



2022

संच क्र.

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प्रश्नपुस्तिका - I

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विद्युत व यांत्रिकी अभियांत्रिकी पेपर - 1

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प्रश्नपुस्तिका क्रमांक
BOOKLET NO.

एकूण प्रश्न : 100

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एकूण गुण : 200

सूचना

(1) सदर प्रश्नपुस्तिकेत 100 अनिवार्य प्रश्न आहेत. उमेदवारांनी प्रश्नांची उत्तरे लिहिण्यास सुरुवात करण्यापूर्वी या प्रश्नपुस्तिकेत सर्व प्रश्न आहेत किंवा नाहीत याची खात्री करून घ्यावी. तसेच अन्य काही दोष आढळल्यास ही प्रश्नपुस्तिका समवेक्षकांकडून लगेच बदलून घ्यावी.

(2) आपला परीक्षा-क्रमांक ह्या चौकोनांत न विसरता बॉलपेनने लिहावा.

परीक्षा-क्रमांक									

केंद्राची संकेताक्षरे

शेवटचा अंक

(3) वर छापलेला प्रश्नपुस्तिका क्रमांक तुमच्या उत्तरपत्रिकेवर विशिष्ट जागी उत्तरपत्रिकेवरील सूचनेप्रमाणे न विसरता नमूद करावा.

(4) या प्रश्नपुस्तिकेतील प्रत्येक प्रश्नाला 4 पर्यायी उत्तरे सुचविली असून त्यांना 1, 2, 3 आणि 4 असे क्रमांक दिलेले आहेत. त्या चार उत्तरांपैकी सर्वात योग्य उत्तराचा क्रमांक उत्तरपत्रिकेवरील सूचनेप्रमाणे तुमच्या उत्तरपत्रिकेवर नमूद करावा. अशा प्रकारे उत्तरपत्रिकेवर उत्तर-क्रमांक नमूद करताना तो संबंधित प्रश्न-क्रमांकासमोर छायांकित करून दर्शविला जाईल याची काळजी घ्यावी. ह्याकरिता फक्त काळ्या शाईचे बॉलपेन वापरावे, पेन्सिल वा शाईचे पेन वापरू नये.

(5) सर्व प्रश्नांना समान गुण आहेत. यास्तव सर्व प्रश्नांची उत्तरे द्यावीत. घाईमुळे चुका होणार नाहीत याची दक्षता घेऊनच शक्य तितक्या वेगाने प्रश्न सोडवावेत. क्रमाने प्रश्न सोडविणे श्रेयस्कर आहे पण एखादा प्रश्न कठीण वाटल्यास त्यावर वेळ न घालविता पुढील प्रश्नांकडे वळावे. अशा प्रकारे शेवटच्या प्रश्नापर्यंत पोहोचल्यानंतर वेळ शिल्लक राहिल्यास कठीण म्हणून वगळलेल्या प्रश्नांकडे परतणे सोईस्कर ठरेल.

(6) उत्तरपत्रिकेत एकदा नमूद केलेले उत्तर खोडता येणार नाही. नमूद केलेले उत्तर खोडून नव्याने उत्तर दिल्यास ते तपासले जाणार नाही. एकापेक्षा जास्त उत्तरे नमूद केल्यास ते उत्तर चुकीचे धरले जाईल व त्या चुकीच्या उत्तराचे गुण वजा केले जातील.

(7) प्रस्तुत परीक्षेच्या उत्तरपत्रिकांचे मूल्यांकन करताना उमेदवारांच्या उत्तरपत्रिकेतील योग्य उत्तरांनाच गुण दिले जातील. तसेच "उमेदवाराने वस्तुनिष्ठ बहुपर्यायी स्वरूपाच्या प्रश्नांची दिलेल्या चार उत्तरांपैकी सर्वात योग्य उत्तरेच उत्तरपत्रिकेत नमूद करावीत. अन्यथा त्यांच्या उत्तरपत्रिकेत सोडविलेल्या प्रत्येक चुकीच्या उत्तरांसाठी 25% किंवा 1/4 गुण वजा/कमी करण्यात येतील."

