1. The air standard efficiency of an I.C. engine is given by (where r = Compression ratio, and γ = Ratio of specific heats)
   (A) $1 - r^{\gamma - 1}$
   (B) $1 + r^{\gamma - 1}$
   (C) $1 - (1/r^{\gamma - 1})$
   (D) $1 \times (1/r^{\gamma - 1})$
2. Number of working strokes per min. for a four stroke cycle engine are _____ the speed of the engine in r.p.m.
   (A) Equal to
   (B) One-half
   (C) Twice
   (D) Four-times
3. 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
4. Which of the following medium is compressed in a Diesel engine cylinder?
   (A) Air alone
   (B) Air and fuel
   (C) Air and lub oil
   (D) Fuel alone

5. **A stoichiometric air-fuel ratio is**
   (A) Chemically correct mixture
   (B) Lean mixture
   (C) Rich mixture for idling
   (D) Rich mixture for over loads

6. **Morse test can be conducted for**
   (A) Petrol engines
   (B) Diesel engines
   (C) Multi cylinder engines
   (D) Single Cylinder Engines

7. **It the temperature of intake air in IC engines is lowered, then its efficiency will**
   (A) Increase
   (B) Decrease
   (C) Remain same
   (D) Increase up to certain limit and then decrease

8. **In a typical medium speed 4-stroke cycle diesel engine the inlet valve**

   (A) opens at 20° before top dead centre and closes at 35° after the bottom dead centre
   (B) opens at top dead centre and closes at bottom dead centre
   (C) opens at 10° after top dead centre and closes 20° before the bottom dead centre
   (D) may open or close anywhere
9. **Combustion in compression ignition engines is**

(A) homogeneous
(B) heterogeneous
(C) laminar
(D) turbulent

10. The precess of breaking up fuel into fine droplets by spraying is called

(A)vaporisation
(B) carburetion
(C) ionisation
(D) atomisation.

11. Supercharging is the process of

(A) supplying the intake of an engine with air at a density greater than the density of the surrounding atmosphere

(B) providing forced cooling air

(C) injecting excess fuel for raising more load

(D) supplying compressed air to remove combustion products fully

12. The most important characteristic of lubricants in automobiles is the

(A) resistance against corrosion
(B) chemical stability
(C) physical stability
(D) viscosity

13. Fins are provided over engine cylinder scooters for

(A) higher strength of cylinder
(B) better cooling
(C) good appearance
(D) higher efficiency

14. Hydrocarbons are decomposed into smaller hydrocarbons by

a) reforming
b) refining
c) cracking
d) polymerization

15. The major pollutants emitted from the exhaust due to incomplete combustion are

a) carbon monoxide
b) hydrocarbons
c) oxides of nitrogen
d) all of the mentioned

16. _____ is the difference between indicated and brake power of an engine.

a) Air flow
b) Emissions

c) Friction power
d) None of the mentioned

17. If the speed of the engine is increased, the indicated power will
a) increase
b) decrease
c) remain same
d) none of the mentioned

18. _____ is also known as fuel rate extrapolation method.
a) Morse test
b) Motoring test
c) Willan's line method
d) Retardation test

19. Time loss factor in Actual Cycle is due to
a) progressive combustion
b) heat loss through cylinder walls
c) gas leakage
d) friction

20. Fuel is injected into the cylinder at the end of _____ stroke.
a) suction
b) compression
c) expansion
d) exhaust

2 Marks Questions

21. The thermal efficiency of a standard Otto cycle for a compression ratio of 5.5 will be

A.25%
B.50%
C.70%
D.100%

22. The brake power (B.P.) of the engine is given by (where *W* = Brake load or dead load in newtons, *l* = Length of arm in meters, *N* = Speed of engine in r.p.m., *S* = Spring balance reading in newtons, *D* = Dia. of brake drum in meters, and *d* = Dia. of rope in meters)
(A) $B.P = (Wl \times 2\pi N)/60$ watts

