CHOOSE THE BEST ANSWER FROM THE GIVEN ALTERNATIVES

A wound rotor induction motor is preferred over squirrel cage induction motor when the major consideration involved is

A) high starting torque
B) low starting current
C) speed control over limited range
D) All of the above.
E) Only (a) & (c)

2. When smooth and precise speed control over a wide range is desired, the motor preferred is
A) synchronous motor
B) squirrel cage induction motor
C) wound rotor induction motor
D) dc motor.
E) Slip ring motor

3. A synchronous motor is found to be more economical when the load is above
A) 1 kW
B) 10 kW
C) 20 kW
D) 40 kW
E) 100kW.

4. The advantage of a synchronous motor in addition to its constant speed is
A) high power factor
B) better efficiency
C) lower cost
D) All of the above.
E) None of the above

5. In a transformer iron losses vary as _____ of voltage
A) inverse
B) inverse square
C) square
D) cube.
E) None of the above

6. What type of transistor does the following symbol represent?
A) NPN BJT transistor
B) PNP BJT transistor
C) NPN FET transistor
D) PNP FET transistor
E) None

7. If the B-E junction is forward biased and B-C junction is reverse biased, For NPN BJT transistor, what will be the region of operation?
A) Cut off region
B) Active (linear) region
C) Saturation region
D) None
E) All except A

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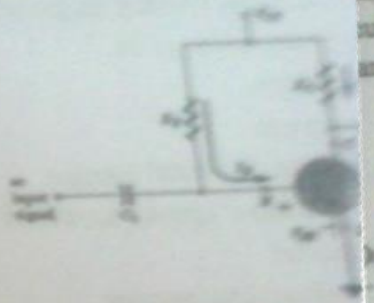
8. What type of biasing configuration is the following?



A) Common Collector
B) Common Base
C) Common Emitter
D) Common Gate
E) None

9. If both the B-E junction and B-C junction is reverse biased, For PNP BJ
will be the region of operation?
A) Cut off region
B) Active (linear) region
C) Saturation region
D) Undeter
E) None

10. In a certain chemical-processing plant, a liquid chemical is used in a
The chemical is stored in three different tanks. A level sensor in each
voltage when the level of chemical in the tank drops below a specif
circuit expression that monitors the chemical level in each tank and
in any two of the tanks drops below the specified point?
A) X= AB+AC+BC
B) X=$\overline{AB}$ +AC+BC
C) X=$\overline{AB}$ +$\overline{AC}$+BC
D) X
E)

high in the
D) All

the B-E junction and B-C junction is reverse biased, For PNP BJT
the region of operation?
A) Cut off region
B) Active (linear) region
C) Saturation region
D) Undetermined
E) None

certain chemical-processing plant, a liquid chemical is used in a manufacturing process.
chemical is stored in three different tanks. A level sensor in each tank produces a HIGH
age when the level of chemical in the tank drops below a specified point. What is logic
uit expression that monitors the chemical level in each tank and indicates when the level
any two of the tanks drops below the specified point?
A) X= AB+AC+BC
B) X=$\overline{AB}$ +AC+BC
C) X=$\overline{AB}$ +$\overline{AC}$+BC
D) X=$\overline{AB}$ +AC+$\overline{BC}$
E) None

oping concentration of BJT is high in the
A) Emitter Region
B) Base Region
C) Collector Region
D) All
E) None

FET is
A) current-controlled device
B) voltage-controlled device
C) power-controlled device
D) Resistance-controlled device
E) None

. Which of the following is not advantage of using programmable logic device?
A) Reduce space and power requirements
B) High production cost
C) Design security
D) Compact circuitry
E) None

14. Which one of the following is not the characteristic of ideal Op-Amplifier?
A) Infinitely large Gain
B) Zero Input impedance
C) Infinitely large CMRR
D) Zero Output impedance
E) All

16. _____ is the time required for the response to reach and stay within the tolerance band.
A) T_r
B) T_p

17. If system is having multiple poles on the negative real axis, then the system is
A) Stable
B) Unstable
C) critically stable