ताकीद

ह्या प्रश्नपत्रिकेसाठी आयोगाने विहित केलेली वेळ संपेपर्यंत ही प्रश्नपुस्तिका आयोगाची मालमत्ता असून ती परीक्षाकक्षात उमेदवाराला परीक्षेसाठी वापरण्यास देण्यात येत आहे. ही वेळ संपेपर्यंत सदर प्रश्नपुस्तिकेची प्रत/प्रती, किंवा सदर प्रश्नपुस्तिकेतील काही आशय कोणत्याही स्वरूपात प्रत्यक्ष वा अप्रत्यक्षपणे कोणत्याही व्यक्तीस पुरविणे, तसेच प्रसिद्ध करणे हा गुन्हा असून अशी कृती करणाऱ्या व्यक्तीवर शासनाने जारी केलेल्या "परीक्षांमध्ये होणाऱ्या गैरप्रकारांना प्रतिबंध करण्याबाबतचा अधिनियम-82" यातील तरतुदीनुसार तसेच प्रचलित कायद्याच्या तरतुदीनुसार कारवाई करण्यात येईल व दोषी व्यक्ती कमाल एक वर्षाच्या कारावासाच्या आणि/किंवा रुपये एक हजार रकमेच्या दंडाच्या शिक्षेस पात्र होईल.

तसेच ह्या प्रश्नपत्रिकेसाठी विहित केलेली वेळ संपण्याआधी ही प्रश्नपुस्तिका अनधिकृतपणे बाळगणे हा सुद्धा गुन्हा असून तसे करणारी व्यक्ती आयोगाच्या कर्मचारीवृंदापैकी, तसेच परीक्षेच्या पर्यवेक्षकीयवृंदापैकी असली तरीही अशा व्यक्तीविरुद्ध उक्त अधिनियमानुसार कारवाई करण्यात येईल व दोषी व्यक्ती शिक्षेस पात्र होईल.

पुढील सूचना प्रश्नपुस्तिकेच्या अंतिम पृष्ठावर पहा.

पर्यवेक्षकांच्या सूचनेविना हे सील उघडू नये

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कच्च्या कामासाठी जागा / SPACE FOR ROUGH WORK



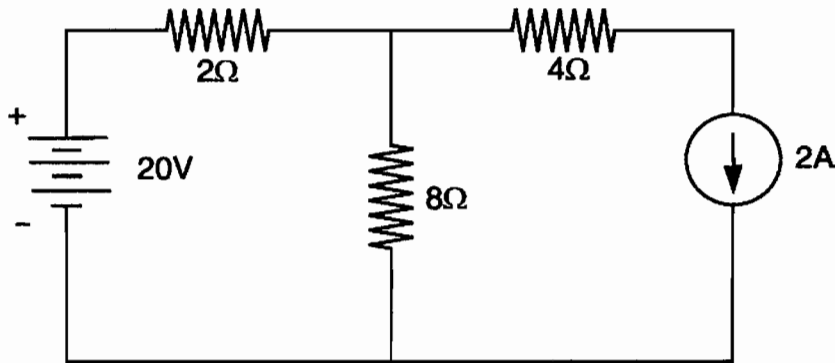
1. A resistance of 30Ω is connected across a 240 V supply. If a resistance of R ohm is connected in parallel with a 30 ohm resistor across the same supply, the current drawn becomes triple of original one. The value of unknown resistance R is
(1) 15 ohm (2) 10 ohm (3) 5 ohm (4) 30 ohm
-
2. Joules/second is also called as
(1) kWh (2) W (3) Wb/s (4) kWh/s
-
3. KCL and KVL are applicable for
(1) DC circuits only
(2) Any circuits irrespective of its complexity
(3) Simple DC circuits only
(4) AC circuits only
-
4. In an R-L-C series AC circuit the value of X_L and X_C are equal the circuit current becomes
(1) Zero (2) Minimum
(3) Maximum (4) Transient
-
5. _____ of an a.c. circuit is the reciprocal of its impedance.
(1) Admittance (2) Conductance
(3) Reluctance (4) Permeance
-
6. Under steady state condition, capacitor acts as an/a _____ and inductor as an/a _____.
(1) Open circuit, short-circuit (2) Short-circuit, open circuit
(3) Short-circuit, short-circuit (4) Open-circuit, open circuit
-
7. A resultant current is made of two components. A 10 A DC component and a sinusoidal component of maximum value 14.14 A. The average value of the resultant current is
(1) 0 A (2) 24.14 A (3) 10 A (4) 4.14 A



