

BRAINWARE UNIVERSITY

Term End Examination 2021 - 22 Programme – Diploma in Electrical Engineering Course Name – Control of Electrical Machine Course Code - DEE604C (Semester VI)

Time allotted: 1 Hrs.15 Min. Full Marks: 60

[The figure in the margin indicates full marks.]

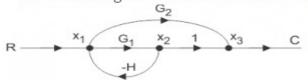
Group-A

(Multiple Choice Type Question)

1 x 60=60

Choose the correct alternative from the following:

(1)
Use mason's gain formula to calculate the transfer function of given figure:

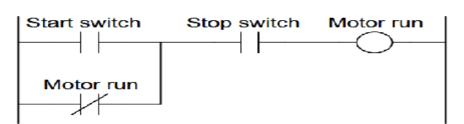


a) $G1/(1+G_2H)$

b) $G_1+G_2/(1+G_1H)$

c) $G_1G_2/1-G_1H$

- d) $G_1+G_2/(1-G_1H)$
- (2) Identify the motor control problem in this PLC program



a) coil

b) seal in contact

c) start cotact

- d) stop contact
- (3) Loop which do not possess any common node are said to be
 - a) Forward gain

b) Touching loops

c) Non touching loops

d) Feedback gain

- (4) A fully controlled converter uses
 - a) diodes only

b) thyristors only

c) both diodes and thyristors

- d) none of the mentioned
- (5) The advantage of using free wheeling diode in half controlled bridge converter is that

a) There is always a path for the dc current independ ent of the ac line	b) There is always a path for the ac current independ ent of the ac line
c) There is always a path for the dc current dependen t of the ac line	d) There is always a path for the ac current independ ent of the ac line
(6) In a single phase full wave rectifier, during blocking s	tate the peak inverse voltage of diode is
a) Vm	b) 2 Vm
c) Vm / 2	d) 4 Vm
(7) Which one of these is not a manually operated switch	?
a) Thumbwheel switch	b) Rotary selector switch
c) Crossbar switch	d) Toggle switch
(8) The primary function of a fuse is to	
a) Open the circuit	b) Protect the appliance
c) Protect the line	d) Prevent excessive currents from flow through t he circuit
(9) Fuse is never inserted in	
a) Neutral wire	b) Negative of DC circuit
c) Positive of DC circuit	d) Phase line
(10) Protection by fuses is generally not used beyond	
a) 20 A	b) 50 A
c) 100 A	d) 200 A
(11) On which off the following effects of electric current a	a fuse operates?
a) Photoelectric effect	b) Electrostatic effect
c) Heating effect	d) Magnetic effect
(12) In HRC fuse the time between cut-off and final curren	,
a) Pre-arcing time	b) Arcing time
c) Total operating time	d) None of the above
(13) HRC fuse as compared to a rewireable fuse has	,
a) No ageing effect	b) High speed of operation
c) High rupturing capacity	d) All of the above
(14) The fuse blows off by	,
a) Arcing	b) Burning
c) . Melting	d) no options
(15) A fuse is normally a	
a) Power limiting device	b) Voltage limiting device
c) Current limiting device	d) Power factor correcting device
(16) Relays can be designed to respond to changes in	a) I on or moved correcting we not
a) Resistance, reactance or impedance	b) Voltage and current
c) Temperature	d) All of the above
(17) Overload relays are of	a) The of the weeve
a) Solid state	b) Thermal
c) Electromagnetic	d) All correct
(18) MCB protects a circuit from	d) All correct
· · · · · · · · · · · · · · · · · · ·	h) Over I and only
a) Short circuitc) Both short circuit and overload	b) Over Load onlyd) None of these
*	a) Notic of these
(19) Which of the following fuse is very fast in operation?	h) Coming ductor Free
a) KitKat fuse	b) Semiconductor Fuse

