These are sample MCQs to indicate pattern, may or may not appear in examination

University of Mumbai

Online Examination 2020

Program: BE Mechanical Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VII

Course Code: MEDLO7031 and Course Name: Mechanical Vibrations

Time: 1hour Max. Marks: 50

Note to the students:- All the Questions are compulsory and carry equal marks .

Q	Two springs of stiffness 4000 N/m and 5000 N/m are connected in Parallel. One end of first spring is attached to fix end and one end of other spring is connected to mass of 200 Kg then natural friquency is
A	6.7082 Rad/Sec
B	8.453 Rad/Sec
C	4.564 Rad/Sec
D	9.786 Rad/Sec
Q	In case of spring mass system if mass is doubled and stiffness is halved then natural friquency of the system is
A	Doubled
B	Halved
C	Trippled
D	Remains unchanged
Q	In case of rayleighs method for finding natural friquency
A	Kinetic energy is Zero

B	Potential energy is greater than Kinetic energy
C	Maximum Kinetic energy is equal to maximum potential energy
D	Kinetic energy is greater than potential energy
Q	In case of simple U tube manometer of length l and density of fluid is ϑ then natural friquency is
A	Sqare root of (4g/l)
B	Sqare root of (2g/l)
C	Sqare root of (2gϑ/l)
D	Sqare root of (2g/3l)
Q	in case of spring mass system mass is coupled by two horizantal springs of stiffness 1500 N/m each and one vertical spring of stiffness 2000 N/m, mass is allowed to vibrate in horizantal directions only then equivalent stiffness is
A	2000 N/m
B	3000 N/m
C	5000 N/m
D	3500 N/m
Q	if a mass is in the form of block coupled to horizantal spring and allowed to move horizantally. One more mass is coupled a block by means of pin connection then above system has how many degrees of freedom
A	1
B	2

C	3
D	0
Q	Which method is used for transverse vibrations where multi point loading is applied
A	Rayleigh method
B	Matrix method
C	Holzar method
D	Langarangian method
Q	Mode shapes shows
A	degrees of freedom
B	Displacements at different points
C	natural friquencies
D	applied friquencies
Q	According to Maxwells receprocal therom
A	aij = 2* aji
B	aij = aji
C	aij = 3*aji
D	aij ≠ aji
Q	In case of coulombs damping
A	Ratio of two successive amplitude is constant
B	Diffrence between two successive is constant
C	Ratio of two successive amplitudes varies with time
D	Diffrence between two successive is varies with time
Q	In case of viscus damping natural time period is 0.65 sec and damped time period is 0.85 seconds then what is the value of damping ratio

A	0.9887
B	0.5645
C	0.6444
D	1.2
Q	Considering viscous damping logarithmic decrement is 0.3218 then how many cycles are required to reduce the amplitude ti o.2 times the initial amplitude
A	8
B	5
C	3
D	10
Q	In which of the following application damping factor is maintained greater than unity
A	Forging hammer
B	Musical instruments
C	Vehical shock absorber
D	Seat cushioning
Q	In case of rotating unbalance zero friquency amplitude is
A	Equal to staitc amplitude
B	Equal to two times staitc amplitude
C	Equal to half of static or zero friquency amplitude
D	equal to zero
Q	Isolators should be designed for friquency ratio
A	Greater than 1.4142
B	Less than 1.4142
C	in between 1 and 1.4142
D	in between o to 1

Q	Undamped vibratory system has mass of 200 kg andhas an amplitude of 0.02 mm with eccentiicity as 4mm. Determine eccentric mass considering friquency ratio of 0.4
A	5.25 kg
B	7.65 kg
C	2.67 Kg
D	9.45 Kg
Q	in case simple forced vibrations maximum value of magnification factor for all values of damping occurs at
A	just right of the resonent line
B	just left of the resonent line
C	at resonent condition
D	at friquency ratio equal to 4
Q	Vibrometer is designed such that friquency ratio
A	>3
B	< 3
C	>1
D	1
Q	In case of undamped vibrometer if friquency ratio is 5.2 then error observed in instrument is
A	5.00%
B	6.87%
C	3.84%
D	10.00%
Q	In case of accererometer accuracy is
A	decreased with increase friquency ratio

B	increased with increase in friquency ratio
C	remains constant for any friquency ratio
D	higher at lower friquency ratio
Q	In case of non linear system
	damping factor and spring stiffness
A	remains constant throughout operation
	damping factor and spring stiffness
B	Changes with time
	damping factor and spring stiffness are
C	zero
	damping factor and spring stiffness are
D	unity throughout operation
	if df(x)/dx is decreasing function then such
Q	spring is called as
A	soft spring
B	Hard spring
C	linear spring
D	torsional spring
Q	Pendulum possesses
A	soft spring Characteristics
B	Hard spring Characteristics
C	linear spring Characteristics
D	torsional spring Characteristics
	Out of list given which method is used for
Q	analysis of nonlinear system
A	D,alemberts principle
B	Petrubation method
C	Energy method
D	Rayleigh Method
Q	Vibrometer is dseigned with

A	High natural friquency
B	Low natural friquency
C	Zero natural friquency
D	Resonent condition