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 2016

Examination: Third Year Semester V

Course Code: MEC504 and Course Name: Dynamics of Machinery

Time: 1hour Max. Marks: 50

==========

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

Q1.	Sensitiveness of the governor is defined as the ratio of the
Option A:	mean speed to the maximum equilibrium speed
Option B:	mean speed to the minimum equilibrium speed
Option C:	difference of the maximum and minimum equilibrium speeds to the mean speed
Option D:	sum of the maximum and minimum equilibrium speeds to the mean speed
Q2.	Gyroscopic effect is not observed in which of the following actions performed by the ships?
Option A:	Rolling
Option B:	Steering
Option C:	Stable
Option D:	Pitching
Q3.	The height of the Watt's Governor in m is
Option A:	$8.95/N^2$
Option B:	$895/N^2$
Option C:	$8950/N^2$
Option D:	$89.5/N^2$
Q4.	When range of speed is zero for all radii of rotation of the balls within the working range, neglecting friction, then governor is said to be_____
Option A:	stable
Option B:	isochronous
Option C:	unstable
Option D:	hunt
Q5.	What is the gyroscopic couple acting on the disc which has mass moment of inertia equal to 0.02135 kg-m^2 If disc has a angular velocity of spinning 52 rad/s and is made to precess at 10 rad/s.
Option A:	13.212 N-m

Option B:	10.231 N-m
Option C:	12.151 N-m
Option D:	11.102 N-m
Q6.	The essential condition of placing the two masses, so that the system becomes dynamically equivalent is____ (Where l_1 and l_2 = Distance of masses from C.G. of the body, k_G = Radius of gyration of the body)
Option A:	$l_1 \times l_2 = k_G^2$
Option B:	$l_1 \times l_2 = k_G$
Option C:	$l_1 = k_G$
Option D:	$l_2 = k_G$
Q7.	In a four stroke I.C. engine, the turning moment during the compression stroke is
Option A:	positive throughout
Option B:	negative throughout
Option C:	positive during major portion of the stroke
Option D:	negative during major portion of the stroke
Q8.	The difference between which two factors denotes the correction couple?
Option A:	Difference between force required to accelerate non dynamically equivalent system and dynamically equivalent system
Option B:	Difference between torque required to accelerate non dynamically equivalent system and dynamically equivalent system
Option C:	Difference between torque required to decelerate dynamically equivalent system and non dynamically equivalent system
Option D:	Difference between force required to decelerate dynamically equivalent system and non dynamically equivalent system
Q9.	A simple spring - mass vibrating system has a natural frequency of 'N'. If the spring stiffness is halved and the mass is doubled, then natural frequency will be
Option A:	N/2
Option B:	2N
Option C:	4N
Option D:	8N
Q10.	Which of the following relations is true when springs are connected in series ?where K = spring stiffness
Option A:	$K_e = (1/K_1) + (1/ K_2)$
Option B:	$K_e = K_1 + K_2$
Option C:	$(1 / K_e) = (1/K_1) + (1/ K_2)$
Option D:	$K_e = K_1 / K_2$
Q11.	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
Q12.	In spring-mass-damper system spring provides
Option A:	Inertia force
Option B:	Restoring force
Option C:	Resisting force
Option D:	Frictional force
Q13.	In which of the following cases, under damping occurs?
Option A:	Roots are real and negative
Option B:	Roots are complex conjugate
Option C:	Roots are equal
Option D:	Independent of the equation
Q14.	A viscous damping system with free vibrations will be critically damped if the damping factor is
Option A:	Zero
Option B:	Less than one
Option C:	Equal to one
Option D:	Greater than one
Q15.	In a spring mass damper system the amplitude decays to half the original value in 6 complete cycles. the logarithmic decrement of the system is
Option A:	0.116
Option B:	0.125
Option C:	0.167
Option D:	0.833
Q16.	The measure of the rate of decrease of amplitude of free damped vibration is known as
Option A:	Transmissibility
Option B:	Damping coefficient
Option C:	Damping factor
Option D:	Logarithmic decrement
Q17.	In forced vibrations at resonance the magnification factor is
Option A:	maximum
Option B:	minimum
Option C:	Zero
Option D:	One
Q18.	The ratio of force transmitted to the supporting structure to that force impressed upon the system is called
Option A:	Force transmissibility
Option B:	Motion transmissibility
Option C:	logarithmic decrement

Option D:	magnification factor
Q19.	The process of sensing vibratory motion from the vibrating machine and converting into electrical system is done by
Option A:	signal conversion unit
Option B:	transducer
Option C:	display unit
Option D:	data analysis unit
Q20.	The transmitted force is always less than the impressed exciting force when transmissibility is
Option A:	less than unity
Option B:	equal to unity
Option C:	greater than unity
Option D:	zero
Q21.	The accelerometer commonly used in practical applications is based on which principle
Option A:	electromagnetic induction
Option B:	mutual induction
Option C:	capacitance
Option D:	piezoelectric crystal effect
Q22.	Which of the following is true for centrifugal force causing unbalance?
Option A:	Direction changes with rotation
Option B:	Magnitude changes with rotation
Option C:	Direction and magnitude both change with rotation
Option D:	Direction and magnitude both remain unchanged with rotation
Q23.	The secondary unbalanced force due to inertia of reciprocating parts in a reciprocating engine is given by equation ---- (where, m is mass of reciprocating parts, ω is angular speed of crank, r is the radius of the crank, ɵ is angle of inclination of the crank with the line of stroke and n is ratio of connecting rod to radius of crank)
Option A:	$m\omega^2 r \sin\theta$
Option B:	$m\omega^2 r \cos\theta$
Option C:	$m\omega^2 r (\sin 2\theta/n)$
Option D:	$m\omega^2 r (\cos 2\theta/n)$
Q24.	Balancing of rotating and reciprocating parts of an engine is necessary when it runs at ___
Option A:	slow speed
Option B:	moderate speed
Option C:	high speed
Option D:	at any speed

Q25.	In reciprocating engine, usually _____ of the reciprocating masses are balanced
Option A:	one-half
Option B:	two-third
Option C:	three-fourth
Option D:	whole