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B. Tech 3rd Semester Examination
Elements of Automobile Engineering (NS)

AU-211

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all. Select one question from each section A, B, C and D. Section E (Question 9) is compulsory. Use of steam non-programmable calculator is permitted.

SECTION - A

1. (a) Draw the layout of an automobile and indicate the various components. (8)
- (b) Name the components of vehicle frame and type of load taken by these. (7)
2. (a) What are the advantages of single-plate clutch over multi-plate clutches? (5)
- (b) Explain the construction and working principle of multi-plate clutch with neat diagram. (10)

SECTION - B

3. (a) Describe the constant mesh gear box and how does it differ from sliding mesh gear box with neat diagrams. (10)
- (b) What is the purpose of front axle? Describe the live and dead front axle. (5)
4. Explain construction and working of a differential with the help of a neat diagram. (15)

SECTION - C

5. (a) What is the need of independent suspension system? How is it achieved in front and rear wheel suspension? (8)

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- (b) Explain air suspension system with the help of a neat diagram. (7)
6. (a) Explain different angles in a steering system with diagrams. (8)
- (b) Explain construction and working of a power steering with a diagram? (7)

SECTION - D

7. (a) With the help of a neat diagram, explain construction and working of a hydraulic brake system. (10)
- (b) Explain the working of vacuum brake by means of a diagram. (5)
8. (a) What are the different types of wheels? Explain with the help of diagrams. (8)
- (b) What are cross ply and radial ply tyres? Explain with diagrams. (7)

SECTION - E

9. (i) Give any four advantages of four wheel drive over two wheel drive vehicle.
- (ii) Give any four requirements of a good vehicle frame.
- (iii) What are the basic requirements of an automobile clutch?
- (iv) Name the major parts of a single plate clutch.
- (v) What are the advantages of synchronizing mechanism over sliding mesh?
- (vi) What is the necessity of a propeller shaft?
- (vii) Differentiate between independent suspension system and rigid axle suspension system.
- (viii) What are the types of steering gear box? State the function of gear box.
- (ix) What is the function of brake? State its type.
- (x) What are the components of lead acid battery?

(4x10=40)