18. Magneto-elastic transducers work on the principle of
A) change of permeability with change in stress
*B) change of co-ersive force with change of stress

19. Thermocouples are
A) are most commonly used temperature transducers
B) require reference junction temperature

20. Excitation and amplification systems are needed for
A) for active transducers only
B) for passive transducers only
C) for both active and passive transducers

21. Maxwell's inductance-capacitance bridge is used for measurement of inductance of
A) low Q coils
B) medium Q coils
C) high Q coils

22. The speed and torque of induction motors can be varied by which of the following means?
A) Stator voltage control
B) Rotor voltage control
C) Frequency control

23. Power MOSFET is a
A) voltage controlled device
B) current controlled device
C) frequency controlled device

D) Marginally stable
E) None of the above

D) make oscillations
E) none

C) change of permeability with change in strain
D) change of dimensions with change of applied stress
E) All

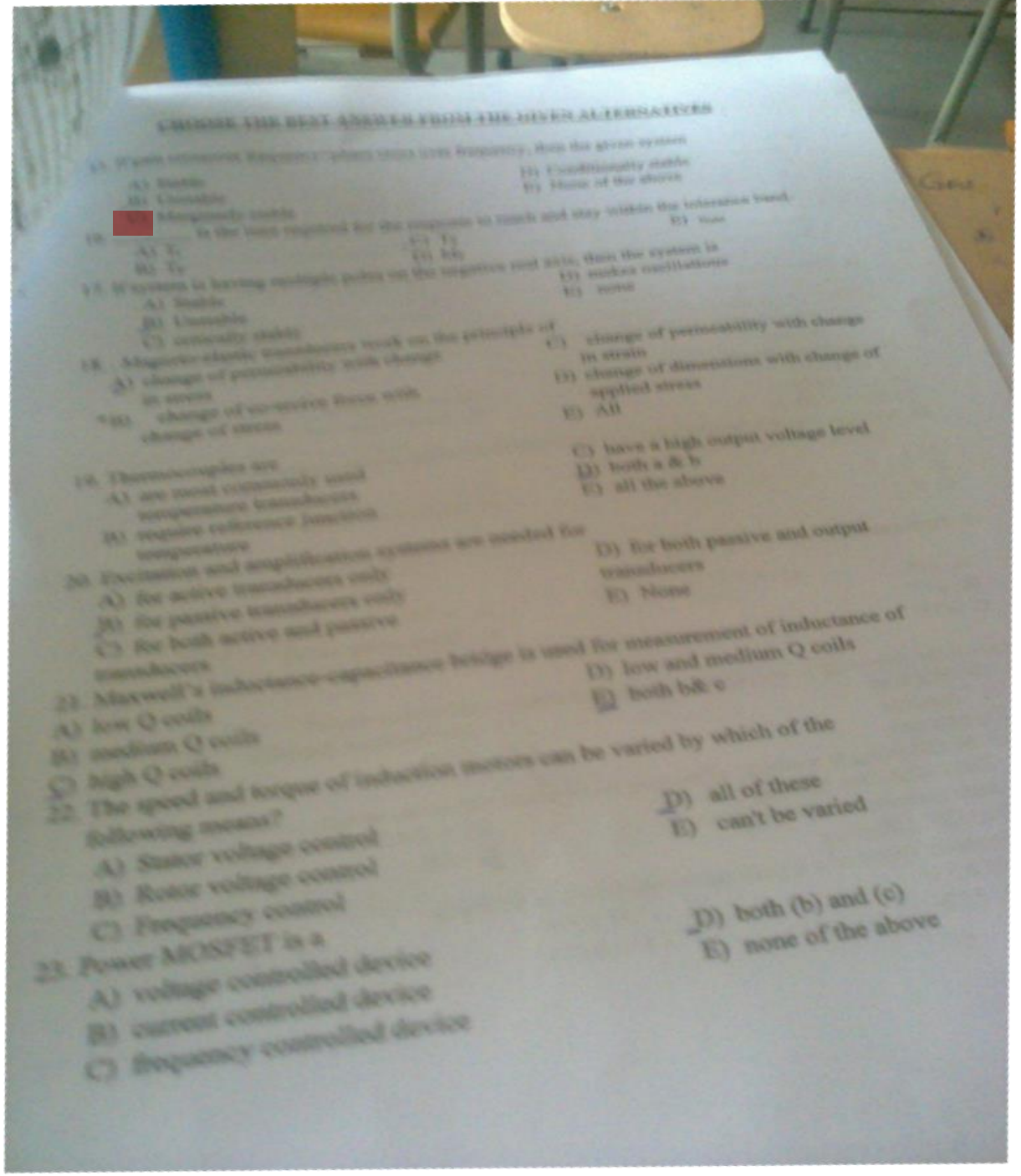
C) have a high output voltage level
D) both a & b
E) all the above

