

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

University of Mumbai

Examination 2020

Program: BE Mechanical Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester V

Course Code: MEC502 and Course Name: Mechanical measurements and control

Time: 1hour

Max. Marks: 50

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

Q1.	In generalized measurement system the quantity to be measured makes the first contact with
Option A:	primary sensing element
Option B:	signal conversion element
Option C:	variable manipulation element
Option D:	data transmission element
Q2.	The velocity of propagation of sound waves in a fluid is changed when the velocity of the flow of fluid changes.This is applicable in _____
Option A:	Ultrasonic Flowmeter
Option B:	Magnetic
Option C:	Rotameter
Option D:	Anemometer
Q3.	The region between the limits within which an instruments is designed is called as
Option A:	Span
Option B:	Range
Option C:	Resolution
Option D:	Threshold
Q4.	A proportional controller will have an offset difference between set point and control point
Option A:	at all times
Option B:	equal to proportional band setting
Option C:	that depends on process load
Option D:	that will eventually vanish
Q5.	An optical encoder is designed ,such that it gives 1000 pulses per revolution. Suppose encoder is mounted on shaft and counter counts 100 pulses after shaft is rotated. Then how much angle shaft has rotated?
Option A:	360
Option B:	180
Option C:	36
Option D:	270

Q6.	In peizoelectric accelerometer, the peizoeletri crystal works as a
Option A:	seismic mass
Option B:	Housing
Option C:	spring-damper
Option D:	dielectric medium
Q7.	C type bourdon tube is having____cross section
Option A:	Pentagonal
Option B:	hexagonal
Option C:	hectagonal
Option D:	oval
Q8.	The _____ is the most extensively used form of the variable area flow meter. It consists of a vertical tapered tube with a float which is free to move up or down within the tube
Option A:	Magnetic flow meter
Option B:	Ultrasonic Flowmeter
Option C:	Rotameter
Option D:	Galvanometer
Q9.	_____ is not the advantage of rotameter
Option A:	Simplicity of operation.
Option B:	Ease of reading and installation.
Option C:	Relatively low cost.
Option D:	Limited to small pipe sizes and capacities.
Q10.	The materials mostly used as RTD materials are -----
Option A:	Copper, Nickel
Option B:	Iron, constantan
Option C:	Chromel, constantan
Option D:	Steel, rhodium
Q11.	The Op-amp can amplify
Option A:	a.c. signals only
Option B:	d.c. signals only
Option C:	both a.c. and d.c. signals
Option D:	neither d.c. nor a.c. signals
Q12.	Which of the following is an example of an open loop system?
Option A:	Household Refrigerator
Option B:	Respiratory system of an animal
Option C:	Stabilization of air pressure entering into the mask
Option D:	Execution of program by computer
Q13.	Which notation represents the feedback path in closed loop system representation?
Option A:	b(t)
Option B:	c(t)

Option C:	$e(t)$
Option D:	$r(t)$
Q14.	How is an output represented in the control systems?
Option A:	$r(t)$
Option B:	$c(t)$
Option C:	$x(t)$
Option D:	$v(t)$
Q15.	While shifting a take-off point after the summing point, which among the following should be added?
Option A:	Summing point in series with take-off point
Option B:	Summing point in parallel with take-off point
Option C:	Block of reciprocal transfer function
Option D:	Block of inverse transfer function
Q16.	Determine the Settling Time for a certain second order system if the value of Natural frequency of oscillation is 5 rad/s and the damping ratio is 0.6
Option A:	0.56 Sec
Option B:	1.33 Sec
Option C:	1.92 Sec
Option D:	2.85 Sec
Q17.	Determine the Natural frequency of Oscillation for a certain second order system if the value of Peak Time is 1 second and the damping ratio is 0.667
Option A:	4.2165 rad/s
Option B:	42.1165 rad/s
Option C:	2.3154 rad/s
Option D:	8.9165 rad/s
Q18.	The constant term in the characteristic equation of a second order system equals to
Option A:	Natural frequency of oscillation
Option B:	Square of Natural frequency of oscillation
Option C:	Damped frequency of oscillation
Option D:	Damping Coefficient
Q19.	F-plane is used in_____
Option A:	Bode plot
Option B:	Nyquist plot
Option C:	Root locus
Option D:	Routh's criteria
Q20.	A point where two or more roots occur for a particular value of K(system gain) is called_____

Option A:	Centroid
Option B:	Breakaway point
Option C:	Origin
Option D:	Asymptote
Q21.	Which of the following should be done to make an unstable system stable ?
Option A:	The gain of the system should be decreased
Option B:	The gain of the system should be increased
Option C:	The number of poles to the loop transfer function should be increased
Option D:	The number of zeros to the loop transfer function should be increased
Q22.	State space analysis is applicable even if the initial conditions are
Option A:	Zero
Option B:	Non-zero
Option C:	Equal
Option D:	Not equal
Q23.	What is the main objective of process control?
Option A:	to control physical parameter
Option B:	to control mechanical parameters
Option C:	to control optical parameters
Option D:	to control electrical parameters
Q24.	For proper feedback in a process control element, it is required to
Option A:	Measure p
Option B:	measure set point
Option C:	measure error
Option D:	measure comparator
Q25.	The function of integral (reset) mode is to
Option A:	Oppose change in measurement
Option B:	Automatic adjust the controller's gain
Option C:	Eliminate offset
Option D:	Stabilize the control loop