University of Mumbai

Examination 2020 under cluster 4 (PCE)

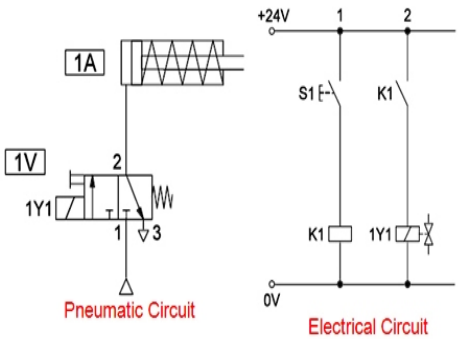
Program: BE Mechanical Engineering
Curriculum Scheme: Rev 2012
Examination: Third Year Semester VI
Course Code: MEC605 and Course Name: Mechatronics

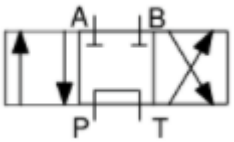
Time: 1 hour Max. Marks: 50

==========

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

Q1.	The mechatronics is an interdisciplinary field in which the disciplines those act together are _____
Option A:	Mechanical systems and Electronic systems
Option B:	Mechanical systems and Information technology
Option C:	Electronic systems and Information technology
Option D:	Mechanical systems, Electronic systems and Information technology
Q2.	The advantages of mechatronics system from the following are:
Option A:	it is very easy to design processes and products
Option B:	it is having low cost
Option C:	complicated design
Option D:	system has low levels of integration
Q3.	what are the applications of Mechatronics systems?
Option A:	Hand operated door
Option B:	non flexible manufacturing systems
Option C:	automated manufacturing systems
Option D:	supply chain links
Q4.	Construction of BLDC is exactly similar to the _____
Option A:	Permanent magnet synchronous motor
Option B:	Conventional DC motor
Option C:	Induction motor
Option D:	Totally different construction
Q5.	Determine the input pulse rate if the stepper motor has 10° per step and rotating at 300rpm.
Option A:	45
Option B:	90
Option C:	180
Option D:	360
Q6.	Wave excitation of a stepper motor results in
Option A:	Micro-stepping
Option B:	Half-stepping
Option C:	Increased step angle
Option D:	Reduced resolution.
Q7.	Why do most motor windings use copper wire?

Option A:	Low cost
Option B:	Positive temperature coefficient
Option C:	Light in weight
Option D:	High current capacity
Q8.	What is not the function of pressure switch?
Option A:	pressure switch is used to start a motor
Option B:	pressure switch is used to stop a motor
Option C:	pressure switch is used to de-energize a solenoid
Option D:	pressure switch is used to repair a motor
Q9.	The most common hydraulic fluid is:
Option A:	Mineral oil
Option B:	Synthetic fluid
Option C:	Water
Option D:	Gel
Q10.	A pressure relief valve cannot be
Option A:	direct operated
Option B:	pilot operated
Option C:	solenoid operated
Option D:	direction control valve
Q11.	Which of the following is a component used in air generation system?
Option A:	pressure switch
Option B:	pressure gauge
Option C:	Drier
Option D:	intercooler
Q12.	What does the numbers in 3/2 valve mean
Option A:	3 positions and 2 ways
Option B:	3 ways and 2 positions
Option C:	its 3 circuits used
Option D:	its just a number
Q13.	The electrical circuit diagram for indirect control of a single-acting cylinder is shown in Figure where 1Y1 indicates 

Option A:	Relay coil
Option B:	Open contact
Option C:	close contact
Option D:	Solenoid
Q14.	The use of the Relay based interlock implementation of sequence control, over PLC based ones, is advantageous in terms of its:
Option A:	ability to incorporate complex task
Option B:	ease of up-gradation of current control logics
Option C:	cost effectiveness for implementing small and simple systems
Option D:	speed of operation and reliability
Q15.	Following is the symbol of 
Option A:	4/3 way valve
Option B:	4/2 way valve
Option C:	4/1 way valve
Option D:	3/4 way valve
Q16.	For a matched line, the input impedance will be equal to
Option A:	Load impedance
Option B:	Characteristic impedance
Option C:	Output impedance
Option D:	Zero
Q17.	The transmission signal coding method for T, the carrier is called
Option A:	NRZ
Option B:	Bipolar
Option C:	Manchester
Option D:	Binary
Q18.	Which technique has one or more control signal for acknowledgement that is used for intimation
Option A:	FTP
Option B:	Ping
Option C:	Strobe
Option D:	Handshaking
Q19.	If we see practically, parallel data transmission is sent
Option A:	over long distances only
Option B:	over short distances only
Option C:	usually over a coaxial cable
Option D:	over a single channel

Q20.	Which technique is most widely used in the single channel data acquisition system
Option A:	Counter type approximation
Option B:	Flash approximation
Option C:	Successive approximation
Option D:	Delta Sigma approximation
Q21.	What is the name for space inside which a robot unit operates
Option A:	Environment
Option B:	Spacial base
Option C:	Work envelope
Option D:	Exclusion zone
Q22.	The ignition timing of the engine in car engine management sysstem is varied by,
Option A:	Timing wheel and the microprocessor
Option B:	solenoid valve
Option C:	timer coil
Option D:	relay coil
Q23.	Following type of sensors are used to generate information in object grasping & obstacle
Option A:	Hall effect sensor
Option B:	Light sensor
Option C:	Proximity sensor
Option D:	Optical sensor
Q24.	The engine management system of a car is responsible for managing the,
Option A:	ignition and fuelling requirements of the engine
Option B:	stability of the engine
Option C:	low noise of the engine
Option D:	high power generation from the engine
Q25.	The following type of robot is most suitable for pick & place operations
Option A:	Rectangular
Option B:	Cylindrical
Option C:	Spherical
Option D:	Jointed arm type

University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering
Curriculum Scheme: Rev 2012
Examination: Third Year Semester VI
Course Code: MEC605 and Course Name: Mechatronics

Time: 1 hour Max. Marks: 50

==========

Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	A
Q3.	C
Q4	A
Q5	C
Q6	B
Q7	D
Q8.	D
Q9.	C
Q10.	D
Q11.	C
Q12.	B
Q13.	D
Q14.	C
Q15.	A
Q16.	B
Q17.	B
Q18.	D
Q19.	B
Q20.	C
Q21.	C
Q22.	A
Q23.	C
Q24.	A
Q25.	A