operation
B.	Natural convection due to temperature difference
C.	Radiator fan
D.	High-pressure pumps
Q225	Which cooling method is more efficient for multi-cylinder engines used in automobiles?
A.	Air cooling
B.	Oil cooling
C.	Forced water cooling
D.	Thermo-syphon cooling
Q226	An overheated engine may cause:
A.	Improved combustion efficiency
B.	Lubricant thickening
C.	Piston seizure and reduced engine life
D.	Increased fuel economy
Q227	Which system uses a water pump to circulate coolant?
A.	Air cooling system
B.	Thermo-syphon system
C.	Forced circulation system
D.	Gravity system
Q228	The selection of a cooling system depends on:
A.	Engine colour
B.	Type and size of engine
C.	Fuel quality only
D.	Type of spark plug used
Q229	Detergent additives in lubricants are used to:
A.	Prevent oxidation
B.	Clean sludge and deposit from engine parts
C.	Increase lubrication pressure
D.	Act as coolant
Q230	In a pressure lubrication system, oil is delivered to parts using:
A.	Capillary action
B.	Splashing motion
C.	Oil pump
D.	Manual feed
Q231	Which type of cooling system is more suitable for high-performance, water-cooled engines like in cars?
A.	Thermo-syphon cooling
B.	Forced circulation cooling
C.	Natural convection
D.	Air cooling
Q232	Which lubricant additive helps prevent engine corrosion?
A.	Detergents
B.	Anti-wear agents
C.	Rust inhibitors
D.	Viscosity index improvers
Q233	Air-cooled engines are generally used in:

A.	Large trucks
B.	Cars
C.	Motorcycles and scooters
D.	Submarines
Q234	Which of the following is a possible effect of inadequate cooling in IC engines?
A.	Better efficiency
B.	Engine overheating and component seizure
C.	Increased oil viscosity
D.	Reduced power output only
Q235	Viscosity index improvers are added to lubricants to:
A.	Clean the oil filter
B.	Prevent foaming
C.	Maintain viscosity over a wide temperature range
D.	Increase the cooling rate
Q236	Which of the following engines would typically use pressure lubrication?
A.	Lawnmower engines
B.	Two-stroke scooters
C.	High-speed car engines
D.	Bicycle engines
Q237	Compared to air cooling, water cooling provides:
A.	Simpler maintenance
B.	Faster warm-up
C.	Better heat dissipation and quieter operation
D.	More vibrations
Q238	Which of the following is an important function of the lubrication system?
A.	Cooling the radiator
B.	Preventing fuel knock
C.	Cleaning, sealing, and cushioning engine parts
D.	Air-fuel mixing
Q239	The main purpose of lubrication in IC engines is to:
A.	Increase engine temperature
B.	Reduce friction and wear between moving parts
C.	Provide fuel to the engine
D.	Clean spark plugs
Q240	Which cooling system is ideal for motorcycles and small engines?
A.	Water cooling
B.	Forced cooling
C.	Air cooling
D.	Oil cooling
Q241	Which of the following is an advantage of forced water cooling over thermo-syphon?
A.	Simpler design
B.	No need for a radiator
C.	Better temperature control under varying loads
D.	Less power consumption
Q242	An overheated engine may cause:
A.	Improved combustion efficiency

B.	Lubricant thickening
C.	Piston seizure and reduced engine life
D.	Increased fuel economy
Q243	Detergent additives in lubricants are used to:
A.	Prevent oxidation
B.	Clean sludge and deposit from engine parts
C.	Increase lubrication pressure
D.	Act as coolant
Q244	Which of the following engines would typically use pressure lubrication?
A.	Lawnmower engines
B.	Two-stroke scooters
C.	High-speed car engines
D.	Bicycle engines
Q245	Which lubrication system is commonly used in motorcycles and small engines?
A.	Pressure system
B.	Splash system
C.	Charge lubrication
D.	Hydraulic system
Q246	The main purpose of lubrication in IC engines is to:
A.	Increase engine temperature
B.	Reduce friction and wear between moving parts
C.	Provide fuel to the engine
D.	Clean spark plugs
Q247	The main function of coolant additives is to:
A.	Lower engine noise
B.	Prevent corrosion and improve boiling point
C.	Increase fuel flow
D.	Reduce combustion temperature
Q248	Which cooling system is ideal for motorcycles and small engines?
A.	Water cooling
B.	Forced cooling
C.	Air cooling
D.	Oil cooling
Q249	Which of the following is an advantage of forced water cooling over thermo-syphon?
A.	Simpler design
B.	No need for a radiator
C.	Better temperature control under varying loads
D.	Less power consumption
Q250	Why is cooling necessary in an internal combustion engine?
A.	To increase knocking
B.	To improve air-fuel mixing
C.	To prevent overheating and maintain optimal temperature
D.	To reduce engine noise
Q251	What is the primary purpose of cooling in an internal combustion engine?
A.	To reduce noise
B.	To increase engine weight

