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ME 1818 OE 24

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2022

B.Tech. 8th Semester End-Term Examination

ME

AUTOMOTIVE MECHANICS

(New Regulation (w.e.f. 2017-18) &
New Syllabus (w.e.f. 2018-19))

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks
for the questions.

Answer question No. 1 and any *four* from the rest.

1. Fill in the blanks with appropriate words or phrases: (10 × 1 = 10)
- Main bearings are those used for supporting the _____
 - The motion of the cam is transferred to the valves through _____
 - If the engine coolant leaks into the engine oil, then engine oil appears _____
 - A four-cylinder engine has a capacity of 1.2L. The swept volume of one cylinder is _____
 - The brake pedal during ABS operation transmits frequent _____ to the driver's foot.
 - In a four cylinder in-line engine, the number of firing strokes in one revolution of the crank is _____
 - The speed of camshaft is _____ the speed of the crankshaft.
 - Simplest technique to stop a running diesel engine is to _____
 - The function of contact breaker is to break the _____ to induce high voltage in the high tension (HT) lead.
 - _____ is used to lift lubricating oil to the overhead camshaft in case of OHC engine.

[Turn over

2. (a) What are the basic lists of components used for developing the required power in a petrol engine? Give a schematic for their relative positions.
(b) What additional components may be used for increasing the power output from the engine significantly and how? (8+7=15)
3. (a) Develop a system for the measurement of brake power (BP) and brake specific power consumption (BSFC) in a single cylinder diesel engine (specified as 4kW at 1500RPM).
(b) What sensor technology is used for the measurement of wheel speed in a car? Why this speed information is necessary in modern cars? (12+3=15)
4. (a) Give two possible causes for a diesel engine failing to develop the rated power output. Suggest how the rectification can be done in each case.
(b) How does an oxygen sensor function to maintain proper A/F ratio? (5+10=15)
5. (a) How would you assess the condition of CVT system in two-wheeler during a check up after few years of running? What suggestions can you make for repair by replacement?
(b) How does the CDI system work for precise delivery of spark at the right time? (5+10=15)
6. (a) What technique is employed in cars for efficient braking to reduce braking distance and also to avoid skidding? How does this technique become effective?
(b) What is EGR and how it is used in automobiles? (5+10=15)
7. (a) State two major drawbacks of mechanical contact breaker (CB) system used for spark production in S.I engines. Suggest a better option for the replacement of the CB system and the working for the same.
(b) How the car air-conditioner (AC) compressor is kept disengaged when the AC is not in use to avoid excessive consumption of fuel? (5+10=15)

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