



**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.]

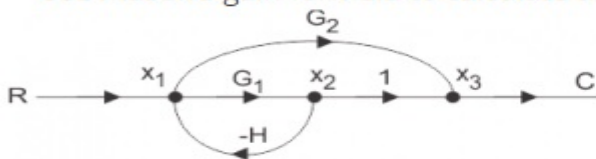
**Group-A**

(Multiple Choice Type Question)

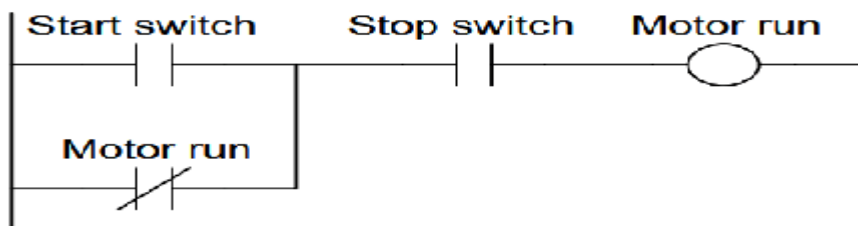
1 x 60=60

Choose the correct alternative from the following :

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



- a)  $G_1/(1+G_2H)$
  - 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 independent of the ac line  
 b) There is always a path for the ac current independent of the ac line
- c) There is always a path for the dc current dependent of the ac line  
 d) There is always a path for the ac current independent of the ac line
- (6) In a single phase full wave rectifier, during blocking state the peak inverse voltage of diode is  
 a)  $V_m$   
 b)  $2 V_m$   
 c)  $V_m / 2$   
 d)  $4 V_m$
- (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 the 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 of the following effects of electric current 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 current zero is called the  
 a) Pre-arcing time  
 b) Arcing time  
 c) Total operating time  
 d) None of the above
- (13) HRC fuse as compared to a rewirable 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) Resistance, reactance or impedance  
 b) Voltage and current  
 c) Temperature  
 d) All of the above
- (17) Overload relays are of  
 a) Solid state  
 b) Thermal  
 c) Electromagnetic  
 d) All correct
- (18) MCB protects a circuit from  
 a) Short circuit  
 b) Over Load only  
 c) Both short circuit and overload  
 d) None of these
- (19) Which of the following fuse is very fast in operation?  
 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 emf at starting
- (21) The speed of a DC shunt motor can be increased by
- 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 braking is used?
- a) dynamic
- b) plugging
- c) regenerative
- d) all of the above
- (23) Polarity of supply voltage is reversed in which type 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 constant 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 (parallel) the start circuit
- (29) For which types of D.C. motor, dynamic braking 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  $\alpha$  is its duty cycle, then the chopping frequency is
- a)  $T\alpha/\alpha$
- b)  $T\alpha/\alpha$
- c)  $\alpha/T\alpha$
- d)  $\alpha/T\alpha$
- (31) Find the output voltage expression for a step down chopper with  $V_s$  as the input voltage and  $\alpha$  as the duty cycle
- a)  $V_o = V_s/\alpha$
- b)  $V_o = V_s \times \alpha$
- c)  $V_o = V_s^2/\alpha$
- d)  $V_o = 2V_s/\alpha\pi$
- (32) In case the back e.m.f. and the speed of a D.C. motor are doubled, the torque developed by the motor will
- 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  $\alpha$  (duty cycle) = 0.5 then



- electrical switching contacts from the rest of the relay components.
- c) It has just one coil.
- (46) When a relay is NOT energized:
- a) There is an electrical path through the NO contacts
- b) There is an electrical path through the NC contacts
- c) Neither the NO or the NC contacts have an electrical path
- d) Both the NO and the NC contacts have an electrical path
- (47) Current flows into the \_\_\_\_\_
- a) Input terminal of a sinking DC input module
- b) Input terminal of a sinking output field device
- c) Output terminal of a sinking input 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 mechanical 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 stores the data which are immediately required for use is called as \_\_\_\_\_.
- a) HDD
- b) ROM
- c) RAM
- d) SSD
- (50) How is the noise immunity of PLCs to electrical noises as compared to that of conventional relay controllers?
- a) poor
- b) excellent
- c) as good as noise immunity of conventional relay controllers
- 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 system which control their output based on the conditions of the inputs.
- 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 SCADA 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) \_\_\_\_\_ is a method used to send commands , programs and receives monitoring information from the remote locations.
- a) Micro-controller
- b) PLC
- c) Telemetry
- d) no options are right
- (57) A major part of the automatic control theory applies 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) analogous 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
- c) Product 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