8. The ratio of maximum value to the r.m.s. value of an alternating quantity is known as

- (1) form factor (2) peak factor
(3) power factor (4) distortion factor

9. In the given circuit the current flowing through the $8\ \Omega$ resistor is



- (1) 2.5 A (2) 1.6 A (3) 4 A (4) 16 A

10. In DC network ideal current source has internal resistance of

- (1) Zero ohm (2) Zero ohm connected in series
(3) Infinite ohm (4) Infinite ohm connected in parallel

11. A series magnetic circuit having the combination of iron ring with an air gap. The total mmf is

- (1) mmf of iron + mmf of air (2) $\frac{1}{\text{mmf of iron}} + \frac{1}{\text{mmf of air}}$
(3) mmf of iron only (4) mmf of air only

12. A short circuit coil of 100 turns surrounds the middle of a bar magnet.

If the magnet sets up a flux of 60 microwb, the average value of emf induced in the coil when the magnet is taken far away from the coil in 0.04 sec. is

- (1) 0.15 V (2) 0.30 V (3) 0.07 V (4) 0.6 V

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13. Ideal transformer have the features of
- (1) Low permeability, no magnetic leakage, no resistance, no losses
 - (2) Low permeability, magnetic leakage, no resistance, no losses
 - (3) High permeability, no magnetic leakage, no resistance, no losses
 - (4) High permeability, no magnetic leakage, considerable resistance with losses
-
14. If primary winding of single phase transformer is connected to d.c. supply, it results in
- (1) D.C. emf in secondary winding
 - (2) A.C. emf in secondary winding
 - (3) Primary winding will have open circuit status
 - (4) Primary winding will draw a very large current
-
15. The Δ -Y winding connection of three phase transformer is commonly used for
- (1) Stepping up to high voltage
 - (2) Stepping down to a high voltage
 - (3) Stepping down to a moderate voltage
 - (4) No change in voltage
-
16. A capacitor with a capacitance of 500 pF is charged to 100 V. The plates of the capacitor are then separated till capacitance reduces to 100 pF. Calculate change in potential across the capacitor.
- (1) 200 V (2) 300 V (3) 400 V (4) 500 V
-
17. Scott connection of three phase transformer is used for
- (1) Three phase to single phase
 - (2) Three phase to two phase
 - (3) Three phase to three phase
 - (4) Single phase to three phase
-
18. A transformer takes a current of 0.6 A and absorbs 64 W when the primary is connected to its normal supply of 200 V, 50 Hz; the secondary being on open circuit. The iron loss current is
- (1) 0.2 Amp (2) 0.43 Amp (3) 1 Amp (4) 0.32 Amp



19. A transformer has full-load copper loss of 400 W. The copper loss at half full-load will be

- (1) 50 W (2) 100 W (3) 400 W (4) 200 W
-

20. In short circuit test of transformer, the transformer is loaded with

- (1) Half load and supplied with rated voltage
(2) Full load and supplied with rated voltage
(3) Full load supplied with reduced voltage
(4) Half load supplied with reduced voltage
-

21. A dc generator has a efficiency of 90% for a output voltage and current of 250 V and 18 A respectively. If this machine is made to operate at the same speed as a dc motor with an input voltage of 250 V and a current of 18 A, the efficiency of the motor would be

- (1) 90% (2) 95% (3) 88.88% (4) 85%
-

22. The efficiency of dc machine will be maximum when _____

Let (P_c = constant losses)

- (1) $I = \frac{\sqrt{P_c}}{R_a}$ (2) $I = \sqrt{\frac{P_c}{R_a}}$
(3) $I = \frac{P_c}{R_a^2}$ (4) $I = \frac{P_c}{R_a}$
-

23. In Fleming's Left Hand Rule

First finger indicates direction of _____

Second finger indicates direction of _____

Thumb indicates direction of _____

respectively

- (1) Force, magnetic field, current (2) Magnetic field, current, force
(3) Magnetic field, induced emf, force (4) Current, magnetic field, force
-

24. Which type of dc motor is used in lathe machine ?

- (1) dc series motor (2) dc compound motor
(3) dc shunt motor (4) dc differential compound motor
-

