MAGDALINE COACHING CENTRE (mc²)
ELECTRICAL ENGINEERING PAPER 2
(Answer key at the bottom)

1. Bundled conductors are mainly used in high voltage overhead transmissions lines to
(A) Reduce transmission losses
(B) Increase mechanical strength of the line
(C) Reduce corona
(D) reduce sag

2. Choose the appropriate auxiliary components of HVDC transmission system from the following
1. DC line inductor
2. AC line inductor
3. Reactive power source
4. Distance relays on DC line
5. Series capacitance on Ac line
(A) 1 and 2
(B) 1 and 3
(C) 2 and 4
(D) 4 and 5

3. The interrupting time of a circuit breaker is the period between the instant of
(A) initiation of short circuit and the arc extinction on an opening operation
(B) energizing of the trip circuit and the arc extinction on an opening operation
(C) initiation of short circuit and the parting of primary arc contacts
(D) energizing of the trip circuit and the parting of primary ac contacts

4. A list of relays and the power system components protected by the relays are given in List – I and List – II respectively. Choose the correct match from the four choices given below:

List – I	List - II
a) distance relay	1. Transformers
b) under frequency relay	2. Turbines
c) differential relay	3. Busbars
d) buchholz relay	4. Shunt capacitors
	5. Alternators
	6. Transmission lines

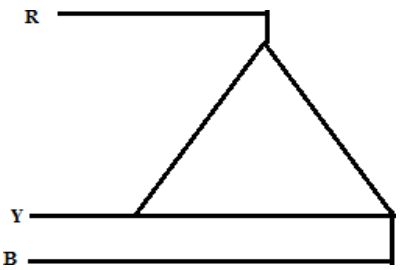
Codes:

	a	b	c	d
(A)	6	5	3	1
(B)	4	3	2	1
(C)	5	2	1	6
(D)	6	4	5	3

5. Total instantaneous power supplied by a 3 phase ac supply to a balanced R-L load is
(A) zero
(B) constant
(C) pulsating with zero average
(D) pulsating with non-zero average

6. The rated voltage of a 3 phase power system is given by
(A) rms phase voltage
(B) peak phase voltage
(C) rms line to line voltage
(D) peak line to line voltage

7. The phase sequence of the 3 phase system shown in figure is



(A) RYB
(B) RBY
(C) BRY
(D) YBR

8. In thermal power plants, the pressure in the working fluid cycle is developed by
(A) condenser
(B) super heater
(C) feed water
(D) turbine

9. For harnessing low variable waterheads, the suitable hydraulic turbine with high percentage of reaction and runner adjustable vanes is
(A) kaplan
(B) francis
(C) pelton
(D) impeller

10. The transmission line distance protection relay having the property of being inherently directional is
(A) impedance relay
(B) MHO relay
(C) OHM relay
(D) reactance relay

11. A hydraulic turbine having a rated speed of 250 rpm is connected to a synchronous generator. In order to produce power at 50 Hz, the number of poles required in the generator are
(A) 6

(B) 12
(C) 16
(D) 24

12. The p.u. parameters for a 5mm MVA machine on its base are:
inertia, M = 20 p.u.; reactance, X = 2 p.u. The p.u. values of inertia and reactance on 100 MVA common base, respectively, are
(A) 4, 0.4
(B) 100, 10
(C) 4, 10
(D) 100, 0.4

13. The insulation strength of an EHV transmission line is mainly governed by
(A) load power factor
(B) switching over – voltages
(C) harmonics
(D) corona

14. High voltage DC transmission is mainly used for
(A) bulk power transmission over very long distances
(B) inter-connecting two systems with the same nominal frequency
(C) eliminating reactive power requirement in the operation
(D) minimizing harmonics at the converting stations

15. The concept of an electrically short, medium and long line is primarily based on the
(A) nominal voltage of the line
(B) physical length of the line
(C) wavelength of the line
(D) power transmitted over the line

16. Keeping in view the cost and overall effectiveness, the following circuit breaker is best suited for capacitor bank switching
(A) vacuum
(B) air blast
(C) SF6
(D) oil

17. In a biased differential relay the bias is defined as a ratio of
(A) number of turns of restraining and operating coil
(B) operating coil current and restraining coil current
(C) fault current and operating coil current
(D) fault current and restraining coil current

18. An HVDC link consists of rectifier, inverter transmission line and other equipments. Which one of the following is true for this link?
(A) the transmission line produces/supplies reactive power
(B) the rectifier consumes reactive power and the inverter supplies reactive power from/to the respective connected AC systems
(C) rectifier supplies reactive power and the inverter consumes reactive power from/to the respective connected AC systems
(D) both the converters (rectifier/inverter) consumes reactive power from the respective connected AC systems.

