Roll No.

## SHAMBHUNATH INSTITUTE OF ENGINEERING AND TECHNOLOGY

# FUNDAMENTALS OF MECHANICAL ENGINEERING (BME201)

B. Tech. (II-SEMESTER)

FIRST SESSIONAL EXAMINATION, EVEN SEMESTER, (2024-2025)

Branch: CS

Time -1hr

### 1. Attempt all parts:

Maximum Marks – 15

	OTTECTION	Marks	CO	BL
Q. N.	QUESTION	2	CO1	T.1
a	What is free body diagram?	2	CO1	L2
b	Explain the principle of transmissibility of force.	2	COI	<u> </u>
С	Write the characteristics of force.	2	COI	L2
d	State parallelogram law of forces.		COI	L2
e	Write the equilibrium equations for concurrent and non concurrent force	2	CO1	1.2
14,	system.	100	1	

# 2. Attempt any one part of the following:

	QUESTION	Marks	CO	BL
Q.No.	Determine the support reactions in the given beam as shown in Fig (1).			
a.	40 kN/m 80 kN 20 kN	5	COI	L5
	Fig (1)  D E B C  Fig (1)			
	Determine the support reactions in the given beam as shown in Fig (2).			
2 2 2	10 kN 10 kN-m			
b.	A B AMAIN E	5	COI	L5
	Fig (2)			

# Attempt any one part of the following:

5. Aug	OMEGINON	Marks	CO	BL
	QUESTION  The forces 20N, 30N, 40N, 50N and 60N are acting at one of the angular points of a regular hexagon, towards the other five angular points, taken in points of a regular hexagon, towards the resultant force.	5	COI	L5 •
	order. Find the magnitude and direction of the resonant	5 .	COI	L4
b	State and prove Varignon's theorem.			

Bloom's Taxonomy Level (BL):-

Understanding (L2), Remember (L1),

Apply (L3),

Analyze (L4),

Evaluating (L5),

Creating (L6)