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25. In a DC generator, commutator serve as a
- (1) Mechanical inverter (2) Synchronous condenser
(3) Mechanical rectifier (4) None of these
-
26. If the series field flux opposes the shunt field flux, the DC machine is called
- (1) Cumulatively compound DC machine
(2) Self-excited DC machine
(3) Differentially compounded DC machine
(4) Separately excited DC machine
-
27. Regenerative braking on DC motor running at the speed lower than the rated speed is possible by
- (1) Reversing the field circuit connections
(2) Reversing the armature circuit connections
(3) Using rectifier circuit
(4) Using chopper circuit
-
28. The angle between magnetic axis of armature winding and the magnetic axis of field winding of two pole d.c. machine is
- (1) 0° (2) 30° (3) 60° (4) 90°
-
29. A dc motor when connected directly to the supply would draw a very heavy current because
- (1) the back EMF at starting is zero
(2) the back EMF at starting is maximum
(3) the back EMF is opposing the supply voltage
(4) torque required at starting is high
-
30. A dc series motor should not be run at no-load, because
- (1) it will draw a dangerously large current
(2) it will stall
(3) it will run at a dangerously high speed
(4) it will generate high temperature



31. A 6 pole, 50 Hz, 3 phase induction motor is running at 950 rpm and has rotor copper loss of 5 kW. Its rotor input is _____ kW.
(1) 100 (2) 10 (3) 95 (4) 5.3
-
32. The power input in Blocked Rotor test performed on a three phase induction motor is approximately equal to
(1) Hysteresis loss in the core (2) Copper loss in the windings
(3) Eddy current loss in the core (4) Iron loss in the core
-
33. When an induction machine, working in association with wind turbine as induction generator, its slip is
(1) Positive (2) Zero (3) Negative (4) Infinity
-
34. The power input to a 415 volt, 50 Hz, 6-pole, three phase induction motor running at 975 rpm is 40 kW, the stator losses are 1 kW and friction and windage losses total 2 kW. The efficiency of motor is
(1) 85% (2) 90% (3) 95% (4) 99%
-
35. The starting torque of capacitor start 1 phase induction motor is directly related to the angle α between two winding currents by the relation
(1) $\cos \alpha$ (2) $\sin \alpha$
(3) $\tan \alpha$ (4) $\sin (\alpha/2)$
-
36. In an 3 phase induction motor, if the rotor is locked, then the rotor frequency of induction motor will be
(1) zero
(2) more than supply frequency of stator
(3) less than supply frequency of stator
(4) equal to supply frequency of stator
-
37. In single phase induction motor phase difference between auxiliary winding and main winding is
(1) 0° (2) 180° (3) 90° (4) 120°
-

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38. Referring to equivalent circuit of an induction motor which of the following statements are correct ?

- i. Magnetizing reactance is dependent on supply current.
- ii. Magnetizing reactance is dependent on air gap flux.
- iii. Core loss is dependent on the input voltage and frequency.
- iv. Rotor resistance is dependent on the speed.

- (1) ii and iii are correct (2) i, iii, iv are correct
(3) i, ii, iii, iv are correct (4) i, ii, iv are correct
-

39. In an induction motor, what is the ratio of rotor copper loss and rotor input ?

- (1) $\frac{1}{s}$ (2) s (3) $(1 - s)$ (4) $\frac{s}{1-s}$
-

40. An 8-pole single phase induction motor is running at 690 rpm. What is its slip with respect to forward and backward fields, respectively ?

- (1) 0.08, 2.0 (2) 0.08, 1.92 (3) 1.92, 0.08 (4) 2.0, 0.08
-

41. Synchronous capacitor is

- (1) An ordinary static capacitor
 - (2) An over excited synchronous motor driving mechanical load
 - (3) An over excited synchronous motor running without mechanical load
 - (4) None of the above
-

42. Maximum value of torque angle in synchronous motor is _____ degree electrical.

- (1) 45 (2) 90
(3) Between 45 and 90 (4) Below 60
-

43. A salient pole synchronous motor is running with normal excitation. If the excitation is reduced to zero

- (1) It becomes an induction motor (2) It becomes a reluctance motor
(3) It acts as synchronous generator (4) The motor would stop
-



