

# JK LAKSHMIPAT UNIVERSITY, JAIPUR

## INSTITUTE OF ENGINEERING AND TECHNOLOGY

Backlog End Term Examination, May 2019  
B. Tech. in All Branches, Semester II

Roll No.....

CM 101: Elements of Engineering

Time: 3 hours

Max. Marks: 100

### Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A Objective type multiple choice questions (10 questions @ 1 mark) 10

- i. In a four stroke engine, the number of revolutions of the crankshaft for completion of working cycle is (a) one (b) two (c) three (d) four
- ii. The circle passing through the top of the teeth of gear is known as (a) inner circle (b) base circle (c) addendum circle (d) dedendum circle
- iii. In an isolated system, transfer of ----- takes place (a) mass (b) energy (c) both mass and energy (d) neither mass nor energy
- iv. The ratio of two specific heats of air is equal to (a) 0.17 (b) 0.24 (c) 0.1 (d) 1.4
- v. Which of the following is compressed in a Diesel engine cylinder? (a) Air alone (b) Air and fuel (c) Air and lubricating oil (d) Fuel alone
- vi. V belts are usually used for (a) long drives (b) short drives (c) long and short drives (d) none of these
- vii. In diesel engine, the compression ratio in comparison to petrol engine is (a) More (b) Less (c) Same (d) None of these
- viii. In Otto cycle and Diesel cycle, heat is rejected at (a) constant pressure (b) Constant volume (c) Constant temperature (d) Constant enthalpy
- ix. In Diesel engine, the air-fuel ratio in comparison to petrol engine is (a) More (b) Less (c) Same (d) Variable
- x. The air-fuel ratio of the Diesel engine is controlled by (a) Fuel pump (b) Injector (c) Governor (d) Carburetor

Q.2 Short answer type questions (4 questions @ 2.5 marks) 10

- i. Define enthalpy for a thermodynamic system.
- ii. Define First law of thermodynamics with suitable example.
- iii. Differentiate between two stroke and four stroke petrol engine.
- iv. Define the swept volume and clearance volume for I.C. engine.

Q.3A Differentiate between internal combustion engine and external combustion engine. 5

OR

Q.3A Discuss the different types of gears used in power transmission. 5

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|------|----------------------------------------------------------------------------------------------------------------------------------|----|
| Q.3B | Discuss dry manufacturing process of cement.                                                                                     | 5  |
| Q.4  | Discuss the structural components of timber with neat and clean diagram.                                                         | 10 |
| OR   |                                                                                                                                  |    |
| Q.4  | Give the name of important constituents of cement and state the role of each in achieving its properties.                        | 10 |
| Q.5  | Describe the working of four stroke Diesel engine with neat sketch.                                                              | 10 |
| Q.6  | Discuss the rope brake type dynamometer used in I.C. engines.                                                                    | 10 |
| Q.7  | What are the merits and demerits of belt rope and chain drive?                                                                   | 10 |
| Q.8  | Define following terms with respect to gear through a sketch. (i) module (ii) pressure angle (iii) pitch point (iv) pitch circle | 10 |
| Q.9  | Explain the role of transportation in national development. Discuss the role of civil engineer in society.                       | 10 |
| Q.10 | What is Rigid pavements? Explain flexible pavements with neat and clean diagram.                                                 | 10 |

-----ALL THE BEST-----