19. The Gauss Siedel load flow method has following disadvantages. Tick the correct statement.
(A) unreliable convergence
(B) slow convergence
(C) choice of slack bus affects convergence
(D) a good initial guess for voltage sis essential for convergence

20. Out of the following plant categories
1. Nuclear
2. Run-of-river
3. Pump storage
4. Diesel
the base load power plant are
(A) 1 and 2
(B) 2 and 3
(C) 1, 2 and 4
(D) a, 3 and 4

21. A load curve is a plot of
(A) load versus duration of time
(B) load versus current
(C) load versus time
(D) total number of units generated versus time

22. Feeder is designed mainly from the point of view of
(A) its current carrying capacity
(B) voltage drop in it
(C) operating voltage
(D) operating frequency

23. The function of steel wire in ACSR conductor is to
(A) compensate for skin effect
(B) take care of surges
(C) provide additional mechanical strength
(D) reduce inductance

24. The corona loss on a particular system at 50 Hz is kW/km per phase. What is the corona loss at 60 Hz

in kw/km per phase?
(A) 0.83
(B) 1.0
(C) 1.13
(D) 1.2

25. What does the standing wave ratio (SWR) of unity imply?
(A) transmission line is open circuited
(B) transmission line is short circuied
(C) transmission's line characteristics impedance is equal to load impedance
(D) transmission's line characteristics is not equal to load impedance

26. Corona loss in a DC line is
(A) less than that in ac line operating at same rms voltage
(B) more than that in ac line operating in same rms voltage
(C) same as in ac linear equal rms voltage
(D) none of the above

27. Which of the following circuit breakers has the lowest operating voltage?
(A) SF
(B) air break
(C) air blast
(D) minimum oil

28. Cables that are used for 132 kV lines are
(A) high tension
(B) super tension
(C) extra high tension
(D) extra super voltage

29. Conduit pipes are normally used to protect _____ cables.
(A) unsheathed
(B) PVC sheathed
(C) armored
(D) all of the above

30. The dielectric strength of rubber is around
(A) 5 kV/mm
(B) 15 kV/mm
(C) 30 kV/mm
(D) 100 kV/mm

31. In cables the charging current
(A) lags the voltage by 90°
(B) leads the voltage by 90°
(C) lags the voltage by 180°
(D) leads the voltage by 180°

32. The wooden poles well impregnated with creosote oil or any preservative compound have life
(A) 2 to 5 years
(B) 10 to 15 years
(C) 25 to 30 years
(D) 60 to 70 years

33. A booster is a
(A) series wound generator
(B) shunt wound generator
(C) synchronous generator
(D) none of the above

34. Pin type insulators are generally not used for voltages beyond
(A) 1 kV
(B) 11 kV
(C) 22 kV
(D) 33 kV

35. Load factor of a power station is generally
(A) equal to unity
(B) less than unity
(C) more than unity
(D) equal to zero

36. High load factor indicates
(A) cost of generation per unit power is increased
(B) total plant capacity is utilized for most of the time
(C) total plant capacity is not properly utilized for most of the time
(D) none of the above

37. Which plant can never have 100 percent load factor?
(A) peak load plant
(B) base load plant
(C) nuclear power plant
(D) hydro power plant

38. For a power plant which of the following constitutes running cost?
(A) cost of wages
(B) cost of fuel
(C) cost of lubricants
(D) all of the above

39. A power transformer is usually rated at
(A) kW
(B) kVAR
(C) kWh
(D) kVA

40. The efficiency of a plant is of least importance if it is selected as

(A) peak load plant
(B) casual run plant
(C) both (A) and (B)
(D) base load plant

41. A single phase transformer has a maximum efficiency of 90 at full load and unity power factor. Efficiency at half load at the same power factor is
(A) 86.7%
(B) 88.26%
(C) 88.9%
(D) 87.8%

42. A stand alone engine driven synchronous generator is feeding partly inductive load. A capacitor is now connected across the load to completely nullify the inductive current. For this operating condition,
(A) the field current and the fuel input have to be reduced
(B) the field current and the fuel input have to be increased
(C) the field current has to be increased and the fuel input left unaltered
(D) the field current has to be reduced and fuel input left unaltered

43. No - load test on a three phase induction motor was conducted at different supply voltages and a plot of input power versus voltage was drawn. This curve was extrapolated to intersect the y - axis. This intersection point yields
(A) core loss
(B) stator copper loss
(C) stray load loss
(D) friction and windage loss

44. A 4 pole 3 phase double layer winding is housed in a 36 slot stator for an ac machine with 60° phase spread. Coil span is 7 short pitched. Number of slots in which top and bottom layers belong to different phases is
(A) 24
(B) 18
(C) 12
(D) 0

45. A three phase induction motor is driving a constant load torque load at a rated voltage and frequency. If both voltage and frequency are halved, following statements relate to the new condition if stator resistance, leakage reactance and core loss are ignored
1. The difference between synchronous speed and actual speed remains same
2. The air gap flux remains same
3. The stator current remains the same
4. The p.u. slip remains the same
(A) all
(B) 1, 2 and 3
(C) 2,3 and 4
(D) 1 and 4

46. A single phase induction motor with only the main winding excited would exhibit the following response at synchronous speed
(A) rotor current is zero
(B) rotor current is non – zero and is at slip frequency
(C) forward and backward rotating fields are equal
(D) forward rotating field is more than the backward rotating field

47. A dc series motor driving an electric train faces a constant power load. It is running at rated speed and voltage. If the speed has to be brought down to 0.25 pu the supply voltage has to be approximately brought down to
(A) 0.75 pu
(B) 0.5 pu
(C) 0.25 pu
(D) 0.125 pu