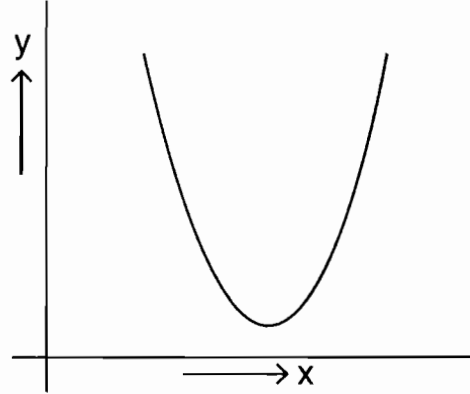
44. A stand alone engine driven synchronous generator is feeding a partly inductive load. A capacitor is now connected across the load to completely nullify the inductive current. For this operating condition
- (1) The field current and fuel input have to be reduced
 - (2) The field current and fuel input have to be increased
 - (3) The field current has to be increased and fuel input left unaltered
 - (4) The field current has to be reduced and fuel input left unaltered
-
45. In synchronous machine when rotor speed becomes more than the synchronous speed during hunting. The damping bars develop
- (1) Induction generator torque
 - (2) DC motor torque
 - (3) Synchronous motor torque
 - (4) Induction motor torque
-
46. A 75 kW, Y – connected, 50 Hz, 440 V, 4 pole cylindrical rotor synchronous motor operates at 0.8 pf leading. Its N_s is _____ rps.
- (1) 15
 - (2) 25
 - (3) 35
 - (4) 45
-
47. What is the angle between the induced voltage and supply voltage of a synchronous motor under running condition ?
- (1) Zero
 - (2) Greater than zero but $\leq 90^\circ$
 - (3) Between 90° and 180°
 - (4) $> 180^\circ$
-
48. In synchronous machines, if field winding axis is ahead of armature field axis in the direction of rotation of rotor, then the machine is operating as
- (1) Synchronous motor
 - (2) Synchronous generator
 - (3) Asynchronous motor
 - (4) Asynchronous generator
-
49. In a cylindrical rotor synchronous machine, the phasor addition of stator and rotor mmfs is possible because
- (1) Two mmfs are rotating in opposite directions
 - (2) Two mmfs are rotating in same direction at different speeds
 - (3) Two mmfs are stationary with respect to each other
 - (4) One mmf is stationary and the other mmf is rotating

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50. In the "V" curve shown in the figure for a synchronous motor, the parameter of x and y co-ordinates are, respectively



- (1) Armature current and field current (2) Power factor and field current
(3) Armature current and torque (4) Torque and field current
-
51. In voltage amplifier, the load resistance should be
- (1) As large as possible (2) As small as possible
(3) Equal to output impedance (4) Equal to input impedance
-
52. A pulse-stretcher is same as _____ multivibrator.
- (1) Astable (2) Bistable
(3) Monostable (4) None of the above
-
53. For a J-K flip-flop, if $J = K = 1$, flip-flop is said to
- (1) Be set (2) Be reset
(3) Operate in toggle mode (4) Operate in forbidden mode
-
54. An XOR gate produces output "1" only when two inputs are
- (1) High (2) Low (3) Different (4) Equal
-
55. Crystal oscillators are superior to tuned LC oscillators mainly because
- (1) High degree of frequency stability (2) Size of crystal
(3) High value of Q (4) All (1), (2) and (3) are valid

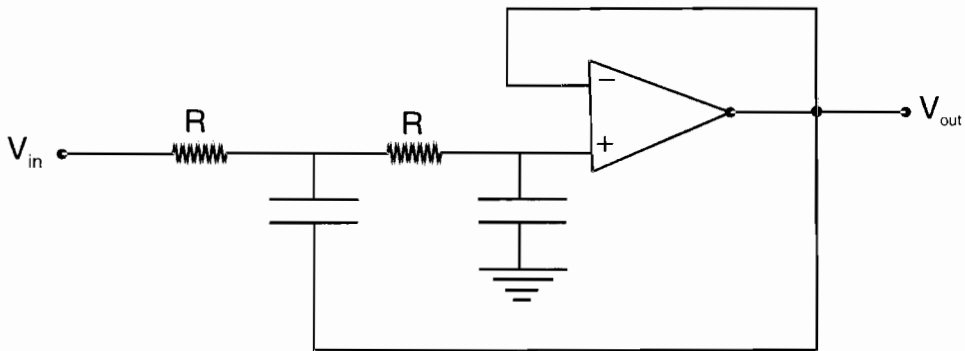


56. The combinational circuit has inputs A, B and C and its Karnaugh map is as shown below. The output of the circuit is given by