D) for both passive and output transducers
E) None

D) low and medium Q coils
E) both b& c

D) all of these
E) can't be varied

D) both (b) and (c)
E) none of the above



CHOOSE THE BEST ANSWER FROM THE GIVEN ALTERNATIVES

24. In 3 phase, half wave rectifier, if per phase input voltage is 200v, then the average output voltage is
A) 333.8v
B) 116.95v
C) 202.56v
D) 101.28v
E) 233.91v

25. A free wheeling diode is place across the DC load
A) to prevent reversal of load voltage
B) to permit transfer of load current away from the source
C) to increase the load volta
D) both a) and b)
E) None of the above

26. Cycloconverter converts_____
A) AC voltage to DC voltage
B) DC voltage to DC voltage
C) AC voltage to AC voltage at same frequency
D) AC voltage at supply fr
AC voltage at load freq
E) None of the above

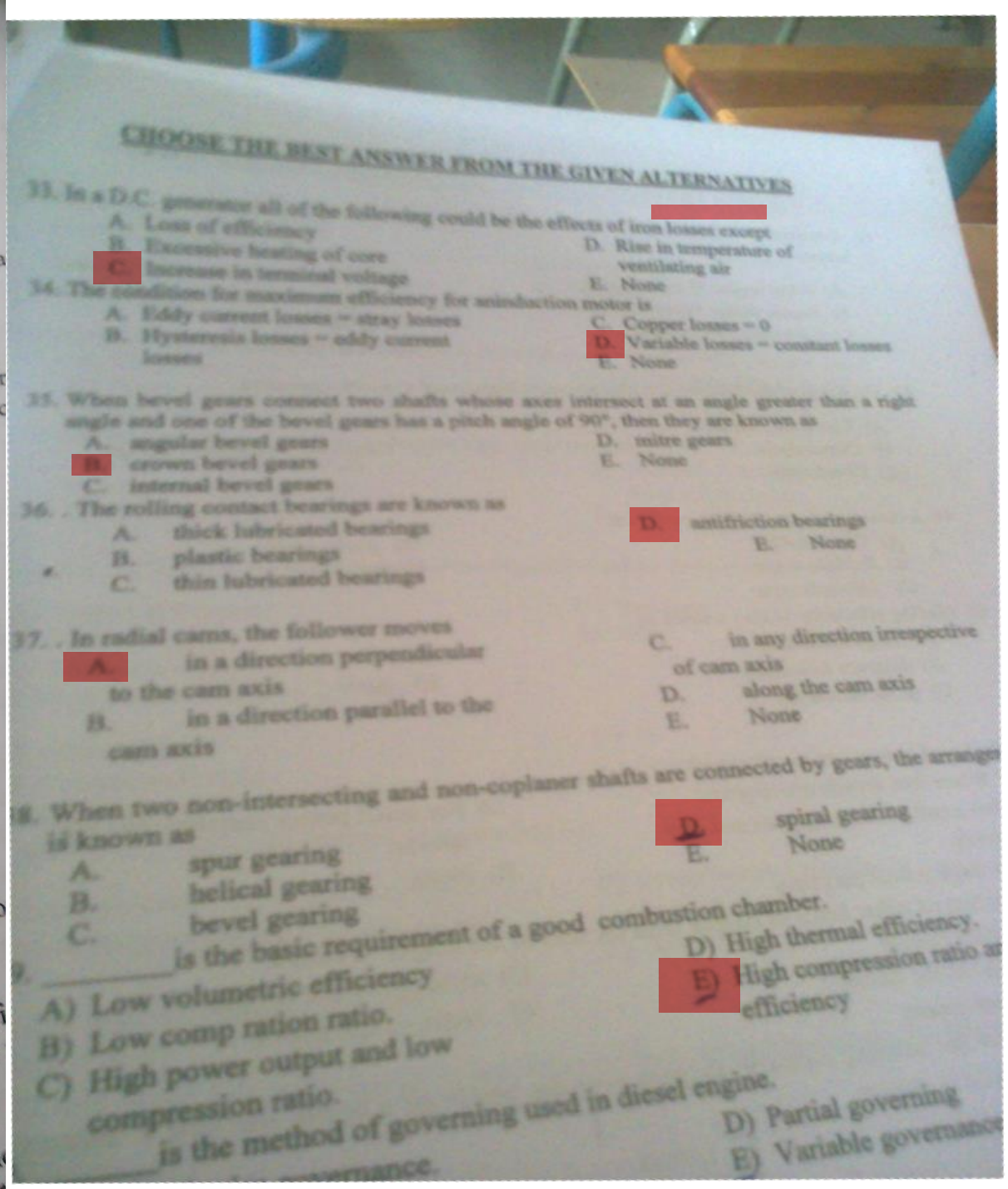
27. transfer function is
A) $C[SI-A]^{-1}B$
B) $C[SI-D]^{-1}B+A$
C) $B[SI-A]^{-1}C+D$
D) $C[SI-A]^{-1}B+D$
E) None of the above