48. A 500 kVA, 3 phase transformer has iron losses of 300 W and full load copper losses of 600 W. the percentage load at which the transformer is expected to have maximum efficiency is
(A) 50.0%
(B) 70.7%
(C) 141.4%
(D) 200.0%

49. For a given stepper motor, the following torque has the highest numerical value.
(A) detent torque
(B) pull – in torque
(C) pull out torque
(D) holding torque

50. The following motor definitely has a permanent magnet rotor
(A) DC commutator motor
(B) brushless DC motor
(C) stepper motor
(D) reluctance motor

51. An auto transformer has
(A) only one winding

(B) two windings of the same gauge of wire
(C) two windings of different materials
(D) more than two windings

52. The power factor in a transformer is
(A) is always unity
(B) is always lagging
(C) is always leading
(D) depends on the power factor of the load

53. A transformer does not transforms
(A) power
(B) voltage
(C) current
(D) impedance

54. Power transformers are usually designed to have maximum efficiency at
(A) near full load
(B) near 75% of full load
(C) at 50% of full load
(D) between 50% and 75 % of full load

55. If the secondary of a 5 : 1 step down transformer is connected to the primary of a 10 : 1 step down transformer, the total step down ratio of transformer will be
(A) 5 : 1
(B) 10 : 1
(C) 50 : 1
(D) 2500 : 1

56. If the transformer core is made of copper
(A) copper losses will be less
(B) eddy current losses will be more
(C) hysteresis losses will be more
(D) none of the above

57. The useful flux of a transformer is 1.2 weber. When the transformer is loaded at 0.8 lagging, the mutual flux will be closer to
(A) 1.5 wb
(B) 1.28 wb
(C) 1.2 wb
(D) 1.1 wb

58. 1 tesla is the same as
(A) 1 weber
(B) 1 henry
(C) 1 weber/m^2
(D) 100 weber/m^2

59. The silicon steel core and laminations of a transformer are there to
(A) increase impedance and reduce hysteresis loss respectively
(B) reduce transients and eddy current loss respectively
(C) reduce hysteresis loss and eddy current loss respectively
(D) reduce eddy current loss and hysteresis loss respectively

60. Which of the following connection of transformer will give the highest secondary voltage?
(A) delta primary, delta secondary
(B) delta primary, star secondary
(C) star primary, star secondary
(D) star primary, delta secondary

61. When a 400 Hz transformer is operated at 50 Hz, its kVA rating is
(A) reduced to 1/4
(B) reduced to 1/8
(C) reduced to 1/2
(D) reduced to 1/16

62. Consider the following types of single phase motors.
1. Capacitor start induction motor
2. Capacitor start and run induction motor
3. Permanent split capacitor motor
4. Shaded pole motor
the correct sequence of these in the ascending order of magnitude of starting torque is
(A) 1-2-3-4
(B) 2-3-4-1
(C) 3-4-2-1
(D) 4-3-2-1

63. In hand tools applications, which one of the following single phase motor is used?
(A) shaded pole motor
(B) capacitor start motor
(C) capacitor run motor
(D) AC series motor

64. If a dc series motor is operated on ac supply
(A) will not start at all
(B) will start and run but will have poor performance such as excessive sparking, poor efficiency and poor power factor
(C) will get damaged due to burning of its winding
(D) will run at excessive high speed

65. A dc shunt motor does not operate on ac due to
(A) low resistance of armature circuit
(B) high resistance of field circuit
(C) high inductance of field circuit
(D) reversal of polarity

66. In an ac series motor
(A) the starting current is about 2.5 times of full load current
(B) the starting torque is about 4 times of full load torque
(C) power factor varies from 0.9 to 0.95 lagging
(D) all of the above

67. Under no load operating condition, the speed of a universal motor is limited by
(A) windage and friction
(B) armature reaction
(C) armature weight
(D) supply frequency

68. If the capacitor of a capacitor start induction motor fails to open when it picks up the speed
(A) the motor will stop
(B) the auxiliary winding will get damaged
(C) the capacitor will get damaged
(D) the main winding will get damaged

69. Why is a centrifugal switch used in a single phase induction motor?
(A) to protect the motor from overloading
(B) to improve the starting performance of the motor
(C) to cut off the starting winding at an appropriate instant
(D) to cut in the capacitor during running condition

70. Which one of the following is not a synchronous motor?
(A) hysteresis
(B) repulsion
(C) inductor
(D) reluctance

71. Repulsion induction motor has
(A) single phase winding on its stator
(B) two separate windings on its rotor in common slots
(C) squirrel cage rotor and two separate windings on stator in common slots
(D) both (A) and (B)

72. A hysteresis motor
(A) is a self starting motor
(B) is a constant speed motor
(C) does not need dc excitation
(D) all of the above

73. For toys the preferred motor is
(A) shaded – pole motor
(B) capacitor motor
(C) reluctance motor
(D) universal motor

74. In universal motors, normally the ratio of the width of brushes to the width of commutator segments is
(A) 2:1
(B) 1:1
(C) 1:2
(D) 4:1

75. AC series motor are built with as few turns as possible to reduce
(A) flux
(B) eddy current losses
(C) reactance
(D) speed