(A) B.P = (Wl × 2πN)/60 watts
(B) B.P = [(W - S) πDN]/60 watts
(C) B.P = [(W - S) π (D + d) N]/60 watts
(D) All of these

23. The pressure and temperature at the end of compression stroke in a petrol engine are of the order of
(A) 4-6 kg/cm² and 200-250°C
(B) 6-12 kg/cm² and 250-350°C
(C) 12-20 kg/cm² and 350-450°C
(D) 20-30 kg/cm² and 450-500°

24. The correct sequence of the decreasing order of brake thermal efficiency of the three given basic types of engines is
(A) Four stroke C.I. engine, four stroke S.I. engine, two stroke S.I. engine
(B) Four stroke S.I. engine, four stroke C.I. engine, two stroke S.I. engine
(C) Four stroke C.I. engine, two stroke S.I. engine, four stroke S.I. engine
(D) Two stroke S.I. engine, four stroke S.I. engine, four stroke C.I. engine

25. Which of the following statement is correct regarding petrol engines?

(A) A fine fuel spray mixed with air is ignited by the heat of compression which is at a high pressure

(B) The fuel supplied to the engine cylinder is mixed with necessary amount of air and the mixture in ignited with the help of a spark plug

(C) The fuel is first evaporated after passing through a carburettor and is mixed with air before ignition

(D) All of the above

26. As compared to air standard cycle, in actual working, the effect of variation in specific heats is to

(A) Increase maximum pressure and maximum temperature

(B) Reduce maximum pressure and maximum temperature

(C) Increase maximum pressure and decrease maximum temperature

(D) Decrease maximum pressure and increase maximum temperature

27. A gas engine has a swept volume of 300 cm3 and clearance volume of 25 cm3. Its volumetric efficiency is 0.88 and mechanical efficiency is 0.90. The volume of the mixture taken in per stroke is

(A) 248 cm3

(B) 252 cm3

(C) 264 cm3

(D) 286 cm3

28. Which of the following statements is correct?

(A) All the irreversible engines have same efficiency

(B) All the reversible engines have same efficiency

(C) Both Rankine and Carnot cycles have same efficiency between same temperature limits

(D) All reversible engines working between same temperature limits have same efficiency

29. The compensating jet in a carburettor supplies almost constant amount of petrol at all speeds because the

(A) Jet area is automatically varied depending on the suction

(B) The flow from the main jet is diverted to the compensating jet with increase in speed

(C) The diameter of the jet is constant and the discharge coefficient is invariant

(D) Flow is produced due to the static head in the float chamber

30. Pick up the wrong statement

(A) 2-stroke engine can run in any direction

(B) In 4-stroke engine, a power stroke is obtained in 4-strokes

(C) Thermal efficiency of 4-stroke engine is more due to positive scavenging

(D) Petrol engines occupy more space than diesel engines for same power output

31. The fuel in diesel engine is normally injected at pressure of

(A) 5-10 kg/cm²

(B) 20-25 kg/cm²

(C) 60-80 kg/cm²

(D) 90-130 kg/cm²

32. In a four stroke cycle petrol engine, the charge is ignited at

(A) 30° before top dead center

(B) 30° after top dead center

(C) 30° before bottom dead center

(D) 30° after bottom dead centre

33. Which of the following statement is wrong?

(A) In compression ignition engines, detonation occurs near the beginning of combustion.

(B) Since the fuel, in compression ignition engines, is injected at the end of compression stroke, therefore, there will be no pre-ignition.

(C) To eliminate knock in compression ignition engines, we want to achieve auto-ignition not early and desire a long delay period.

(D) In compression ignition engines, because of heterogeneous mixture, the rate of pressure rise is comparatively lower.

34. In petrol engines, the delay period is of the order of

(A) 0.001 second

(B) 0.002 second

(C) 0.003 second

(D) 0.004 second

35. A spark plug gap is kept from

(A) 0.3 to 0.7 mm

(B) 0.2 to 0.8 mm

(C) 0.4 to 0.9 mm

(D) 0.6 to 1.0 mm