	Utech
<i>Name</i> :	\$
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# CS/B.TECH/AUE (O)/SEM-5/AUE-504/2012-13

# 2012

## POWER UNITS AND TRANSMISSION

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

# GROUP - A ( Multiple Choice Type Questions )

- 1. Choose the correct alternatives for the following:  $10 \times 1 = 10$ 
  - i) Transmission is required to
    - a) change direction
- b) change speed
- c) change torque
- d) all of these.
- ii) As slip % increases, torque in a torque converter
  - a) increases
- b) decreases
- c) no change
- d) no relation.
- iii) The type of gear employed in synchromesh gear box is
  - a) Spur gear
- b) Hypoid gear
- c) Helical gear
- d) Spur and helical gear
- iv) Multiplate clutch is generally used in
  - a) four wheeler vehicle
- b) two wheeler vehicle
- c) all of these
- d) none of these.

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For fluid coupling

all of these.

flywheel and runner runner and impeller

v)

vi)

a)

b)

c) d)

b)

c) d)

a)

- speed of input and output shaft become equal speed of input shaft is more than output shaft speed of input shaft is less than output shaft Stator in a torque convertor is located between impeller and clutch plate vii) Torque ratio available in torque converter is b) infinite d) zero.
- c) viii) Clutch plate is placed between

none of these.

finite

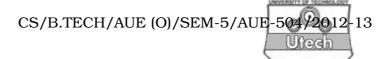
ten

- a) Pressure plate and Clutch cover
- Crankshaft and Flywheel b)
- Flywheel and Pressure plate c)
- Clutch cover and Release lever. d)
- ix) In four speed epicyclic gear train, the number of gear unit(s) is/are
  - a) two

b) one

c) three

- d) four.
- Multi-stage torque converter has x)
  - multiple runners a)
  - multiple impellers b)
  - c) multiple torque converter
  - none of these. d)



#### **GROUP - B**

## (Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$ 

- What are the differences between sliding mesh gearbox and constant mesh gearbox? Why sliding mesh gearbox has become obsolete?
  3+2
- 3. What are the differences between Polyphase torque converter and Multi-stage torque converter? Explain the working of Polyphase torque converter.
- 4. A automotive car engine develops 6 bkW at 2100 rpm. Find the suitable size of clutch having friction lining riveted on both sides, to transmit the power, under the following condition:
  - a) Intensity of pressure on the surface not exceeds  $6.87 \times 10^4$  Pa.
  - b) Slip torque and losses due to wear etc. is 30 % of engine torque.
  - c) Co-efficient of friction of contact surface is 0.3.
  - d) Inside diameter of friction plate is 0.5 times of outside diameter.
- 5. Explain the construction and operation of fluid couplint.

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## **GROUP - C**

## (Long Answer Type Questions)

Answer any three of the following.

 $3 \times 15 = 45$ 

- 6. What is the principle of synchromesh gear box? Explain construction and operation of 3-forward and one reverse speed Synchromesh gear box with a neat sketch. 5 + 10
- 7. Describe Janny hydrostatic transmission system with a neat sketch.
- 8. What is gear ratio? How are different gear ratios obtained in epicyclic gearbox? What are the relative merits of automatic transmission when compared to conventional transmission?

3 + 7 + 5

- 9. Write short notes on any three of the following:
  - a) Modified Ward Leonard control system of electric drive
  - b) Wilson planetary gear box
  - c) Torque converter
  - d) Constant mesh gearbox
  - e) Multiplate clutch