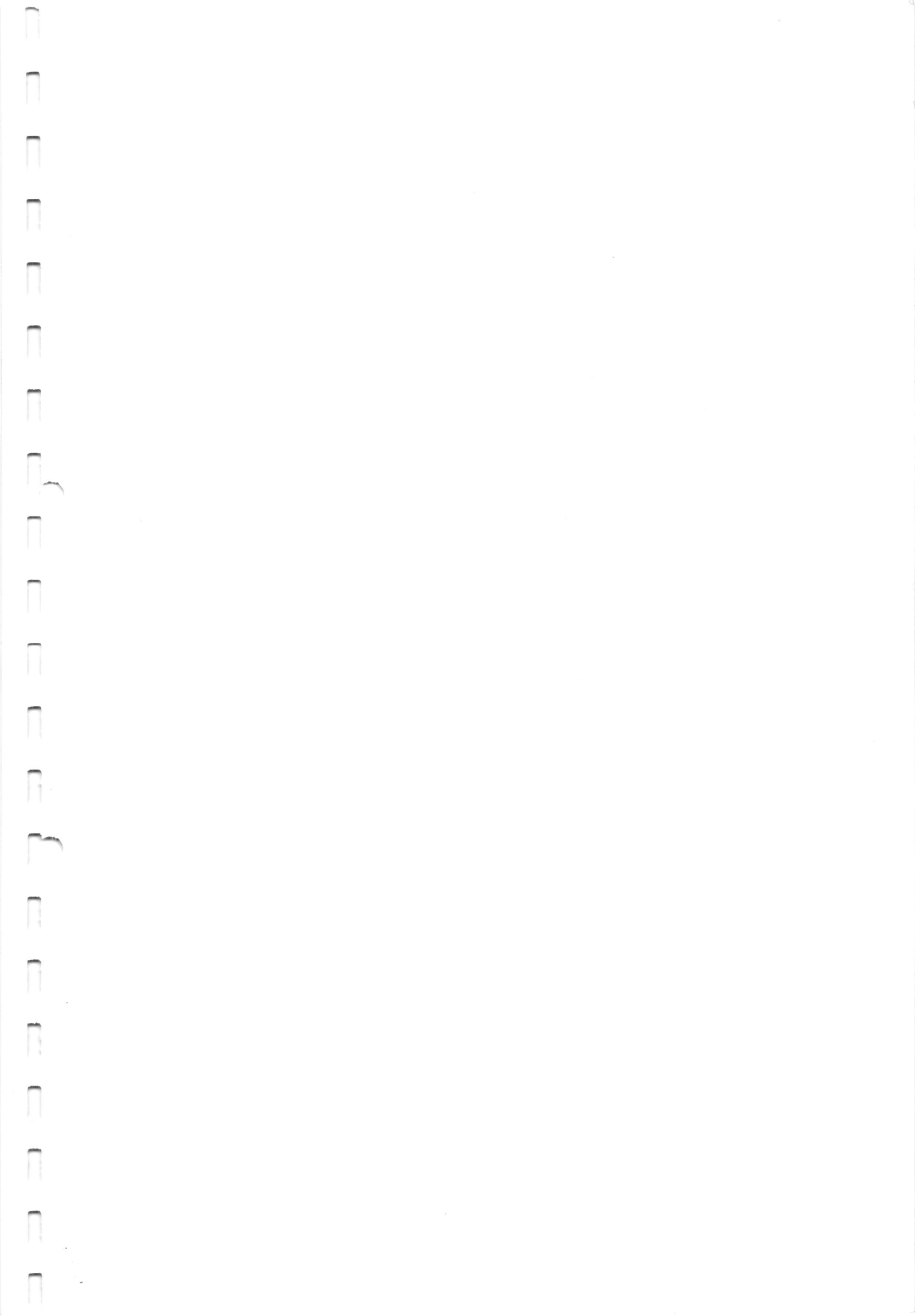


9. The main function of the tread pattern on tyre is that
- in wet conditions, the tread grooves expel water that is drawn between the tyre and road surface
 - the tread grooves pass air between the tyre and road surface, thereby preventing tyre from overheating
 - the crests between the tread grooves absorb road noise
 - the tread pattern protects the tyre's inner carcass from small stones and pieces of glass
10. The information provided by the oxygen (O_2) sensor to the feedback control system is about the
- air temperature
 - air-fuel ratio
 - exhaust gas volume
 - air flow speed
11. The difference between DOT 3 and DOT 4 brake fluids is
- DOT 4 fluid has a lower boiling point than DOT 3 fluid
 - DOT 4 fluid has a higher boiling point than DOT 3 fluid
 - DOT 3 and DOT 4 fluids have the same boiling point, but DOT 4 fluid has a longer service life
 - DOT 4 fluid is more resistant to freezing than DOT 3 fluid
12. The compression ratio in petrol engine is kept less than in Diesel engine because
- higher or equivalent compression ratio in petrol engines is not possible due to pre-ignition
 - it makes petrol engines lighter
 - it is just customary to have less compression ratio in petrol engines
 - less compression ratio gives better performance
13. A worm gear is used as the pinion for the rack and pinion type of steering gearbox, because it
- allows the steering wheel to be turned by a greater amount when steering
 - improves steering comfort when steering wheel is turned to effect small changes in the direction of forward motion
 - makes the steering more responsive
 - reduces the amount of kick-back for large steering angles
14. The function of a first compression ring (top ring) is that it
- maintains a seal and prevents escape of burned gases and loss of pressure in the combustion chamber
 - maintains a seal and prevents the fuel leakage
 - increases the combustion temperature
 - creates swirl
15. Engine misfiring is likely to result from
- spark plug gap too small
 - spark plug gap too wide
 - vapour lock in the fuel only
 - incorrect fuel air mixture

MAR 24 2017

16. If the spark plug deposit indicates black coating of soot, it indicates that the engine has been generally operating on
 too lean mixture stoichiometric mixture
 most economical mixture too rich mixture
17. The aspect ratio (expressed in percentage) of the tyre is defined as the ratio of
