



Name :
Roll No. :
Invigilator's Signature :

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.



- v) For fluid coupling
 - a) speed of input and output shaft become equal
 - b) speed of input shaft is more than output shaft
 - c) speed of input shaft is less than output shaft
 - d) all of these.
- vi) Stator in a torque convertor is located between
 - a) flywheel and runner
 - b) runner and impeller
 - c) impeller and clutch plate
 - d) none of these.
- vii) Torque ratio available in torque converter is
 - a) finite
 - b) infinite
 - c) ten
 - d) zero.
- viii) Clutch plate is placed between
 - a) Pressure plate and Clutch cover
 - b) Crankshaft and Flywheel
 - c) Flywheel and Pressure plate
 - d) Clutch cover and Release lever.
- ix) In four speed epicyclic gear train, the number of gear unit(s) is/are
 - a) two
 - b) one
 - c) three
 - d) four.
- x) Multi-stage torque converter has
 - a) multiple runners
 - b) multiple impellers
 - c) multiple torque converter
 - d) none of these.



GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.

3 × 5 = 15

2. 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.
2 + 3
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 6.87×10^4 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 couplant.



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

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