	AB	00	01	11	10
C	0		1		1
1		1		1	

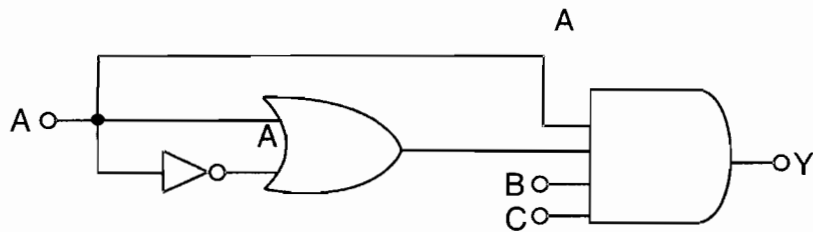
- | | |
|------------------------------|------------------------------------|
| (1) $(\bar{A}B + A\bar{B})C$ | (2) $(\bar{A}B + A\bar{B})\bar{C}$ |
| (3) $\bar{A}\bar{B}\bar{C}$ | (4) $A \oplus B \oplus C$ |

57. The circuit in the figure is a



- | | |
|----------------------|------------------------|
| (1) Low-pass filter | (2) High-pass filter |
| (3) Band-pass filter | (4) Band-reject filter |

58. The Boolean expression for the output Y in the logic circuit is



- | | |
|-----------------|-----------------------------|
| (1) $A\bar{B}C$ | (2) ABC |
| (3) $\bar{A}BC$ | (4) $\bar{A}\bar{B}\bar{C}$ |

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59. Indicate which of the following gates can be used to realize all possible combinational logic functions.

- (1) OR gates only (2) NAND gates only
(3) EX-OR gates only (4) AND gates only

60. An ideal op amp represents the ideal

- (1) Voltage controlled current source (2) Voltage controlled voltage source
(3) Current controlled current source (4) Current controlled voltage source

61. A unity feedback system has the open loop transfer function $G(s) = \frac{1}{(s-1)(s+2)(s+3)}$. The Nyquist plot of G encircles the origin

- (1) Once (2) Twice (3) Thrice (4) Never

62. For a feedback control system of Type-2, the steady state error for a ramp input is

- (1) Infinite (2) Constant (3) Zero (4) Intermediate

63. For a current transformer, the nominal ratio is the ratio of

- (1) Number of turns of secondary winding to the number of turns of primary winding
(2) Primary winding current to the secondary winding current
(3) Rated primary winding current to the rated secondary winding current
(4) None of the above

64. The transfer function of a system is $T(S) = \frac{3(S+1)}{(S+2)(S+5)}$, the characteristic equation is represented by

[T(S) is closed loop transfer function]

- (1) $S^2 + S + 5 = 0$ (2) $S^2 + 7S + 10 = 0$
(3) $S^2 + 3S + 5 = 0$ (4) $S^2 + S + 7 = 0$

65. Which of the following property(ies) is/are important in detecting non-linear behaviour in devices ?

- (1) Saturation (2) Dead zone (3) Hysteresis (4) All the above



66. The device used for measuring flow of air around an aeroplane is

- | | |
|----------------|-------------------|
| (1) Rotameter | (2) Venturimeter |
| (3) Anemometer | (4) None of these |

67. In general, torque measurements on rotating shafts are more difficult than stationary shafts due to

- (1) Wires from sensor element
- (2) Noise introduced by the brushes and slip rings
- (3) Both (1) and (2)
- (4) None of the above

68. Accuracy is defined as the

- (1) Measure of the consistency or reproducibility of the measurement
- (2) Closeness with which an instrument reading approaches the true value of the quantity being measured
- (3) Smallest measurable input change
- (4) Ratio of the change in the input to change in output signal of an instrument

69. Skin surface micro-vibrations are measured using

- | | |
|------------------------------|-----------------------|
| (1) Cathode Ray Oscilloscope | (2) Interferometer |
| (3) Piezometer | (4) Ammeter-Voltmeter |

70. Consider the following statements :

In a measuring instrument,

- a. Linearity is more important than sensitivity.
- b. High precision indicates high accuracy.
- c. Accuracy can not be better than resolution.

Of these statements

- | | |
|----------------------------|-------------------------|
| (1) a, b and c are correct | (2) a and b are correct |
| (3) b and c are correct | (4) a and c are correct |

