Marks Scored:

KATHMANDU UNIVERSITY
End Semester Examination[C]
November, 2017

Level : B. E.
Year : IV
Course : MEPP 412
Semester : I
Exam Roll No. :
Time: 30 mins.
F. M. : 20
Registration No. :
Date NOV 17 2017

SECTION "A"
[20 Q. × 1=20 marks]

Attempt *ALL* the questions (Select and mark [X] for most appropriate answer)

1. Which of the following is not an element of alternator?
[ ] rectifier [ ] cutout [ ] slip ring [ ] voltage regulator

2. The stationary magnetic field in the starting motor is produced by
[ ] brushes and commutator [ ] relay or solenoid
[ ] field windings or permanent magnets [ ] armature windings

3. What are the respective colors of the positive and negative plates in lead acid battery?
[ ] grey and black [ ] brown and black [ ] white and grey [ ] brown and grey

4. The term ply rating as applied to an automobile tyre refers to the
[ ] tyre's rated strength
[ ] tyre's aspect ratio
[ ] actual number of plies in the tyre
[ ] angel at which the ply cords are woven to the tyre axis

5. Due to prolonged application of brakes, the effectiveness decrease .This is called
[ ] brake binding [ ] brake fading
[ ] brake compensation [ ] break bleeding

6. A torsion bar used in the suspension system of an automobile is also known as
[ ] strut rod [ ] radius rod [ ] panhard rod [ ] stabilizer rod

7. On car having rack and pinion gear, rack is attached to
[ ] tie rod [ ] track rod [ ] relay rod [ ] drag rod

8. Identify the smallest gear inside the differential casing
[ ] sun gear [ ] pinion gear [ ] side gear [ ] ring gear

9. In automobiles, Hook's joint is used between
[ ] Clutch and gear box [ ] Gear box and differential
[ ] Differential and wheel [ ] Flywheel and clutch

10. How many gears are there in a three forward speed and reverse transmission consisting of three shafts?
[ ] three [ ] five [ ] eight [ ] ten

11. The clutch facing can withstand a pressure intensity of about
[ ] 1 kPa [ ] 5 kPa [ ] 10 kPa [ ] 100 kPa

12. Which one of the following automobile exhaust gas pollutants is a major cause of photochemical smog
[ ] CO [ ] HC [ ] NO_x [ ] SO_x

13. In spark ignition engines, knocking can be reduced by
[ ] increasing the compression ratio
[ ] increasing the temperature of cooling water
[ ] increasing the inlet air temperature
[ ] retarding the spark advance

14. Identify the set of sensors which regulates the petrol supply in D-MPFI.
[ ] Engine speed and intake manifold vacuum
[ ] Air – flow meter and oxygen in exhaust gases
[ ] Engine speed and air flow meter
[ ] Intake manifold vacuum and air flow meter

15. Scavenging air means
[ ] air used under compression
[ ] air use for forcing the burnt gases out of the cylinder during the exhaust period
[ ] forced air for cooling the engine cylinder
[ ] burnt air containing combustion products

16. A two stroke engine has a speed of 750 rpm. A four stroke engine having a identical cylinder size runs at 1500 rpm. The theoretical output of the two stroke engine will
[ ] be twice that of the four stroke engine
[ ] be half that of the four stroke engine
[ ] be the same as that of the four stroke engine
[ ] depend upon whether it is SI or CI engine

17. Distance between the centers of front wheel is called
[ ] wheel base [ ] axial [ ] turning circle [ ] track

18. The following part is not lubricated by Pressure feed system
[ ] Timing gears
[ ] Valve rods and Push rods
[ ] Rocker arms
[ ] Main bearings of crankshaft

19. Tandem master cylinder consists of
[ ] one cylinder and one reservoir
[ ] two cylinders and one reservoir
[ ] one cylinder and two reservoirs
[ ] two cylinders and two reservoirs

20. Following is the correct order in which fuel is injected
[ ] Fuel tank – Fuel filter – Fuel feed pump – Fuel injection pump – injector
[ ] Fuel tank – Fuel feed pump – Fuel filter – Fuel injection pump – injector
[ ] Fuel tank – Fuel filter – Fuel injection pump – Fuel feed pump – injector
[ ] Fuel tank – Fuel injection pump – Fuel filter – Fuel feed pump – injector

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SECTION "B"

Attempt *ALL* the questions.

1. Give a neat sketch of the theoretical and actual P-V diagram for two stroke and four stroke petrol/ diesel engine. Describe briefly the factor which account for deviation between these plots. [5]

2. Explain the different types of fuel injection system for a petrol engine and diesel engine, with neat diagram. [5]

3. Discuss the salient feature of various types of combustion chamber employed in CI and SI engine. [5]

4. Explain the function and operation of exhaust gas recirculation (EGR) and positive crank ventilation (PCV) system. [5]

5. Draw typical layout to explain the working principle of vacuum clutch. [5]

6. Describe with a neat sketch three- speed and reverse constant mesh gear box. [5]

7. What is a constant velocity universal joint? Sketch one such joint and explain its construction and operation. [5]

8. Describe, with neat sketch, the working of a typical power steering system. [5]

9. How internal combustion engine are classified? Explain with neat diagrams. [7]

10. Compare the hydraulic system of braking with mechanical system regards frictional losses compensation and maintenance. [8]