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

University of Mumbai

Examination 2020

Program: BE Automobile Engineering
Curriculum Scheme: Rev2016
Examination: Third Year Semester VI
Course Code: AEC604 and Course Name: Mechanical Vibration
Time: 1 hour Max. Marks: 50

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

Q1.	When the energy of vibrating system is gradually dissipated by friction and other resistances, the vibration is said to be _____
Option A:	Free vibration
Option B:	Forced vibration
Option C:	Damped vibration
Option D:	Multi degree vibration
Q2.	A mass 'm'is fixed at the centre of spring. Mass m = 20 kg, stiffness of the spring is 15 kN/m. Find out the natural frequency
Option A:	6 Hz
Option B:	3 Hz
Option C:	8.7 Hz
Option D:	10.4 Hz
Q3.	Which type of vibrations are also known as transient vibrations?
Option A:	Undamped vibrations
Option B:	Damped vibrations
Option C:	Torsional vibrations
Option D:	Transverse vibrations
Q4.	Frequency of vibrations is usually expressed in
Option A:	Number of cycles per hour
Option B:	Number of cycles per minute
Option C:	Number of cycles per second
Option D:	Milimeters
Q5.	When a mass of critically damped system is deflected from its equilibrium position and released, then it will _____
Option A:	Return to equilibrium position without oscillation
Option B:	Oscillate with increasing time period

Option C:	Oscillate with decreasing amplitude
Option D:	Oscillate with constant amplitude
Q6.	Calculate logarithmic decrement if damping factor is 0.33.
Option A:	1.36
Option B:	3.23
Option C:	5.16
Option D:	2.19
Q7.	What is meant by critical damping coefficient?
Option A:	Frequency of damped free vibrations is less than zero
Option B:	The motion is aperiodic in nature
Option C:	Frequency of damped free vibrations is one
Option D:	Frequency of damped free vibrations is more than one
Q8.	In under damped vibrating system, the amplitude of vibration _____.
Option A:	Decreases linearly with time
Option B:	Increases linearly with time
Option C:	Decreases exponentially with time
Option D:	Increases exponentially with time
Q9.	For occurrence of free torsional vibration which of the condition is necessary?
Option A:	Rotors moving in same direction
Option B:	Rotors having same frequency
Option C:	Rotors having different frequency
Option D:	Rotors having different frequency
Q10.	What is meant by node point?
Option A:	The point at which amplitude of vibration is maximum
Option B:	The point at which amplitude of vibration is minimum
Option C:	The point at which amplitude of vibration is zero
Option D:	The point at which amplitude of vibration is non zero
Q11.	Modal analysis method is used to find equation of motion for
Option A:	Single degree system
Option B:	Two degree system
Option C:	Three degree system
Option D:	n degree system
Q12.	What is meant by coupled differential equation?
Option A:	The differential equation in which only rectilinear motions exit
Option B:	The differential equation in which only angular motions exit
Option C:	The differential equation in which both rectilinear and angular motions exit
Option D:	The differential equation in which both rectilinear and angular motions not exit

Q13.	What is value of magnification factor for damping ratio = zero and frequency ratio = 1 ?
Option A:	Zero
Option B:	One
Option C:	Infinity
Option D:	Two
Q14.	Calculate critical speed of a vehicle which moves on a road having sinusoidal profile of wavelength 2.5 m. The mass of the vehicle is 300 kg and natural frequency of its spring suspension system is 8 rad/sec
Option A:	4.18 m/sec
Option B:	2.18 m/sec
Option C:	1.18 m/s
Option D:	1.18 m/s
Q15.	When speed of shaftis greater than the critical speed , the deflection of shaft is .....
Option A:	Negative
Option B:	Positive
Option C:	Neutral
Option D:	Less
Q16.	Transmibility versus frequency ratio graph will have following regions
Option A:	Spring and Mass controlled region
Option B:	Mass and Damping controlled region
Option C:	Damping and Spring controlled region
Option D:	Spring, Damping and Mass controlled regions
Q17.	Solution of forced damped single degree freedom system differential equation consist of
Option A:	Only transient vibration
Option B:	Only steady state vibration
Option C:	Transient and and Steady state vibration
Option D:	Longitudinal Vibration
Q18.	Which of the following instruments measure amplitude of a vibrating body?
Option A:	Vibrometers
Option B:	Velometer
Option C:	Accelerometer
Option D:	Barometer
Q19.	Which of the following instruments measure velocity of a vibrating body?
Option A:	Vibrometers
Option B:	Velometer
Option C:	Accelerometer
Option D:	Barometer
Q20.	Which of the following instrument have frequency ratio ($\omega/\omega n$) >>1?

Option A:	Accelerometers
Option B:	Velometers
Option C:	Barometer
Option D:	Acceleration pick up
Q21.	In order to get best results, indicating instruments are
Option A:	Overdamped
Option B:	Underdamped
Option C:	Critically damped
Option D:	Damped slightly less than the critical value
Q22.	Often an unbalance of forces is produced in rotary or reciprocating machinery due to _____
Option A:	centripetal forces
Option B:	centrifugal forces
Option C:	friction forces
Option D:	inertia forces
Q23.	What is the effect of a rotating mass of a shaft on a system?
Option A:	Bend the shaft
Option B:	Twist the shaft
Option C:	Extend the shaft
Option D:	Compress the shaft
Q24.	The critical speed of a shaft depends upon its
Option A:	Mass
Option B:	Stiffness
Option C:	Mass and Stiffness
Option D:	Stiffness and damping coefficient
Q25.	In order to facilitate the starting of locomotive in any position, the cranks of a locomotive, with two cylinders, are placed at _____ to each other.
Option A:	45°
Option B:	90°
Option C:	120°
Option D:	180°