76. A 3-phase, 4 pole squirrel cage induction motor has 36stator and 28 rotor slots. The number of phases in the rotor is
(A) 3
(B) 9
(C) 7
(D)8

77. In a synchronous machine, if the armature field axis is ahead of the field flux axis in the direction of rotation the machine operating is
(A) synchronous motor
(B) synchronous generator
(C) asynchronous motor
(D) asynchronous generator

78. Synchronous motors are generally not a self starting machine because
(A) the direction of rotation is not fixed
(B) the direction of instantaneous torque reverses after half cycle
(C) starters cannot be used on these machines
(D) starting winding is not provided on the machines

79. A synchronous motor can operate at
(A) lagging power factor only
(B) leading power factor only
(C) unity power factor only
(D) lagging, leading and unity power factors

80. In a synchronous motor, the maximum power developed depends on all of the following except
(A) rotor excitation
(B) maximum value of coupling angle
(C) direction of rotation
(D) supply voltage

81. In thyristor, holding current is
(A) more than the latching current
(B) less than the latching current
(C) equal to the latching current
(D) none of the above

82. When a thyristor turns on, the gate drive
(A) can be turned down but thyristor remain in ON position
(B) cannot be turned down as thyristor will be turned OFF
(C) gate drive has no impact on starting and turning OFF the thyristor
(D) none of the above

83. A thyristor can be termed as
(A) DC switch
(B) AC switch
(C) both AC and DC switch
(D) none of the above

84. An IGBT has three terminals called
(A) collector, emitter and base
(B) drain, source and base
(C) drain, source and gate
(D) collector, emitter and gate

85. A UJT exhibits a negative resistance region
(A) before the break point
(B) between peak and valley point
(C) after the valley point
(D) both (A) and (C)

86. For dynamic equalizing circuit used for series connected SCRs, the choice of C is based on
(A) reverse recovery characteristics
(B) turn – on characteristics
(C) turn – off characteristics
(D) rise time characteristics

87. In a circulating – current type of dual converter, the nature of the voltage across the reactor is
(A) alternating
(B) pulsating
(C) direct
(D) triangular

88. A single phase full bridge inverter can operate in load – commutation mode in case load consist of
(A) RL load
(B) RLC under-damped
(C) RLC damped
(D) RLC critically damped

89. Practical way of obtaining static voltage equalization in series connected SCRs is by the use of
(A) one resistor across the string
(B) resistors of different values across each SCR
(C) resistors of the same value across each SCR
(D) one resistor in series with each SCR

90. Junction breakdown occurs
(A) with forward bias
(B) with reverse bias
(C) under high temperature condition
(D) because of the excess heating of the diode

91. In a P – N junction the barrier potential offers opposition to only
(A) holes in P - region
(B) free electrons in N - region
(C) majority carriers in both regions
(D) minority carriers in both regions

92. In the depletion region in the P –N junction there are
(A) no charges
(B) no current
(C) no mobile charges
(D) no electron

93. For highly doped diode
(A) zener breakdown is likely to take place
(B) avalanche breakdown is likely to take place
(C) either (A) or (B) can take place
(D) neither (A) nor (B) will take pace

94. Tunnel diode is a
(A) power diode
(B) has light doping
(C) has heavy doping
(D) is a reverse recovery diode

95. Zener diode is used as the main component in DC power supply for
(A) rectification
(B) voltage regulation
(C) filter action
(D) both (A) and (B)

96. Reverse resistance of a diode is of the order of
(A) milli ohm
(B) ohm
(C) kilo ohm
(D) mega ohm

97. LEDs are fabricated from
(A) silicon
(B) germanium
(C) either (A) or (B)
(D) gallium arsenide

98. The arrow head of a transistor symbol always shows the direction of
(A) electron flow in emitter region
(B) conventional current flow
(C) majority carrier flow in the emitter region
(D) minority carrier flow in the emitter region

99. Salient poles are generally used on
(A) high speed prime movers only
(B) medium speed prime movers only
(C) low speed prime movers only
(D) low and medium speed prime movers

100. The frequency of voltage generated in an alternator depends on
(A) number of poles
(B) rotating speed
(C) number of poles and rotating speed
(D) number of poles, rotating speed and type of winding

101. The frequency of voltage generated by an alternator having 8 poles and rotating at 250 rpm is
(A) 60 Hz
(B) 50 Hz
(C) 25 Hz
(D) 16.7 Hz

102. An alternator is generating power at 210 V per phase while running at 1500 rpm. If the speed of the alternator drops to 1000 rpm the generated voltage per phase will be
(A) 180 V
(B) 140 V
(C) 120 V
(D) 105 V

103. A 10 pole AC generator rotates at 1200 rpm. The frequency of AC voltage in cycles per second will be
(A) 120
(B) 110
(C) 100
(D) 50

104. The number of electrical degrees passed through in one revolution of a 6 pole synchronous alternator is
(A) 360°
(B) 720°
(C) 1080°
(D) 2160°

105. An ideal OP-AMP is an ideal
(A) current controlled current source
(B) current controlled voltage source
(C) voltage controlled voltage source
(D) voltage controlled current source