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71. Number of thyristors/SCRs required for single phase cycloconverter of the mid-point type and for the three phase type cycloconverter are respectively
- (1) 4, 6 (2) 8, 18
(3) 4, 18 (4) 4, 36
-
72. The average value of a half wave rectified voltage with a peak value of 200 V is
- (1) 63.7 V (2) 127.3 V
(3) 141 V (4) 200 V
-
73. Reverse recovery time for a diode is defined as the time between the instant diode current becomes zero and the instant reverse recovery current decays to
- (1) Zero (2) 10% of reverse peak current I_{RM}
(3) 25% of I_{RM} (4) 15% of I_{RM}
-
74. A dc motor operated from a type A chopper is switched to type B chopper. How does the motor operate when type A and B are in operation respectively ?
- (1) Plugging and motoring
(2) Motoring and plugging
(3) Regenerative braking and motoring
(4) Motoring and regenerative braking
-
75. Third harmonic can be eliminated in a single-pulse of PWM inverter, if pulse width is equal to
- (1) 150° (2) 120°
(3) 90° (4) 60°
-
76. The advantage of using a freewheeling diode with bridge type ac/dc converter is
- (1) Regenerative braking (2) Reliable speed control
(3) Improved power factor (4) Reduced cost of the system



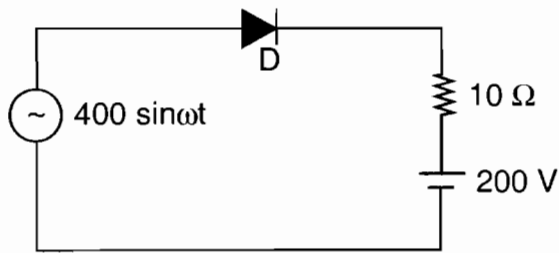
77. The 3-phase PWM rectifier can control following

- (1) Only active power (2) Only reactive power
(3) Only voltage magnitude (4) Active and reactive power both
-

78. In slip power recovery scheme, Induction Motor used is of type

- (1) Squirrel cage (2) Wound rotor
(3) Both (1) and (2) (4) Synchronous motor
-

79. In Fig. shown below, PIV required for the diode D is



- (1) 600 V (2) 400 V
(3) 200 V (4) Zero V
-

80. In a three phase full converter, the six SCRs are fired at an interval of

- (1) 30° (2) 60°
(3) 90° (4) 120°
-

81. If δ is the loss angle of the cable, its power factor is

- (1) $\sin \delta$
(2) $\cos \delta$
(3) power factor is independent of δ
(4) power factor depends upon δ but it is not as per (1) and (2)
-

82. The energy radiated by sun on a bright sunny day is about

- (1) 2.5 kw/m^2 (2) 1.0 kw/m^2
(3) 500 w/m^2 (4) 200 w/m^2
-

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83. For 33 kV line, number of discs used in suspension insulator are
(1) 3 (2) 6 (3) 9 (4) 12
-
84. With the decrease in conductor size and increase in frequency, the corona loss
(1) Increases (2) Decreases
(3) Remains same (4) May decrease or increase
-
85. The efficiency of solar cell is about
(1) 05% (2) 15% (3) 40% (4) 60%
-
86. Long transmission lines are represented by
(1) Nominal Pi model (2) Nominal T model
(3) Equivalent Pi Model (4) All of the above
-
87. For high head and low discharge, the water turbine used is
(1) Pelton wheel (2) Kaplan turbine
(3) Francis turbine (4) Propeller turbine
-
88. The positive sequence component of voltage at the point of fault is zero when it is a
(1) 3-phase fault (2) L-L fault (3) L-L-G fault (4) L-G fault
-
89. Which State has maximum hydro-generation ?
(1) Uttarakhand (2) Himachal Pradesh
(3) Meghalaya (4) Jammu and Kashmir
-
90. Which of the following source of power is most unreliable ?
(1) Solar energy (2) Geothermal power
(3) Wind power (4) MHD
-
91. The active power transfer over a transmission line is dependant on angle ' δ '. There is limitation on angle ' δ ' with the consideration of
(1) Efficiency (2) Voltage profile
(3) Stability (4) Frequency



92. Maximum flow of power through a point without losing the stability with sudden large changes in the load is known as

- (1) Steady state stability (2) Dynamic state stability
(3) Transient state stability (4) Sub-transient state stability
-

93. Which one of the following statement is correct ?

The elements of each row of a Y_{BUS} matrix for load flow studies in power system add up to zero

- (1) Always
(2) If the shunt admittances at the buses are ignored
(3) If mutual couplings between transmission lines are absent
(4) If both (2) and (3) are satisfied
-

94. A turbine generator set has a regulation constant 5% on the generator rating of 100 MVA, 50 Hz. The generator frequency decreases by 0.02 Hz. The increase in turbine output power for steady state operation is nearly

- (1) 0.8 MW (2) 8 MW
(3) 3.6 MW (4) 0.2 MW
-

95. When a symmetrical short circuit fault occurs on an alternator on no load, the amplitude of current decreases exponentially from the instant of fault occurred to the instant at which steady state reaches. It is due to

- (1) Effect of change in reactance of alternator and dc offset component present in fault current
(2) Effect of change in reactance only
(3) Effect of presence of dc offset current only
(4) None of the (1), (2) and (3)
-

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96. Which one of the following is correct ?

