

# GTU MID SEM-DOM(3151911)-AY 2021-22 - C04- PART 3

Subject: Dynamics of machinery (3151911)

AcademicYear: 2021-22 (Odd)

Class: 5th Semester

Time : 30 minutes

Maximum 10 Marks will be count (all questions can be attempted)

\* Required

\* This form will record your name, please fill your name.

1

A body is said to be under forced vibrations, when \*  
(1 Point)

- (A) There is a reduction in amplitude after every cycle of vibration
- (B) No external force acts on a body, after giving it an initial displacement
- (C) A body vibrates under the influence of external force
- (D) None of the above

2

During vibration if the amplitude reduces gradually over every cycle the the system is under \*

(1 Point)

- (a) free vibration
- (b) forced vibration
- (c) damped vibration
- (d) critical vibration

3

About a vibrating spring-mass system, if the mass is halved and the spring stiffness is doubled, then the natural frequency of vibration is \*

(1 Point)

- halved
- doubled
- unchanged
- quadrupled

4

Among the following which statement is correct for discrete parameter systems? \*

(1 Point)

- a. Systems which have infinite number of degree of freedom
- b. Systems which have finite number of degree of freedom
- c. Systems which have no degree of freedom
- d. None of the above

5

In torsional vibrations the particles of a body move \_\_\_\_\_ its axis \*  
(1 Point)

- in a circle about
- parallel to
- perpendicular to
- away from

6

A shaft 50 mm diameter and 3 metres long is simply supported at the ends and carries three loads of 1000 N, 1500 N and 750 N at 1 m, 2 m and 2.5 m from the left support. The Young's modulus for shaft material is  $200 \text{ GN/m}^2$ . Find the frequency of transverse vibration. \*  
(5 Points)

- 3.5 Hz
- 10 Hz
- 15 Hz
- 25 Hz

7

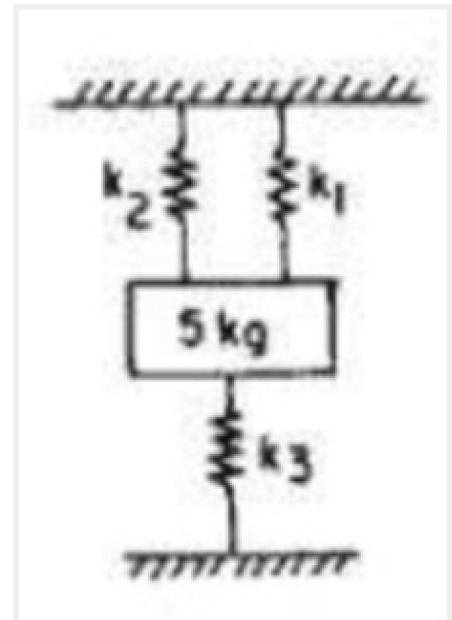
A cantilever shaft 50 mm diameter and 300 mm long has a disc of mass 100 kg at its free end. The Young's modulus for the shaft material is  $200 \text{ GN/m}^2$ .

Determine the frequency of transverse vibrations of the shaft. \*

(5 Points)

- 4 Hz
- 41 Hz
- 55 Hz
- 60 Hz

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Find the natural frequency of the system as shown in figure . where  $k_1=1500 \text{ N/m}$ ,  $k_2=1500 \text{ N/m}$ ,  $k_3=2000 \text{ N/m}$  \*

(5 Points)

- 15.05 Hz
- 5.03 Hz
- 25.3 Hz
- 50.9 Hz