106. The ideal OP-AMP has the following characteristics
(A) $R_i = \infty$, A = ∞, $R_o = 0$
(B) $R_i = 0$, A = ∞, $R_o = 0$
(C) $R_i = \infty$, A = ∞, $R_o = \infty$
(D) $R_i = 0$, A = ∞, $R_o = \infty$

107. Which of the following amplifier is used in a digital to analog converter
(A) non inverter
(B) voltage follower
(C) summer
(D) differential amplifier

108. The two input terminals of an OP-AMP are labeled as
(A) high and low
(B) positive and negative
(C) inverting and non inverting
(D) differential and non differential

109. A voltage follower
(A) has a voltage gain of 1
(B) is non inverting
(C) has no feedback resistor
(D) all of the above

110. In a transistor the base current is about_____of emitter current
(A) 25%
(B) 20%
(C) 30%
(D) 5%

111. At the base emitter junction of a transistor, one finds
(A) a reverse bias
(B) a wide depletion layer
(C) low resistance
(D) high resistance

112. In a transistor
(A) IC = IE + IB
(B) IB = IC + IE
(C) IE = IC - IB
(D) IE = IC + IB

113. The output impedance of a transistor is
(A) high
(B) zero
(C) low
(D) very low

114. In a transistor if β = 100, and collector current is 10 mA, then IE is
(A) 100 mA
(B) 100.1 mA
(C) 110 mA
(D) none of the above

115. The relation between β *and* α is
(A) $\beta = 1/(1- \alpha)$
(B) $\beta = (1- \alpha)/ \alpha$
(C) $\beta = \alpha /(1- \alpha)$
(D) $\beta = \alpha /(1 \mp \alpha)$

116. The value of β for a transistor is generally _____
(A) 1
(B) less than 1
(C) between 20 and 500
(D) above 500

117. As the temperature of a transistor goes up, the base – emitter resistance
(A) decreases
(B) increases
(C) remains the same
(D) none of the above

118. The voltage gain of a transistor connected in common collector arrangement is
(A) equal to 1
(B) more than 10
(C) more than 100
(D) less than 1

119. A triac is
(A) like a bi directional SCR
(B) a four terminal device
(C) not a thyristor
(D) both (A) and (B)

120. Which of the following is not a characteristic of UJT?
(A) intrinsic standoff ratio
(B) negative resistance
(C) peak – point voltage
(D) bilateral conduction

121. The UJT may be used as
(A) an amplifier
(B) a sawtooth generator
(C) a rectifier
(D) none of the above

122. A UJT is sometimes called as
(A) low resistance diode
(B) high resistance diode
(C) single base diode
(D) double base diode

123. A DIAC has____PN junctions
(A) four
(B) two
(C) three
(D) one

124. A TRIAC can be used only in
(A) chopper
(B) inverter
(C) multi quad chopper
(D) none of the above

125. During forward blocking state, a thyristor is associated with
(A) large current and low voltage
(B) low current and low voltage
(C) medium current and medium voltage
(D) medium voltage and high current

126. An exciter for a generator is a
(A) shunt motor
(B) series motor
(C) shunt generator
(D) series generator

127. A cordless telephone using separate frequencies for transmission in base and portable nits is called as
(A) duplex arrangement
(B) half duplex arrangement
(C) either (A) or (B)
(D) none of the above

128. For attenuation of high frequencies we should use
(A) shunt capacitance
(B) series capacitance
(C) inductance
(D) resistance

129. A modem is classified as low speed if data rate handed is
(A) upto 100 bps
(B) upto 250 bps
(C) upto 400 bps
(D) upto 600 bps

130. VSB modulation is preferred in TV because
(A) it reduces the bandwidth requirement to half
(B) it avoids phase distortion at low frequencies
(C) it result in better reception
(D) none of the above

131. For telegraphy the most commonly used modulated system is
(A) FSK

(B) two tone modulation
(C) PCM
(D) single tone modulation

132. Commercial frequency deviation of FM is
(A) 70 kHz
(B) 75 kHz
(C) 80 kHz
(D) 65 kHz

133. If output power of a radio receiver is doubled, its volume is increased by_____dB
(A) 2
(B) 3
(C) 1
(D) 5

134. DVD uses
(A) laser beam of both recording and playback
(B) laser beam for recording and video head for playback
(C) video head for recording and laser for playback
(D) none of the above

135. For a low level AM system, the amplifiers modulated stage must be
(A) linear devices
(B) harmonic devices
(C) class C amplifiers
(D) non – linear devices

136. Which of the following is a digital modulation technique?
(A) PCM
(B) PSK
(C) DM
(D) all of the above

137. SSB can be generated by
(A) filter method
(B) phase cancellation method
(C) good attenuation characteristics
(D) all of the above

138. PAM stands for
(A) pulse analog modulation
(B) phase analog modulation
(C) pulse amplitude modulation
(D) phase amplitude modulation

139. A buffer amplifier is
(A) a double tuned amplifier
(B) a high gain DC amplifier
(C) a cathode follower stage
(D) none of the above

140. The direction of rotation of a CD is
(A) mostly clock wise
(B) mostly anti cock wise
(C) clock wise or anti clock wise depending on frequency of data stored
(D) none of the above

