

Prof. Suman Kumar (198) 9/5/2023

NATIONAL INSTITUTE OF TECHNOLOGY, HAMIRPUR (H.P.)
B.TECH. END SEMESTER EXAMINATION MAY 2023

Branch : Mechanical Engineering
Semester : VI
Course Name : Automobile Engineering
Course Code : ME - 324
Date & Session: (09.05.2023) E (02:30 PM-05:30PM)
Time : Three Hours
Max. Marks : 50

NOTE: Attempt all the questions which carry marks as indicated in the ().

- I (a)** Draw a neat block representation of the transmission system of a Front Engine Four Wheel Drive automobile marking clearly all the parts and explain in brief the function performed by each part. (4)
- (b)** Draw neatly an enlarged sketch of a Clutch Plate used in a Single plate dry clutch. Also name the friction lining materials used in the clutch plate with their characteristics. (4,2)
- II (a)** What is the need of differential in an automobile? Explain with the help of neat sketches the construction and working of differential. (2,2,2)
- (b)** Why an independent suspension system is preferred over solid axle suspension? Mention the various types of independent suspension systems used in automobiles and explain **any one** in brief. (1,3)
- III (a)** Explain with the help of neat sketches the following and their effect on the automobile:
Camber, Castor, Toe-in, Toe-out, over steer and under steer. (6)
- (b)** Draw neat sketches of a propeller shaft and a front axle used in an automobile. (2,2)
- IV (a)** Explain clearly the necessity of cooling of engines. Write a note on coolant and antifreeze solutions. (1,4)
- (b)** Draw a neat diagram of a fuel supply system for a C.I. Engine and explain. (3,2)
- V** Write short notes on any **THREE** of the following.
- (a) Modern developments in automobiles.
 - (b) Oil additives
 - (c) Transfer box
 - (d) Centrifugal clutch (3x3x4)

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