C.	To remove excess heat and prevent engine damage
D.	To improve ignition timing
Q252	A good engine coolant should have:
A.	Only water as the base
B.	High boiling point and low freezing point
C.	No corrosive properties only
D.	None of the above.
Q253	In which lubrication system is oil splashed onto engine parts by moving components?
A.	Pressure system
B.	Splash system
C.	Charge system
D.	Filter system
Q254	Which lubrication system is commonly used in motorcycles and small engines?
A.	Pressure system
B.	Splash system
C.	Charge lubrication
D.	Hydraulic system
Q255	Compared to air cooling, water cooling provides:
A.	Simpler maintenance
B.	Faster warm-up
C.	Better heat dissipation and quieter operation
D.	More vibrations
Q256	Which lubrication system is preferred for racing cars
A.	Wet lubrication system
B.	Charge lubrication
C.	Dry lubrication system
D.	Splash lubrication system
Q257	In an air-cooled engine, fins on the cylinder are important because they:
A.	Reduce friction of moving parts
B.	Increase heat dissipation surface area
C.	Reduce oil viscosity
D.	Prevent fuel leakage
Q258	If the radiator cap is faulty and cannot maintain pressure, the coolant system will:
A.	Overheat at lower temperatures than designed
B.	Reduce oil viscosity
C.	Increase the engine's compression ratio
D.	Cause the fuel injector to fail
Q259	An engine uses oil cooling in addition to water cooling. Which situation would most benefit from this system?
A.	Light city driving
B.	Prolonged idling
C.	High-speed racing
D.	Engine start in winter
Q260	An engine equipped with a wet sump lubrication system occasionally shows oil starvation at sharp turns. What improvement is most effective?
A.	Using higher viscosity oil
B.	Switching to a dry sump lubrication system

C.	Adding antifreeze to the coolant
D.	Increasing the radiator size
Q261	An IC engine uses a thin-film lubrication system. What is the primary advantage of maintaining this type of lubrication?
A.	It reduces engine weight
B.	It minimizes friction and wear between moving surfaces
C.	It increases the coolant boiling point
D.	It improves fuel-air mixture
Q262	In a vehicle with a pressurized lubrication system, if the oil pump fails:
A.	The coolant will overheat
B.	The bearings will receive no lubrication and wear rapidly
C.	The engine will automatically switch to splash lubrication
D.	The fuel injection will stop
Q263	In which type of IC engine lubrication system is oil thrown onto engine parts by the motion of components themselves?
A.	Splash lubrication
B.	Pressure lubrication
C.	Wick lubrication
D.	Mist lubrication
Q264	Which type of additive in lubricating oil improves its ability to withstand high temperatures without breaking down?
A.	Detergents
B.	Oxidation inhibitors
C.	Anti-foam agents
D.	Rust inhibitors
Q265	A motorbike engine using splash lubrication begins to emit smoke from the exhaust. The most likely cause is:
A.	Coolant is leaking into combustion chamber
B.	Excess oil is splashing into the combustion chamber
C.	Radiator fan failure
D.	Spark plug malfunction
Q266	An engine is overheating even though the coolant level and radiator condition are normal. Which of the following is the most likely cause?
A.	Low oil level
B.	Faulty water pump
C.	Excessive engine load
D.	Worn piston rings
Q267	A diesel engine uses a dry-sump lubrication system. Which of the following situations benefits most from this design?
A.	Vehicles operating in high-speed highways
B.	Off-road vehicles with steep inclines and uneven terrain
C.	Small scooters and motorcycles
D.	Stationary generator engines
Q268	An engine running on high ambient temperatures has a coolant mixture of water and antifreeze. Why is antifreeze added in this case?
A.	To increase boiling point and reduce cavitation
B.	To reduce viscosity and increase friction
C.	To cool the engine faster