c) Cartridge fuse	d) High rupturing capacity type
(20) Why starters are required in a DC motor?	
a) Back emf of these motors is zero initially	b) These motors are not self-starting
c) These motors have high starting torque	d) To restrict armature current as there is no back em f at starting
(21) The speed of a DC shunt motor can be increased b	у
a) Increasing the resistance in armature circuit	b) Increasing the resistance in field circuit
c) Reducing the resistance in the field circuit	d) Reducing the resistance in the armature circuit
(22) To save energy during braking what type of brakin	g is used?
a) dynamic	b) plugging
c) regenerative	d) all of the above
(23) Polarity of supply voltage is reversed in which typ	e of braking?
a) regenerative	b) plugging
c) dynamic	d) rheostat
(24) What type electric drive is used in cranes?	
a) mutimotor	b) group
c) individual	d) both 2 and 3
(25) Which speed control method preferred for constan	t torque drive?
a) field control	b) armature voltage control
c) mechanical loading	d) None
(26) Zero initial condition for a system means	
a) input reference signal is zero	b) zero stored energy
c) no initial movement of moving parts	d) system is at rest and no energy is stored in any of its components
(27) The transfer function is applicable to which of the	following?
a) Linear and time-in variant systems	b) Linear and time-variant systems
c) Linear systems	d) Non-linear systems
(28) The jog circuit has to	
a) Enable the seal-in circuit	b) Activate (parallel) the start circuit.
c) Disable the seal-in circuit	d) Both Disable the seal-in circuit and Activate (para llel) the start circuit
(29) For which types of D.C. motor, dynamic braking is	is generally used?
a) shunt motor	b) series motor
c) compound motor	d) all the above
(30) If T is the time period for a chopper circuit and $\alpha\ i$	s its duty cycle, then the chopping frequency is
a) Ton/α	b) Toff/α
c) a/Toff	d) α/Ton
(31) Find the output voltage expression for a step down the duty cycle	chopper with Vs as the input voltage and α as
a) $Vo = Vs/\alpha$	b) Vo = Vs x α
c) $Vo = Vs2/\alpha$	d) Vo = $2Vs/\alpha\pi$
(32) In case the back e.m.f. and the speed of a D.C. mo otor will	tor are doubled, the torque developed by the m
a) remain unchanged	b) Reduce to one-fourth value
c) Increase four folds	d) be doubled
(33) For a step-up/step-down chopper, if α (duty cycle)	= 0.5 then

a) $Vo = Vs$	b) b) $Vo < Vs$	
c) c) $V_0 > V_S$	d) c) $Vo \ge Vs$	
(34) The expression for a step-up/step-down chopper with oltage is	$\boldsymbol{\alpha}$ as the duty cycle and Vs as the dc input \boldsymbol{v}	
a) $Vs/1 - \alpha$	b) $\alpha \times Vs$	
c) Vs $(\alpha/1-\alpha)$	d) Vs $(\alpha/1+\alpha)$	
(35) The acronym PLC stands for		
a) Pressure Load Control	b) Programmable Logic Controller	
c) Pneumatic Logic Capstan	d) Pressure Loss Chamber	
(36) Ladder logic programming consists primarily of:		
a) Virtual relay contacts and coils	b) Logic gate symbols with connecting lines	
c) Function blocks with connecting lines	d) Hieroglyphics	
(37) The difference between online and offline PLC progra	amming is .	
a) whether the PLC is running or stopped	b) whether the programming PC has internet connect ivity	
c) the type of programming cable used	d) where the edited program resides	
(38) In PLC programming, a retentive function is one that		
a) Defaults to the "on" state	b) Comes last in the program	
c) Defaults to the "off" state	d) Is not reset after a power cycle	
(39) An OR function implemented in ladder logic uses		
a) Normally-closed contacts in series	b) Normally-open contacts in series	
c) A single normally-closed contact	d) Normally-open contacts in parallel	
(40) The PLC was invented by		
a) Bill Gates	b) Dick Morley	
c) Bill Landis	d) Tod Cunningham	
(41) The first company to build PLCs was		
a) General Motors	b) Allen Bradley	
c) Square D	d) Modicon	
(42) From the following which statements is correct?		
a) Ladder logic is a PLC graphical programming tec hnique introduced in the last 10 years.	b) A ladder logic program is hard to analyze because it is totally different when compared with the equi valent relay logic solution.	
c) The number of ladder logic virtual relays and input and output instructions is limited only by memory size.	d) The number of contacts for a mechanical relay is l imited to number of coils on the relay.	
(43) Find the non-correct statements from the following		
 a) If a problem in a PLC module occurs, the module can be changed in a matter of minutes without any changes in wiring. 	b) Outputs can be paralleled on the same rung.	
c) The physical wires between the input and output f ield devices and the PLC input and output module s are the only signal wires required in the PLC sys tem.	d) The cost and size of PLCs have increased signific antly in the last 10 years.	
(44) Which statement is not true for a single pole double the	nrow relay	
a) It is called an SPDT type of relay.	b) It has one common contact.	
c) It has two positions (NC and NO).	d) It has a center off position.	
(45) Which option is the correct alternative for a single pole double throw relay		
a) Insulators are used in the armature to isolate the el	b) The NC contact and the pole are in contact when t	