141. FPGA means
(A) field programmable gate array
(B) forward programmable gate array
(C) forward parallel gate array
(D) field parallel gate array

142. Which of the following is not a vector interrupt
(A) TRAP
(B) INTR
(C) RST 7.5
(D)RST 3

143. 8085 has how many pins
(A) 30
(B) 39
(C) 40
(D) 41

144. In 8085 microprocessor, the RST 6 instruction transfers program execution to following location
(A) 0030H
(B) 0024H
(C) 0048H
(D) 0060H

145. HLT OP code means
(A) load data to accumulator
(B) store result in memory
(C) load accumulator with contents of register
(D) end of program

146. In 8085 name of the 16 bit register/s is/are
(A) stack pointer
(B) program counter
(C) both A and B
(D) none of the above

147. What is SIM?
(A) select interrupt mask
(B) sorting interrupt mask
(C) set interrupt mask
(D)none of the above

148. The ROM programmed during manufacturing process itself is called
(A) MROM
(B) PROM
(C) EPROM
(D) EEPROM

149. A field programmable ROM is called
(A) MROM
(B) PROM
(C) FROM
(D) FPROM

150. Which one of the following transmits two messages simultaneously in one direction?
(A) Duplex
(B) Diplex
(C) Simplex
(D) Quadruplex

151. The number of output pins in 8085 microprocessor are
(A) 40
(B) 27
(C) 21
(D) 19

152. In Intel 8085A microprocessor ALE signal is made high to
(A) enable the data bus to be used as low order address bus
(B) to latch data D0 – D7 from data bus
(C) to disable data bus
(D) to achieve all the functions listed above

153. Which of the following statement for 8085 is correct?
(A) PC specifies the address of the instruction last executed
(B) PC specifies the address of the instruction being executed
(C) PC specifies the address of the instruction to be executed
(D) PC specifies the number of instructions executed so far

154. A good language programmer should use a general purpose registers rather than memory in maximum possible ways for data processing because
(A) data processing with registers is easier than with memory
(B) data processing with memory requires more instructions in the program than that with registers
(C) of limited set of instructions for data processing with memory
(D) data processing with registers takes few cycles than that with memory

155. Which of the following statement is not correct?
(A) bus is a group of wires
(B) bootstrap is a technique or device for loading first instruction
(C) an instruction is a set of bits that defines a computer operation
(D) an interrupt signal is required at the start of every program

156. Processor status word of 8085 microprocessor has five flags which are
(A) S, Z, AC, P, CY
(B) S, OV, AC, P, CY
(C) S, Z , OV, P, CY
(D) S, Z, AC, P, OV

157. From the following statements which of the following are correct
1. A total of about 1 million bytes can be directly addressed by the 8085 microprocessor
2. 8086 has thirteen 16 – bit registers
3. 8086 has eight flags
4. Compared to 8086, the 8026 provides a higher degree of memory protection.
(A) 2, 3 and 4
(B) 1, 3 and 4
(C) 1, 2 and 4
(D) 1, 2 and 3

158. What are the sets of commands in a program which are not translated into machine instructions during assembly process called?
(A) mnemonics
(B) directives
(C) operands
(D) none of the above

159. In an Intel 8085A microprocessor, why is READYsignal used?
(A) to indicate the user that the microprocessor is working and is ready to use
(B) to provide proper WAIT states when the microprocessor is communicating with a slow peripheral device
(C) to slow down a fast peripheral device so as to communicate at the microprocessor's device
(D) none of the above

160. Consider the following
1. Sign flag
2. Trap flag
3. Parity flag
4. Auxiliary flag.
which one of the above flag is/are present in 8085 microprocessor?
(A) 1 only

(B) 1 and 2 only
(C) 2 and 3 only
(D)1, 3 and 4

161. Assertion (**A**): address bus is unidirectional
Reason (R): data bus is bi directional
(A) both (**A**) and (R) are true and (R) is the correct explanation of (**A**)
(B) both (**A**) and (R) are true but (R) is not the correct explanation of (**A**)
(C) (**A**) is true but (R) is false
(D) (**A**) is false but (R) is true

162. Which components are not found on a chip in a microprocessor but may be found on chip in a micro controller?
(A) SRAM and USART
(B) EPROM and PORTS
(C) EPROM, USART, and PORTS
(D) SRAM, EPROM and PORTS

163. The first machine cycle of an instruction is always
(A) a memory read cycle
(B) a fetch cycle
(C) an I/O read cycle
(D) a memory write cycle

164. ALU:
1. Performs arithmetic operation
2. Performs comparison
3. Communicates with I/O devices
4. Keeps watch on the system.
Which of the following statements are correct?
(A) 1, 2, 3 and 4
(B) 1, 2 and 3
(C) 1 and 2
(D) 3 and 4

165. Identify the non – mask able interrupt from the following
(A) RST 7.5
(B) RST 6.5
(C) RST 5.5
(D) RST 4.5

166. SUB A instruction in 8085 microprocessor
(A) reset carry and sign flag
(B) reset zero and parity flag
(C) reset zero and sign flag
(D) reset zero and carry flag