D.	To improve fuel efficiency
Q269	The main purpose of the cooling system in an IC engine is to:
A.	Increase engine speed
B.	Prevent engine overheating
C.	Reduce engine weight
D.	Improve exhaust noise
Q270	Which of the following correctly matches the lubrication system with its mechanism?
A.	Splash lubrication – Oil is pumped under pressure to bearings
B.	Pressure lubrication – Oil is thrown by moving parts
C.	Auto-lube lubrication – Oil is transferred by capillary action
D.	Mist lubrication – Oil is mixed in fuel
Q271	If an engine uses a dry sump lubrication system, what is a key advantage?
A.	Simpler design and lower cost
B.	Reduced oil starvation during high-speed operation
C.	Eliminates the need for a filter
D.	No need for a pump
Q272	Why is pressure lubrication preferred in high-speed engines over splash lubrication?
A.	Because it is cheaper to implement
B.	Because it ensures a continuous supply of oil to all critical components
C.	Because it uses less oil
D.	Because it eliminates the need for a cooling system
Q273	What would likely happen if antifreeze was not added to an engine coolant in winter?
A.	The engine would overheat
B.	The coolant could freeze, causing engine block damage
C.	The fuel consumption would increase
D.	The oil would lose viscosity
Q274	Detergent additives in lubricating oil are primarily used to:
A.	Reduce friction
B.	Neutralize acids and prevent deposit formation
C.	Prevent coolant freezing
D.	Improve fuel efficiency
Q275	Which lubrication system is commonly used in motorcycles and small engines?
A.	Pressure system
B.	Splash system
C.	Charge lubrication
D.	Hydraulic system
Q276	The main purpose of lubrication in IC engines is to:
A.	Increase engine temperature
B.	Reduce friction and wear between moving parts
C.	Provide fuel to the engine
D.	Clean spark plugs
Q276	The main function of coolant additives is to:
A.	Lower engine noise
B.	Prevent corrosion and improve boiling point
C.	Increase fuel flow

D.	Reduce combustion temperature
Q277	Which cooling system is ideal for motorcycles and small engines?
A.	Water cooling
B.	Forced cooling
C.	Air cooling
D.	Oil cooling
Q278	Which of the following is an advantage of forced water cooling over thermo-syphon?
A.	Simpler design
B.	No need for a radiator
C.	Better temperature control under varying loads
D.	Less power consumption
Q279	Why is cooling necessary in an internal combustion engine?
A.	To increase knocking
B.	To improve air-fuel mixing
C.	To prevent overheating and maintain optimal temperature
D.	To reduce engine noise
Q280	If an engine's brake power is significantly lower than its indicated power, what could be a possible cause?
A.	High thermal efficiency
B.	Low fuel consumption
C.	High frictional losses
D.	Low compression ratio
Q281	Morse test is used to determine:
A.	Maximum engine speed
B.	Brake power of a single-cylinder engine
C.	Indicated power of multi-cylinder engine
D.	Cooling rate of the radiator
Q282	What is the major technological addition in BS VI engines for diesel vehicles?
A.	Radiator fans
B.	Fuel injection timing
C.	Diesel Particulate Filter (DPF) and Selective Catalytic Reduction (SCR)
D.	Engine downsizing
Q283	Which term is defined as the ratio of the volume of the cylinder at BDC to the volume at TDC?
A.	Mean effective pressure
B.	Compression ratio
C.	BSFC
D.	Thermal efficiency
Q284	In Bharat Stage VI norms, for a Light Motor Vehicle (LMV) petrol car, the CO emission limit is approximately:
A.	1.0 g/km
B.	0.1 g/km
C.	2.0 g/km
D.	5.0 g/km
Q285	Mechanical efficiency is the ratio of:
A.	IP / BP
B.	BP / IP