28. A system is said to be controllable if the determinant of the system matrix is
A) 1
B) -1
C) 0
D) n
E) None of the above

29. State transition matrix is given by
A. e^{At}
B. e^{-At}
C. e^{nAt}
D. e^{-nAt}
E. None of the abo

30. One of the following is not electro-mechanical energy conversion devi
A. DC machine
B. AC machine
C. Transformer
D. Synchronous
E. None

methods of starting three-phase induction m



CHOOSE THE BEST ANSWER FROM THE GIVEN ALTERNATIVES

33. In a D.C. generator all of the following could be the effects of iron losses except
A. Loss of efficiency
B. Excessive heating of core
C. Increase in terminal voltage
D. Rise in temperature of ventilating air
E. None

34. The condition for maximum efficiency for aninduction motor is
A. Eddy current losses = stray losses
B. Hysteresis losses = eddy current losses
C. Copper losses = 0
D. Variable losses = constant losses
E. None

35. When bevel gears connect two shafts whose axes intersect at an angle greater than a right angle and one of the bevel gears has a pitch angle of 90°, then they are known as
A. angular bevel gears
B. crown bevel gears
C. internal bevel gears
D. mitre gears
E. None

36. The rolling contact bearings are known as
A. thick lubricated bearings
B. plastic bearings
C. thin lubricated bearings
D. antifriction bearings
E. None

37. In radial cams, the follower moves
A. in a direction perpendicular to the cam axis
B. in a direction parallel to the cam axis
C. in any direction irrespective of cam axis
D. along the cam axis
E. None

38. When two non-intersecting and non-coplaner shafts are connected by gears, the arrange is known as
A. spur gearing
B. helical gearing
C. bevel gearing
D. spiral gearing
E. None

9. _____is the basic requirement of a good combustion chamber.
A) Low volumetric efficiency
B) Low comp ration ratio.
C) High power output and low compression ratio.
D) High thermal efficiency.
E) High compression ratio a efficiency

_____is the method of governing used in diesel engine.
D) Partial governing
E) Variable governance

E. None

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helical gearing
bevel gearing
D. spiral gearing
E. None

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volumetric efficiency
comp ration ratio.
power output and low
pression ratio.
D) High thermal efficiency.
E) High compression ratio and thermal efficiency

is the method of governing used in diesel engine.
nd miss governance.
ity governance.
ntity governance.
D) Partial governing
E) Variable governance.

gine higher combustion chamber wall temperature will
duce knocking tendency.
duce exhaust temperature.
rease knocking tendency.
D) To increase delay period.
E) To accelerate scavenging.