167. In 8085 microprocessor, in response to RST 7.5 interrupts the execution is transferred to memory location
(A) 0000H
(B) 002CH
(C) 0034H
(D)003CH

168. In 8085 microprocessor, maximum possible number of I/O devices can be connected using I/O mapped I/O technique is
(A) 64
(B) 512
(C) 256
(D) 65536

169. Which of the following interrupt is both level and edge sensitive?
(A) RST 5.5
(B) INTR
(C) RST 7.5
(D) TRAP

170. Which one of the following lists the interrupt in decreasing order of priority?
(A) TRAP, RST 5.5, RST 6.5, RST 7.5, INTR
(B) INTR, TRAP, RST 7.5, RST 6.5, RST 5.5
(C) TRAP, RST 7.5, RST 6.5, RST 5.5, INTR
(D) RST 7.5, RST 6.5, RST 5.5, INTR

171. Temporary registers in 8085are
(A) B and C
(B) D and E
(C) H and L
(D) W and Z

172. Length of instruction POP D is
(A) 1 byte
(B) 2 byte
(C) 3 byte
(D) 4 byte

173. How many machine cycles are required for execution of IN30H instruction
(A) 3
(B) 4
(C) 5
(D) 6

174. The conduction loss versus device current characteristics of a power MOSFET is best approximated by
(A) a parabola
(B) a straight line
(C) a rectangular hyperbola
(D) an exponential decaying function

175. The output voltage waveform of a 3 – phase square wave inverter contains
(A) only even harmonics

(B) both odd and even harmonics
(C) only odd harmonics
(D) only triple harmonics

176. A single phase fully bridge converter supplies a load drawing constant and ripple free load current. If the triggering angle is 30°, the input power factor will be
(A) 0.65
(B) 0.78
(C) 0.85
(D) 0.866

177. An SCR is considered to be a semi controlled device because
(A) it can be turned OFF but not ON with a gate pulse
(B) it conducts only during only one half cycle of an alternating current wave
(C) it can be turned ON but not OFF with a gate pulse
(D) it can be turned ON only during one half cycle of an alternating voltage wave

178. Circuit turn off time of an SCR is defined as the time
(A) taken by the SCR to turn off
(B) required for the SCR current to become zero
(C) for which the SCR is reverse biased by the commutating circuit
(D) for which the SCR is reversed biased to reduce its current below the holding current

179. The octal equivalent of the HEX number AB.CD is
(A) 253.314
(B) 253.632
(C) 256.314
(D) 526.632

180. The increasing order of speed of data access for the following device is
1. Cache memory
2. CD-ROM
3. Dynamic RAM
4. Processor register
5. Magnetic tape
(A) 5, 2, 3, 4, 1
(B) 5, 2, 3, 1, 4
(C) 2, 1, 3, 4, 5
(D) 5, 2, 1, 3, 4

181. The complete sets of only those logic gates designated as universal gates
(A) NOT, OR and AND gates
(B) XNOR, NOR and NAND gates
(C) NOR and NAND gates
(D) XOR, NOR and NAND gates

182. A low pass filter with a cut off frequency of 30 Hz is cascaded with a high pass filter with a cut off frequency of 20 Hz. The resultant system of filters will function as
(A) an all-pass filter
(B) an all-stop filter
(C) a band stop filter
(D) a band pass filter

183. A 400 V, 15 kW, 4 pole, 50 Hz, Y connected induction motor has a full slip of 4%. The output torque of the machine at full load is
(A) 1.66 Nm
(B) 95.50 Nm
(C) 99.47 N
(D) 624.73 Nm

184. For a 1.8°, 2 phase bipolar stepper motor, the stepping rate is 100 steps/sec. the rotational speed of the motor in rpm is
(A) 15
(B) 30
(C) 60
(D) 90

185. The voltage gain in a transistor connected in ……. arrangement is the highest
(A) common emitter
(B) common collector
(C) common base
(D) none of the above

186. The most commonly used semiconductor in the manufacture of a transistor is …….
(A) germanium
(B) silicon
(C) carbon
(D) selenium

187. The number 1000 would appear just immediately after
(A) FFFF (hex)
(B) 1111 (binary)
(C)7777 (octal)
(D) All of the above.

188. A NAND gate is called a universal logic element because
(A) it is used by everybody
(B) any logic function can be realized by NAND gates alone

(C) all the minimization techniques are applicable for optimum NAND gate realization
(D) many digital computers use NAND gates.