C.	BP / BSFC
D.	IP × ISFC
Q286	Why is controlling air-fuel ratio critical in engine emission control?
A.	It adjusts engine timing
B.	It balances combustion for minimum pollutants
C.	It controls coolant temperature
D.	It improves air conditioning
Q287	Which exhaust gas contributes significantly to acid rain and smog?
A.	Hydrocarbons
B.	Carbon monoxide
C.	NOx
D.	CO ₂
Q288	Which of the following pollutants is most commonly emitted by petrol engines during incomplete combustion?
A.	NOx
B.	CO
C.	PM
D.	SOx
Q289	Bharat Stage (BS) emission norms are aligned with:
A.	American EPA standards
B.	European emission standards
C.	Chinese GB standards
D.	Japanese JIS standards
Q290	The fuel consumption per unit indicated power per hour is called:
A.	BP
B.	IP
C.	ISFC
D.	Thermal Efficiency
Q291	Which device is added in BS VI diesel vehicles to control PM emissions?
A.	Turbocharger
B.	Fuel injector
C.	Diesel particulate filter (DPF)
D.	Radiator
Q292	Thermal efficiency of an engine is defined as:
A.	IP / BP
B.	Work output / Heat input
C.	BP × BSFC
D.	ISFC / Compression ratio
Q293	What is the effect of a rich air-fuel mixture on exhaust emissions?
A.	Increased NOx, decreased CO
B.	Decreased CO and HC
C.	Increased CO and HC
D.	No change
Q294	What is the purpose of Bharat Stage (BS) emission norms?
A.	Regulate tire quality
B.	Control vehicle noise
C.	Limit permissible vehicle emissions

D.	Set road safety standards
Q295	Which pollutant contributes most to the formation of smog?
A.	CO ₂
B.	NOx and HC
C.	H ₂ O
D.	O ₂
Q296	Which pollutant is significantly higher in HMV diesel engines compared to petrol LMVs?
A.	Hydrocarbons
B.	Carbon monoxide
C.	Nitrogen oxides and particulate matter
D.	Oxygen
Q297	The Morse test is used to determine:
A.	Brake power of a two-stroke engine
B.	Compression ratio of a single-cylinder engine
C.	Indicated power of a multi-cylinder engine
D.	Efficiency of a carburetor
Q298	The fuel consumption per unit brake power per hour is called:
A.	BP
B.	IP
C.	BSFC
D.	Thermal Efficiency
Q299	What is the major technological addition in BS VI engines for diesel vehicles?
A.	Radiator fans
B.	Fuel injection timing
C.	Diesel Particulate Filter (DPF) and Selective Catalytic Reduction (SCR)
D.	Engine downsizing
Q300	What is the effect of a rich air-fuel mixture on exhaust emissions?
A.	Increased NOx, decreased CO
B.	Decreased CO and HC
C.	Increased CO and HC
D.	No change
Q301	What does an onboard diagnostics (OBD) system in BS VI vehicles monitor?
A.	Speed
B.	Tire pressure
C.	Emissions performance
D.	Fuel tank level
Q302	The primary purpose of I.C. engine testing is to:
A.	Check air filter performance
B.	Determine the color of exhaust gases
C.	Measure engine performance and efficiency
D.	Replace engine components
Q303	Which vehicle type typically emits more PM under similar fuel conditions?
A.	LMV running on petrol
B.	HMV running on diesel
C.	LMV using LPG
D.	Electric LMV

Q304	Bharat Stage (BS) emission norms are aligned with:
A.	American EPA standards
B.	European emission standards
C.	Chinese GB standards
D.	Japanese JIS standards
Q305	Which of the following pollutants is most commonly emitted by petrol engines during incomplete combustion?
A.	SOx
B.	NOx
C.	CO
D.	PM
Q306	Which term refers to fuel consumed per unit brake power per hour?
A.	ISFC
B.	BSFC
C.	IP
D.	BHR
Q307	Which parameter is directly measured using a dynamometer during engine testing?
A.	Indicated power (IP)
B.	Brake power (BP)
C.	Compression ratio
D.	Mean effective pressure
Q308	A 75 cc engine has following parameter as 75 cc
A.	Fuel tank capacity
B.	Clearance volume
C.	Swept volume
D.	Cylinder volume
Q309	Which term refers to fuel consumed per unit indicated power per hour?
A.	ISFC
B.	BSFC
C.	IP
D.	BP
Q310	Which exhaust gas contributes significantly to acid rain and smog?
A.	Hydrocarbons
B.	Carbon monoxide
C.	NOx
D.	CO ₂
Q311	If an engine's brake power is significantly lower than its indicated power, what could be a possible cause?
A.	High thermal efficiency
B.	Low fuel consumption
C.	High frictional losses
D.	Low compression ratio
Q312	What is the effect of a lean air-fuel mixture on exhaust emissions?
A.	Increased NOx, decreased CO₂
B.	Decreased CO and HC
C.	Increased CO and HC
D.	No change

