Marks scored:

KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2019

Level : B. E.
Year : IV
Course : MEPP 412
Semester : I

Exam Roll No. :
Time: 30 mins.
F. M. : 20

Registration No.:
Date FEB 25 2019.

SECTION "A"
[20 Q. × 1= 20 marks]

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

1. Which of the following provides passages for flow of cooling water?
[ ] Cylinder block [ ] Cylinder head [ ] Crank case [ ] Piston

2. _____ is attached to the bottom face of cylinder block.
[ ] Crank case [ ] Oil pan [ ] Piston [ ] Cylinder liners

3. The size of the engine intake valve is
[ ] same as that of exhaust valve
[ ] smaller than that of exhaust valve
[ ] larger than that of exhaust valve
[ ] does not depend upon the size of exhaust valve

4. On modern four stroke engines the inlet valve opens just
[ ] before TDC [ ] after TDC [ ] before BDC [ ] after BDC

5. The angle between two cylinders in a two cylinder V-type engine is usually
[ ] 15 degrees [ ] 45 degrees [ ] 60 degrees [ ] 90 degrees

6. In an engine having swirl combustion chamber:
[ ] More air fuel mixture enters [ ] Improved scavenging takes place
[ ] Improved combustion takes place [ ] Burned gas has no back pressure

7. PCV valve is located between:
[ ] Crank case and inlet manifold [ ] Crank case and carburetor
[ ] Air cleaner and crank case [ ] Air cleaner and carburetor

8. Transfer case is a type of ___ in four wheel drive vehicles.
[ ] Crank case [ ] Gear box
[ ] Transmission shaft [ ] Differential

9. How many synchronizer units are there in a three speed transmission?
[ ] One [ ] Two [ ] Three [ ] Four

10. The tilt of the front wheels from vertical, when viewed from the front, is called:
[ ] Caster [ ] Camber
[ ] King pin inclination [ ] Toe in

11. In a tyre, it is designated as 'P200/75 R16'. What is the digit 200?
[ ] Section width [ ] Section height [ ] Rim diameter [ ] Aspect ratio

12. The type of body movement of a vehicle in which the vehicle turn on its own longitudinal axis is:
[ ] Pitching [ ] Bouncing [ ] Yawing [ ] Rolling

13. The pollutant that is formed at higher combustion temperature is
[ ] CO [ ] HC [ ] NO2 [ ] H2O

14. Which of the following compound is added to petrol to improve its anti knocking property?
[ ] Sodium bicarbonate [ ] Calcium bicarbonate
[ ] Potassium nitrate [ ] Tetra ethyl lead

15. Diaphragm type mechanical fuel pump is driven by
[ ] V-belt [ ] Chain
[ ] Camshaft eccentric [ ] Cooling fan

16. The Contact Breaker point gap is in the range of
[ ] 0.35 mm to 0.45 mm [ ] 0.35 mm to 0.45 mm
[ ] 0.30 mm to 0.40 mm [ ] 1 mm to 1.35 mm

17. The type of combustion chamber which is made as a depression on the top of piston is called:
[ ] Pre-combustion chamber [ ] Energy cell
[ ] Open combustion chamber [ ] Ante chamber

18. Which among the following material is used as a solid lubricant?
[ ] Calcium chloride [ ] Calcium carbonate
[ ] Copper sulphate [ ] Graphite

19. The part of hydraulic brake system which actuates brakes shoes directly:
[ ] Master cylinder [ ] Push rod
[ ] Wheel cylinder [ ] Brake pedal

20. The needle valve of carburetor is closed and opened by:
[ ] Air jet [ ] Main petrol jet
[ ] Throttle valve [ ] Float

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

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Semester : I
F. M. : 55

SECTION "B"

Attempt *ALL* the questions.

1. What are the main properties of fuel for an internal combustion engine? Explain. [5]

2. How many types of governors are used in fuel injection system? Explain the working of a mechanical governor with suitable sketch. [5]

3. Describe the various parts of water cooling system with diagrams. [5]

4. Describe different lubrication system of an engine with the help of neat sketch where it's appropriate. [5]

5. What is a torque converter? How does it work? Explain its components with neat diagram. [5]

6. Describe the operation of planetary gears when the system is in reduction and reverse. [5]

7. Describe the MacPherson strut assembly of independent suspension system compare it with the double wishbone suspension system in front wheel. [5]

8. Through what parts does the steering wheel have to transmit power to turn the front wheel? Illustrate your answer with neat sketch. [5]

9. Sketch the air brake and engine exhaust brake. Describe the working principle of each brake. Give main troubles of these brakes and their causes. [7]

10. Describe the ignition timing with reference to centrifugal advance and vacuum advance mechanism. Illustrate your answer with neat diagrams. [8]