ectrical switching contacts from the rest of the rel ay components.	he relay is off.
c) It has just one coil.	d) All options are true.
(46) When a relay is NOT energized:	
a) There is an electrical path through the NO contact s	b) There is an electrical path through the NC contact s
c) Neither the NO or the NC contacts have an electrical path	d) Both the NO and the NC contacts have an electric al path
(47) Current flows into the	-
a) Input terminal of a sinking DC input modulec) Output terminal of a sinking input field device	b) Input terminal of a sinking output field device d) All of the above
(48) In a current sinking DC input module	
a) The current flows out of the input field device	b) Requires that a AC sources be used with mechani cal switches
c) The current flows out of the input module	d) Currents can flow in either direction at the input module
(49) The type of memory which is fast and temporarily sto d for use is called as	ores the data which are immediately require
a) HDD	b) ROM
c) RAM	d) SSD
(50) How is the noise immunity of PLCs to electrical noise controllers?	es as compared to that of conventional relay
a) poor	b) excellent
 c) as good as noise immunity of conventional relay c ontrollers 	d) unpredictable
(51) PLC can be in plant to change the sequence of	operation.
a) only programmed	b) only reprogrammed
c) programmed and reprogrammed	d) able to give a set point
(52) The programmable logic controller is used in	
a) machine tools	b) automated assembly equipment
c) moulding and extrusion machines	d) all of the above
(53) are some simple building blocks of a digital sys conditions of the inputs.	tem which control their output based on the
a) Servomechanism	b) Control action
c) Logic gates	d) Micro-controller
(54) What is the full form of SCADA?	
a) Supervision Control And Data Acquisition	b) Supervisory Control And Data Accumulation
c) Supervisory Control And Data Acquisition	d) Supervisory Controller And Data Acquisition
(55) From the following which is the advantage of PLC So	CADA system.
a) Data can be viewed from any where	b) Possible to connect thousands of sensors
c) Data can be display in any way	d) All of above
$(56)\underline{\hspace{1cm}}$ is a method used to send commands , programs he remote locations.	and receives monitoring information from t
a) Micro-controller	b) PLC
c) Telemetry	d) no options are right
(57) A major part of the automatic control theory applies t	to the:
a) Casual systems	b) non-Casual systems
c) Linear Time invariant systems	d) non-linear Time invariant systems

- (58) From which of the following transfer function can be obtained?
 a) signal flow graph
 b) output-input ratio
 c) standard block system
 d) analogus table
 (59) Loop gain is equal to:
 a) Product of all branch gains while traversing the forward path
 b) Summation of all branch gains in a loop
 d) Sum of all branch gains while traversing the forward path
- (60) The overall transfer function of two blocks in parallel are
 - a) Product of individual gain

b) difference of individual gain

c) sum of individual gain

d) division of individual gain