Q313	While conducting a Morse test on a 4-cylinder petrol engine, you observe the following brake powers: All cylinders firing: 40 kW With each cylinder cut off (one at a time): 24, 25, 24, and 25 kW What is the indicated power of the engine?
A.	42 kW
B.	50 kW
C.	60 kW
D.	62 kW
Q314	If the indicated power of an engine is 50 kW and the brake power measured using a dynamometer is 45 kW, what could be inferred if after maintenance the brake power increases to 48 kW with the same indicated power?
A.	The fuel efficiency has decreased
B.	The mechanical losses have increased
C.	The mechanical efficiency has improved
D.	The indicated power has decreased
Q315	What is the purpose of Bharat Stage (BS) emission norms?
A.	Regulate tire quality
B.	Control vehicle noise
C.	Limit permissible vehicle emissions
D.	Set road safety standards
Q316	The brake thermal efficiency of an IC engine can be improved most effectively by:
A.	Reducing the engine speed
B.	Reducing friction losses
C.	Increasing air-fuel ratio
D.	Increasing exhaust back pressure
Q317	Bharat Stage VI (BS-VI) norms are equivalent to which international emission standard?
A.	Euro III
B.	Euro IV
C.	Euro V
D.	Euro VI
Q318	During a brake power test, the indicated power (from indicator diagram) is 40 kW and the brake power is 32 kW. What does this imply about the engine's mechanical efficiency?
A.	80%
B.	60%
C.	75%
D.	70%
Q319	The exhaust gas analyzer in emission testing is primarily used to measure:
A.	Inlet air temperature
B.	Brake mean effective pressure
C.	CO, HC, and NO_x levels
D.	Frictional power
Q320	When conducting a morse test on a multi-cylinder SI engine, the purpose is to determine:
A.	Fuel consumption of each cylinder

B.	Mechanical efficiency
C.	Indicated power of each cylinder
D.	Volumetric efficiency
Q321	If a diesel engine emits black smoke, it indicates:
A.	Excess air supply
B.	Incomplete combustion of fuel
C.	Overheating
D.	Engine knocking
Q322	Which pollutant is most strictly controlled under BS-VI norms compared to BS-IV?
A.	Carbon monoxide (CO)
B.	Hydrocarbons (HC)
C.	Nitrogen oxides (NOx)
D.	Sulphur dioxide (SO ₂)
Q323	Which gas is primarily responsible for smog formation from IC engine exhaust?
A.	CO ₂
B.	NOx
C.	O ₂
D.	H ₂
Q324	What does the term 'BSFC' stand for in engine testing?
A.	Brake Specific Fuel Consumption <input checked="" type="checkbox"/>
B.	Brake System Fuel Calibration
C.	Basic Standard Fuel Coefficient
D.	Brake Safety Fuel Control
Q325	During a test, a 4-cylinder petrol engine is running at constant speed. The indicated power (IP) is 45 kW and brake power (BP) is 38 kW. Which of the following parameters can be directly calculated from this data?
A.	Brake thermal efficiency
B.	Volumetric efficiency
C.	Frictional power
D.	Fuel Consumption Rate
Q326	If during a test, the measured air–fuel ratio is lower than expected, this means:
A.	The mixture is richer than normal
B.	The mixture is leaner than normal
C.	Fuel consumption is too low
D.	Exhaust gas temperature will decrease
Q327	If the mechanical efficiency of an engine increases while indicated power remains constant, the brake power will:
A.	Decrease
B.	Increase
C.	Remain the same
D.	Become zero
Q328	While performing a morse test on a multi-cylinder engine, the power drop for cylinder 3 is significantly less than others. This indicates that:
A.	Cylinder 3 is delivering less power than others
B.	Cylinder 3 is more efficient
C.	Cylinder 3 has the best compression
D.	The engine governor is malfunctioning