189. An OR gate has 6 inputs. The number of input words in its truth table are
(A) 6
(B) 32
(C) 64
(D) 128

190. Digital computers are more widely used as compared to analog computers, because they are
(A) less expensive
(B) always more accurate and faster
(C) useful over wider ranges of problem types
(D) easier to maintain

191. The binary code of (21.125)10 is
(A) 10101.001
(B) 10100.001
(C) 10101.010
(D) 10100.111

192. When a penta - valent impurity is added to a pure semiconductor, it becomes
(A) an insulator
(B) an intrinsic semiconductor
(C) p type semiconductor
(D) n type semiconductor

193. In a semiconductor current conduction is due to
(A) only holes
(B) only free electrons
(C) both holes and free electrons
(D) minority carriers alone

194. At a room temperature an intrinsic silicon semiconductor acts approximately as
(A) a battery
(B) a conductor
(C) an insulator
(D) a piece of copper wire

195. At absolute temperature , an intrinsic semiconductor has
(A) a few electrons
(B) many holes
(C) many free electrons
(D) no holes or free electrons

196. In a CB amplifier the maximum efficiency could be
(A) 99%
(B) 85%
(C) 50%
(D) 25%

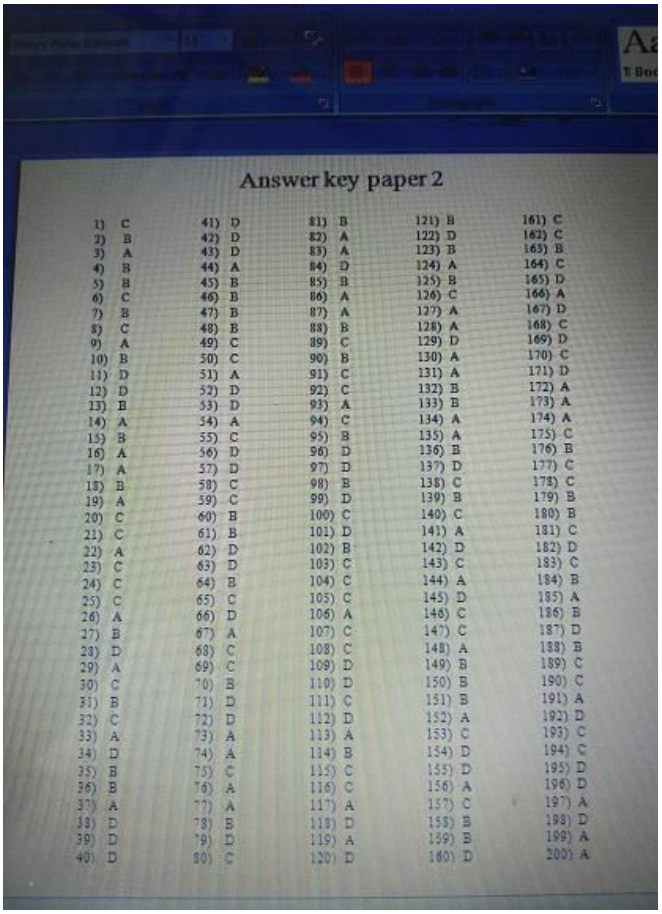
197. The horizontal intercept of dc load line is the same as ideal
(A) cut off point
(B) saturation point
(C) operating point
(D) quasi saturation point

198. In deriving ac equivalent circuit for an amplifier circuit we short circuit
(A) all resistors
(B) all transistors
(C) all inductors
(D) all capacitors

199. Another name for zener diode is
(A) breakdown diode
(B) voltage diode
(C) current diode
(D) power diode

200. A certain regulator has a no-load coltage of 6 V and a full load output of 5.82 V. what is the load regulation
(A) 90%
(B) 87%
(C) 72%
(D) 62%

MAGDALINE COACHING CENTRE (mc²)
ELECTRICAL ENGINEERING PAPER 2
(Answer key at the bottom)



Answer key paper 2

1) C	41) D	81) B	121) B	161) C
2) B	42) D	82) A	122) D	162) C
3) A	43) D	83) A	123) B	163) B
4) B	44) A	84) D	124) A	164) C
5) B	45) B	85) B	125) B	165) D
6) C	46) B	86) A	126) C	166) A
7) B	47) B	87) A	127) A	167) D
8) C	48) B	88) B	128) A	168) C
9) A	49) C	89) C	129) D	169) D
10) B	50) C	90) B	130) A	170) C
11) D	51) A	91) C	131) A	171) D
12) D	52) D	92) C	132) B	172) A
13) B	53) D	93) A	133) B	173) A
14) A	54) A	94) C	134) A	174) A
15) B	55) C	95) B	135) A	175) C
16) A	56) D	96) D	136) B	176) B
17) A	57) D	97) D	137) D	177) C
18) B	58) C	98) B	138) C	178) C
19) A	59) C	99) D	139) B	179) B
20) C	60) B	100) C	140) C	180) B
21) C	61) B	101) D	141) A	181) C
22) A	62) D	102) B	142) D	182) D
23) C	63) D	103) C	143) C	183) C
24) C	64) B	104) C	144) A	184) B
25) C	65) C	105) C	145) D	185) A
26) A	66) D	106) A	146) C	186) B
27) B	67) A	107) C	147) C	187) D
28) D	68) C	108) C	148) A	188) B
29) A	69) C	109) D	149) B	189) C
30) C	70) B	110) D	150) B	190) C
31) B	71) D	111) C	151) B	191) A
32) C	72) D	112) D	152) A	192) D
33) A	73) A	113) A	153) C	193) C
34) D	74) A	114) B	154) D	194) C
35) B	75) C	115) C	155) D	195) D
36) B	76) A	116) C	156) A	196) D
37) A	77) A	117) A	157) C	197) A
38) D	78) B	118) D	158) B	198) D
39) D	79) D	119) A	159) B	199) A
40) D	80) C	120) D	160) D	200) A