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16204(D) - 0 DEC 2016

**B. Tech 7th Semester Examination**

**Automotive Transmissions (NS)**

**AU-413**

**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 one question from each section A, B, C and D. Section E is Compulsory.

**SECTION - A**

1. (a) What is the need for transmission system? Explain in detail. (10)
- (b) What is the centrifugal, automatic, dry and wet type of clutch? Explain. (10)
2. (a) What is two or four wheel drive system? What do you understand by multi axle drives? (10)
- (b) What are the friction lining materials? Explain their peculiarity and importance. (10)

**SECTION - B**

3. Derive equation of gear ratio for compound gear train. Also explain the gear shifting mechanisms. (20)
4. Explain the gear shifting mechanism in detail with line diagram. (20)

**SECTION - C**

5. Explain the construction and working principle of polyphase torque converters. Also discuss the performance characteristics of polyphase torque converters. (20)

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6. What are the principles of hydrostatic drive system, advantage and limitations? Explain the various types of hydrostatic systems in detail. (20)

**SECTION - D**

7. Explain in detail about the drive system in an electric and hybrid vehicle. (20)
8. Explain the Chevrolet "Turboglide" transmission, Powerglide transmission Toyota "ECT-i" automatic transmission with hydraulic actuation system. (20)

**SECTION - E**

9. Write short note for the following question.
  - (a) Working of multiple clutch.
  - (b) Over running clutch.
  - (c) Transaxles.
  - (d) Converter coupling.
  - (e) Multistage torque converters.
  - (f) Method of reduction of drag torque.
  - (g) Ward Leonard control system.
  - (h) Intelligent electronic controls system.
  - (i) Power and economy modes in gearbox.
  - (j) Fluid coupling. (2×10=20)