Q329	Which of the following statements is correct regarding BS norms?
A.	BS norms apply only to petrol vehicles.
B.	BS norms were implemented to reduce air pollution from vehicles.
C.	BS norms are optional for vehicle manufacturers.
D.	BS norms focus only on noise pollution.
Q330	Which of the following vehicles will have stricter emission limits under BS-VI?
A.	Two-wheelers only
B.	Diesel vehicles only
C.	Petrol vehicles only
D.	All vehicles
Q331	Which of the following measures would reduce NOx emissions in diesel engines?
A.	Increasing combustion temperature
B.	Retarding injection timing <input checked="" type="checkbox"/>
C.	Using richer air-fuel mixture
D.	Reducing exhaust gas recirculation
Q332	During a test, a 4-cylinder petrol engine is running at constant speed. The indicated power (IP) is 50 kW and brake power (BP) is 38 kW. Which of the following parameters can be directly calculated from this data?
A.	Mechanical efficiency
B.	Volumetric efficiency
C.	Brake thermal efficiency
D.	Fuel Consumption Rate
Q333	Why is excessive NOx formation common in diesel engines?
A.	Due to low combustion temperature
B.	Due to high combustion temperature
C.	Due to incomplete combustion
D.	Due to low air-fuel ratio
Q334	A fuel sample has a Sulphur content of 50 ppm. To meet BS-VI standards, what action should be taken?
A.	Reduce Sulphur to 10 ppm
B.	Increase Sulphur to 100 ppm
C.	Keep Sulphur constant
D.	Replace Sulphur with nitrogen compounds
Q335	When conducting a Morse Test on a multi-cylinder engine, the power of one cylinder is cut off at a time to:
A.	Measure brake thermal efficiency
B.	Determine mechanical efficiency
C.	Estimate indicated power of each cylinder
D.	Measure friction power directly
Q336	What does an onboard diagnostics (OBD) system in BS VI vehicles monitor?
A.	Speed
B.	Tire pressure
C.	Emissions performance
D.	Fuel tank level
Q337	The primary purpose of I.C. engine testing is to:
A.	Check air filter performance
B.	Determine the color of exhaust gases

C.	Measure engine performance and efficiency
D.	Replace engine components
Q338	Which vehicle type typically emits more PM under similar fuel conditions?
A.	LMV running on petrol
B.	HMV running on diesel
C.	LMV using LPG
D.	Electric LMV
Q339	What is the main difference between BS-IV and BS-VI norms?
A.	BS-VI allows higher Sulphur content in fuel.
B.	BS-VI reduces permissible limits of particulate matter (PM) and NOx.
C.	BS-IV applies only to diesel vehicles, BS-VI to petrol vehicles.
D.	BS-VI increases vehicle speed limits.
Q340	Which of the following pollutants is most commonly emitted by petrol engines during incomplete combustion?
A.	SO _x
B.	NOx
C.	CO
D.	PM
Q341	Which term refers to fuel consumed per unit brake power per hour?
A.	ISFC
B.	BSFC
C.	IP
D.	BP
Q342	Which parameter is directly measured using a dynamometer during engine testing?
A.	Indicated power (IP)
B.	Brake power (BP)
C.	Compression ratio
D.	Mean effective pressure
Q343	Which pollutant is significantly higher in HMV diesel engines compared to petrol LMVs?
A.	Hydrocarbons
B.	Carbon monoxide
C.	Nitrogen oxides and particulate matter
D.	Oxygen
Q344	Which of the following parameters is calculated using a dynamometer?
A.	Indicated Power (IP)
B.	Brake Power (BP)
C.	Mean Effective Pressure
D.	Compression Ratio
Q345	Which of the following pollutants are common to both petrol and diesel engines?
A.	Only CO and CO ₂
B.	Only HC
C.	CO, HC, NOx, and PM
D.	Only NOx and SO ₂
Q346	Which pollutant has stricter control in BS VI norms compared to BS V?
A.	Oxygen
B.	Carbon dioxide

C.	Particulate matter (PM) and NOx
D.	Water vapour
Q347	Particulate matter (PM) emissions are more prominent in:
A.	Petrol engines
B.	Electric vehicles
C.	Diesel engines
D.	CNG vehicles
Q348	An engine with a higher compression ratio generally offers:
A.	Lower power
B.	Better mechanical efficiency
C.	Improved thermal efficiency
D.	Less vibration
Q349	Why is engine testing important in real-world applications?
A.	To only measure fuel consumption
B.	To calibrate spark plugs
C.	To evaluate engine performance, efficiency, and emissions
D.	To check coolant colour
Q350	The compression ratio of a typical SI engine is usually in the range of:
A.	5:1 to 8:1
B.	8:1 to 12:1
C.	12:1 to 16:1
D.	16:1 to 20:1