C. internal bevel gears

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E) High c efficie

40. _____is the method of governing used in diesel engine.
A) Hit and miss governance.
B) Quality governance.
C) Quantity governance.
D) Par
E) Va

41. In C.I engine higher combustion chamber wall temperatu
A) Reduce knocking tendency.
B) Reduce exhaust temperature.
C) Increase knocking tendency.

CHOOSE THE BEST ANSWER FROM THE GIVEN ALTERNATIVES

50. Hooke's law holds good up to
A) Limit of proportionality
B) Yield point
C) Breaking point
D) Plastic limit
E) Plastic limit

51. Among types of gear trains which one gives very high speed reduction with confined space?
A) Simple gear train
B) Compound gear train
C) Epicyclic gear train
D) Revertedgear train
E) None

52. Which type of follower motion is ideal for high speed operation?
A) Uniform velocity motion
B) simple harmonicmotion
C) Cycloidal motion
D) Constant acceleration and deceleration motion
E) All

53. _____ is independent input parameters required to get the desired output.
A) Degree of freedom
B) Kinematic pair
C) Kinematic inversion
D) Revolute
E) None

54. A liquid about to vaporize is called
A) saturated liquid
B) Compressed liquid
C) Super heated liquid
D) All
E) None

55. In general, a compressed liquid is characterized by
A) Higher pressures ($P > P_{sat}$ at a given T)
B) Lower temperatures ($T < T_{sat}$ at a given P)
C) Lower specific volumes ($v < v_f$ at a given P or T)
D) Lower internal energies ($u < u_f$ at a given P or T)
E) All

56. Which one of the following modes of heat transfer does not need a medium for the heat to be transferred?
A) Conduction
B) Convection
C) Radiation
D) All
E) None

57. Experiments reveal that the rate of conduction heat transfer through a medium is dependent on:
A) Geometry of the medium (cross sectional area)
B) Thickness of the medium
C) Material property of the medium and
D) Temperature difference across the medium
E) All

CHOOSE THE BEST ANSWER FROM THE GIVEN ALTERNATIVES

15. If gain crossover frequency=phase cross over frequency, then the given system

A) Stable
B) Unstable
C) Marginarly stable
D) Conditionally stable
E) None of the above

16. _____ is the time required for the response to reach and stay within the tolerance band.

A) T_r
B) T_p
C) T_s
D) M_p
E) None

17. If system is having multiple poles on the negative real axis, then the system is

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B) Unstable
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D) makes oscillations
E) none

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transducers

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B) medium Q coils
C) high Q coils
D) low
E) both

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CHOOSE THE BEST ANSWER FROM THE GIVEN ALTERNATIVES

58. Which one is wrong statement about hydraulic motors?
A) Hydraulic pumps are used as hydraulic motor without any modification in hydraulic system
B) Hydraulic motors are used to convert hydraulic energy into mechanical energy.
C) Hydraulic motor are the prime mover system for both pneumatic and hydraulic system
D) Hydraulic motors need pumps to bring the hydraulic fluid into the motor at a suitable pressure
E) None

59. The difference between Electric and Hydraulic Motors is?
A) Hydraulic motors use hydraulic liquid stored under pressure to make the motors turn while Electric motors use electricity, which is stored in batteries, to produce motion.
B) Hydraulic motors can be made without any flammable parts while Electric motor is a potential fire hazard.
C) Electric motors must increase in size as the loads they drive increase in size while Hydraulic motors, can remain small even when driving large heavy loads.
D) An electric motor can function as dependent unit while hydraulic motors are independent.
E) None

60. Which statement is wrong?
A) In hydraulic and pneumatic system design one should to take consideration of safety of operation, desired function and efficiency of the system.
B) The pneumatic system doesn't need return line throughout the system.
C) The working medium of fluid power system is pressurized liquid and gases.
D) All
E) None of the above