Seat No: _____ Enrollment No: _____

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Diploma Engineering, Mid semester Examination

Semester: 3rd **Date: (01/08/2022)**
Subject Code: (03612211) **Time: (1hr: 30min)**
Subject Name: Automobile Component Design **Total Marks: 40**

Instructions:
1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. English version is considered to be Authentic.

Q.1 Answer any six out of Ten. (2 Marks Each) **(12)**

1. What are the fundamental units?
2. Define stress
3. Write down function of compression ring.
4. Write down forces acting on piston.
5. What is tensile stress and strain ?
6. What is piston head ?
7. What is factor of safety?
8. What is piston skirt ?
9. What is shear modulus?
10. Define Strain

Q.2 A) Define mass, weight and inertia. **(03)**

OR

A)Explain stress and strain Diagram **(03)**
B)Explain hook's law **(03)**

OR

B)Define derived units with three examples. **(03)**
C) Explain shear stress and strain. **(04)**

OR

C) Which material is used for piston ? Why ? **(04)**
D) Write the general considerations in machine design. **(04)**

Q.3 A) Explain Design Consideration for Piston? **(03)**

OR

A) What is the function of piston rings ? **(03)**
B) What is Characteristics of Piston ? **(03)**

OR

B) B) Find the thickness of piston head of cast iron Piston for a single acting four stroke engine for the following data: Given Data : Cylinder Bore (D) = 100 mm, Stroke (L) = 125 mm, Maximum Gas Pressure (p) = 5 N/mm2 , Permissible bending stress for the material of the Piston (σt) = 38 N/mm2. **(03)**
C) Write down the equations to design radial and axial thickness of piston ring. **(04)**

OR

C) Draw a neat sketch of piston with Nomenclature. **(04)**
D) Write down function of piston. **(04)**

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