

AUTOMOTIVE ENGINES

Time Allowed: 3 Hours

Full Marks: 70

Answer to Question No.1 is compulsory and to be answered first.

This answer is to be made in separate loose script(s) provided for the purpose. Maximum time allowed is 45 minutes, after which the loose answer scripts will be collected and fresh answer scripts for answering the remaining part of the question will be provided.

On early submission of answer scripts of Question No.1, a student will get the remaining script earlier.

Answer any five questions from the rest.

1. A. Choose the correct answer (any ten): 1x10
- a) The firing order is the (i) order in which the cylinders are numbered (ii) sequence in which the cylinders deliver their power stroke (iii) sequence in which the connecting rods are attached with the cylinder (iv) direction in which the crank shaft rotates.
 - b) An engine with the camshaft in the block operates the valves through (i) valve lifters (ii) push rods (iii) rocker arms (iv) all of the above.
 - c) The cylinder head forms the upper end of the combustion chamber, the lower end is formed by the (i) piston and rings (ii) connecting rods & crank shaft (iii) cam & cam shaft (iv) valves.
 - d) A stroke of piston is when the piston moves (i) T.D.C to B.D.C (ii) B.D.C to T.D.C (iii) both (iv) none of the above. <https://www.wbscteonline.com>
 - e) The purpose of the cooling system in an I.C engine is to (i) prevent the coolant from boiling (ii) prevent the coolant from freezing (iii) keep the engine as cool as possible (iv) keep the engine running at its most efficient temperature.
 - f) Technician A says the thermostat controls coolant temperature. Technician B says install a thermostat with a lower temperature rating to control engine over-heating who is right? (i) A only (ii) B only (iii) both A and B (iv) neither A nor B.
 - g) A good engine lubricating oil is one which is having (i) high viscosity index (ii) low viscosity index (iii) medium viscosity index (iv) none of the above.
 - h) Causes of excessive oil consumption can include (i) heavy oil and tight bearings (ii) high engine speed and worn engine parts (iii) short trips and weather (iv) frequent oil changes (v) frequent oil changes and weak valve springs.
 - i) The stoichiometric ratio for air & fuel is (i) 14.7:1 (ii) 14:1 (iii) 15:1 (iv) none of the above.
 - j) The purpose of glow plug is to (i) control engine idle speed (ii) provide sparks to ignite the compressed air-fuel mixture (iii) warm the fuel (iv) add heat to the precombustion chamber.
 - k) Efficiency ratio is the ratio of (i) volumetric efficiency & thermal efficiency (ii) thermal efficiency & air standard efficiency (iii) air standard efficiency & thermal efficiency (iv) mechanical efficiency & thermal efficiency.

5. a) State giving examples of second law of thermodynamics.
b) Deduce a formula for COP of reversed Carnot cycle. 10
6. In a 4-stroke diesel engine, the compression ratio is 14 and cut-off takes place at 6% of stroke. Find air standard efficiency. 10

Group-B

7. a) What is the difference between fire tube and water tube type boiler?
b) Explain working principle of a water level indicator. What is its function? 10
8. Steam is supplied from a boiler at a pressure of 20 bar and 99 percent dry, to a steam engine. If the steam loses 20 KJ per kg as it flows through the pipeline, pressure remains constant. Find the dryness fraction and temperature of steam at the engine end.
9. A single acting single stage compressor compresses steam from 1 bar to 5.5 bar pressure.

<https://www.wbscteonline.com>

Whatsapp @ 9300930012

Send your old paper & get 10/-

अपने पुराने पेपर्स भेजे और 10 रुपये पायें,

Paytm or Google Pay से

<https://www.wbscteonline.com>