 wheel diameter to section height section height to section width
 section width to section height wheel diameter to section width
18. The correct flow of power through the drive train is
 engine - clutch - countershaft - main shaft - final driven gear - drive shafts - wheels
 engine - clutch - main shaft - countershaft - final driven gear - drive shafts - wheels
 engine - drive shafts - clutch - main shaft - countershaft - final driven gear - wheels
 engine - main shaft - countershaft - clutch - final driven gear - drive shafts - wheels
19. When the battery is half (50%) charged, the specific gravity of acid in a battery is usually
 1.19 0.74 1.00 1.12
20. In order to implement gear changes in the gear unit of an automatic transmission, a _____ is used.
 synchronizer magnetic clutch
 planetary gear hydraulic multi plate clutch



KATHMANDU UNIVERSITY
End Semester Examination
March/April, 2017

MAR 24 2017

Level : B. E.
Year : IV
Time : 2 hrs. 30 mins.

Course : MEPP 412
Semester : I
F. M. : 55

SECTION "B"

Attempt *ALL* the questions.

1. Discuss the difference between ideal and actual valve timing diagram of 4 stroke and 2-stroke gasoline engine. [5]
2. Describe with help of neat and labeled sketch the components of gasoline fuel injection system and diesel injection system. [5]
3. Discuss in detail, with the help of neat and labeled diagrams, the various ignition advance mechanism used in the ignition system in automotive practice. [5]
4. Describe, with simple sketch, the function of various components of modern automobile starting system. [5]
5. List all the precautions that will prevent a coolant from reaching its boiling point and from reaching its freezing point. [5]
6. Trace the path of oil from the oil pump back to sump in partial – pressure lubrication system and full pressure lubrication system in modern automobile engine. [5]
7. List the units in the operating mechanism of the single plate clutch and multi plate clutch assembly. [5]
8. What are the most common types of steering gear? What are the essential differences between them? [5]
9. How are planetary gear sets shifted to direct drive, to neutral, to reduction and to over drive in automatic transmission. Illustrate your answer with diagram. [7]
10. With the aid of a diagram explain the function of the main components of the hydraulic brake system with power assistance. [8]

