HARYANA VISHWAKARMA SKILL UNIVERSITY

Course	:	B.Sc. (Automotive Mechatronics)
Subject	:	Basics of Mechanical Engineering
Semester	:	First
Subject Code	:	BME-105
Duration	:	3 Hours
Maximum Marks	:	70

Instructions to the Student:

This question paper consists of 2 Sections.

1. **Section A** comprises 10 questions of objective type in nature. All 10 questions are compulsory. Each question carries 2 marks.
2. **Section B** comprises 6 long answer type questions out of which students need to do any 5. Each question carries 10 marks.

SECTION - A (OBJECTIVE TYPE QUESTIONS)

Q1. Velocity ratio of a lifting machine is defined as

A) P/W

B) W/P

C) y/x

D) x/y

Q2. The property which controls the flow of a liquid is known as

A) Viscosity

B) Force

C) Volume

D) density

Q3. Young's Modulus of elasticity is defined as the ratio between

A) Tensile strain/Tensile stress

B) Shear strain/shear stress

C) Tensile stress/ Tensile strain

D) Shear stress/ shear strain

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Q4. V- Belt has

A) Rectangular cross section

B) Circular Cross section

C) Trapezoidal cross section

D) Tangential cross section

Q5. S.I Unit of stress is

A) N/mm^2

B) N/cm^2

C) KN/mm^2

D) KN/m^2

Q6. The internal diameter of an engine is called:

A) Piston

B) Dead centres

C) Stroke

D) Bore

Q7. Which of these is not a lifting machine?

A) Winch Crab

B) Worm and worm wheel

C) Screw jack

D) Lathe

Q8. Full form of NC:

A) Numerical Control

B) Number Control

C) Numeric Chamber

D) Numeric Control

Q9. When two equal and opposite forces are acting tangentially to the cross-section, the stress induced in a member is known as

A) Compressive stress

B) Tensile stress

C) Shear stress

D) Longitudinal stress

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Q10. Strain is

    A) Change of a dimension to the original dimension

    B) Change of a volume to the original volume

    C) Change of area to the original area

    D) Change in length to original length

SECTION B (LONG ANSWER TYPE QUESTIONS)

Q1. (i) Explain First law and second law of thermodynamics? (7)

(ii) What do you mean by intensive and extensive property of a thermodynamic systems? (3)

Q2. (i) Explain in detail with the help of a neat diagram the working principle of a worm and worm wheel? (5)

(ii) Define lifting machines? What do you meant by input, output and efficiency of lifting machines? (5)

Q13. i) Explain CNC Machine? Differentiate between NC and CNC machine? (5)

ii) What do you meant by manufacturing system? Explain? (5)

Q14. i) Describe stress strain diagram of a mild steel? (5)

ii) What do you mean by Elasticity? Explain Hooke's law? (5)

Q15. What do you mean by heat engines? Explain four stroke diesel engines? (10)

(i) Explain the different modes of power transmission? (5)

(ii) Define: Spur gear, helical gear and Bevel gear? (5)

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