(1) $X_d'' = X_d' = X_d$

(2) $X_d'' < X_d' < X_d$

(3) $X_d' = \frac{X_d}{2}$

(4) $X_d'' = \frac{X_d}{2}$

97. Low amplitude (2 cm to 5 cm) and high frequency (5 to 40 c/sec) vibrations of transmission line conductor are known as

(1) Galloping vibrations

(2) Dancing vibrations

(3) Aeolian vibrations

(4) Simple swinging in one direction

98. The sag of the conductors of a transmission line is 2.5 m when the span is 250 m. Now if the height of the supporting tower is increased by 25%, the sag will

(1) Reduce by 25%

(2) Increase by 25%

(3) Reduce by 12.5%

(4) Remain unchanged practically

99. In the plant scheduling method, base loading to capacity

(1) The turbogenerators are successfully loaded to their rated capacity in the order of their efficiency

(2) The turbogenerators are successfully loaded to their most efficient loading

(3) The turbogenerators are successfully loaded proportional to their rating as stated on name plate

(4) None of (1), (2) and (3)

100. The sag calculation of the transmission line is done with the consideration of

(1) Thickness of ice 2.27 cm and wind pressure of 1.5 times the projected area of one face

(2) Thickness of ice 1.27 cm and wind pressure of 1.5 times the projected area of one face

(3) Only ice no wind pressure

(4) None of the (1), (2) and (3)

**सूचना - (पृष्ठ 1 वरून पुढे.....)**

- (8) प्रश्नपुस्तिकेमध्ये विहित केलेल्या विशिष्ट जागीच कच्चे काम (रफ वर्क) करावे. प्रश्नपुस्तिकेव्यतिरिक्त उत्तरपत्रिकेवर वा इतर कागदावर कच्चे काम केल्यास ते कॉपी करण्याच्या उद्देशाने केले आहे, असे मानले जाईल व त्यानुसार उमेदवारावर शासनाने जारी केलेल्या “परीक्षांमध्ये होणाऱ्या गैरप्रकारांना प्रतिबंध करण्याबाबतचे अधिनियम-82” यातील तरतुदीनुसार कारवाई करण्यात येईल व दोषी व्यक्ती कमाल एक वर्षाच्या कारावासाच्या आणि/किंवा रुपये एक हजार रकमेच्या दंडाच्या शिक्षेस पात्र होईल.
- (9) सदर प्रश्नपत्रिकेसाठी आयोगाने विहित केलेली वेळ संपल्यानंतर उमेदवाराला ही प्रश्नपुस्तिका स्वतःबरोबर परीक्षाकक्षाबाहेर घेऊन जाण्यास परवानगी आहे. मात्र परीक्षा कक्षाबाहेर जाण्यापूर्वी उमेदवाराने आपल्या उत्तरपत्रिकेचा भाग-1 समवेक्षकाकडे न विसरता परत करणे आवश्यक आहे.

नमुना प्रश्न

Pick out the correct word to fill in the blank :

Q. No. 201. I congratulate you _____ your grand success.

- (1) for (2) at
(3) on (4) about

ह्या प्रश्नाचे योग्य उत्तर “(3) on” असे आहे. त्यामुळे या प्रश्नाचे उत्तर “(3)” होईल. यास्तव खालीलप्रमाणे प्रश्न क्र. 201 समोरील उत्तर-क्रमांक “(3)” हे वर्तुळ पूर्णपणे छायांकित करून दाखविणे आवश्यक आहे.

प्र. क्र. 201. (1) (2) (3) (4)

अशा पद्धतीने प्रस्तुत प्रश्नपुस्तिकेतील प्रत्येक प्रश्नाचा तुमचा उत्तर-क्रमांक हा तुम्हाला स्वतंत्ररीत्या पुरविलेल्या उत्तरपत्रिकेवरील त्या त्या प्रश्न-क्रमांकासमोरील संबंधित वर्तुळ पूर्णपणे छायांकित करून दाखवावा. ह्याकरिता फक्त काळ्या शाईचे बॉलपेन वापरावे, पेन्सिल वा शाईचे पेन वापरू नये.

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