

Test Booklet
Series

A

Paper No.

04

Written Test Paper, 2021

**SKILL INSTRUCTOR
(ELECTRICAL)**

Test Booklet No.

Name of Applicant Answer Sheet No.

Application No. : SVSU/2020/Estt/NT/ Signature of Applicant :

Date of Examination : **25 / 12 / 2021**

Signature of the Invigilator(s)

1.

Time of Examination :

2.

Duration : 60 Minutes]

[Maximum Marks : 50

IMPORTANT INSTRUCTIONS

- (i) The question paper is in the form of Test-Booklet containing **50 (Fifty)** questions. All questions are compulsory. Each question carries four answers marked (A), (B), (C) and (D), out of which only one is correct.
- (ii) On receipt of the Test-Booklet (Question Paper), the candidate should immediately check it and ensure that it contains all the pages, i.e., **50** questions. Discrepancy, if any, should be reported by the candidate to the invigilator immediately after receiving the Test-Booklet.
- (iii) A separate Answer-Sheet is provided with the Test-Booklet/Question Paper. On this sheet there are **50** rows containing four circles each. One row pertains to one question.
- (iv) The candidate should write his/her Application number at the places provided on the cover page of the Test-Booklet/Question Paper and on the Answer-Sheet and **NOWHERE ELSE**.
- (v) No second Test-Booklet/Question Paper and Answer-Sheet will be given to a candidate. The candidates are advised to be careful in handling it and writing the answer on the Answer-Sheet.
- (vi) For every correct answer of the question **One (1) mark will be awarded**. For every unattempted question, Zero (0) mark shall be awarded. **There is no Negative Marking**.
- (vii) Marking shall be done only on the basis of answers responded on the Answer-Sheet.
- (viii) To mark the answer on the Answer-Sheet, candidate should **darken** the appropriate circle in the row of each question with Blue or Black pen.
- (ix) For each question only **one** circle should be **darkened** as a mark of the answer adopted by the candidate. If more than one circle for the question are found darkened or with one black circle any other circle carries any mark, the question will be treated as cancelled.
- (x) The candidates should not remove any paper from the Test-Booklet/Question Paper. Attempting to remove any paper shall be liable to be punished for use of unfair means.
- (xi) Rough work may be done on the blank space provided in the Test-Booklet/Question Paper only.
- (xii) *Mobile phones (even in Switch-off mode) and such other communication/programmable devices are not allowed inside the examination hall.*
- (xiii) No candidate shall be permitted to leave the examination hall before the expiry of the time.

DO NOT OPEN THIS QUESTION BOOKLET UNTIL ASKED TO DO SO.

[P.T.O.

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1. In a series resonant band-pass filter, a lower value of Q results in
 - (A) a higher resonant frequency
 - (B) a smaller bandwidth
 - (C) a higher impedance
 - (D) a larger bandwidth
2. The problem of passive filters is overcome by using
 - (A) Analog filter
 - (B) Active filter
 - (C) LC filter
 - (D) A combination of analog and digital filters
3. Determine the resonant frequency for the specifications: $R = 10 \Omega$, $L = 0.1 \text{ H}$, $C = 10 \mu\text{F}$.
 - (A) 157
 - (B) 158
 - (C) 159
 - (D) 160
4. For a star connection network, consuming power of 1.8 kW and power factor 0.5, the inductance and resistance of each coil at a supply voltage of 230 Volts, 60 Hz is _____?
 - (A) 0.1 H, 8 Ohms
 - (B) 0.5 H, 10 Ohms
 - (C) 0.3 H, 7.4 Ohms
 - (D) 1 H, 7 Ohms
5. A three-phase balanced delta connected load of $(4 + j8) \Omega$ is connected across a 400 V, 3- ϕ balanced supply. Determine the phase current IY.
 - (A) $44.74 \angle 183.4^\circ\text{A}$
 - (B) $45.74 \angle 183.4^\circ\text{A}$
 - (C) $44.74 \angle 183.4^\circ\text{A}$
 - (D) $45.74 \angle -183.4^\circ\text{A}$
6. Coulomb law is employed in
 - (A) Electrostatics
 - (B) Magnetostatics
 - (C) Electromagnetics
 - (D) Maxwell theory
7. Divergence theorem is based on
 - (A) Gauss law
 - (B) Stoke's law
 - (C) Ampere law
 - (D) Lenz law
8. The electric field intensity is defined as
 - (A) Force per unit charge
 - (B) Force on a test charge
 - (C) Force per unit charge on a test charge
 - (D) Product of force and charge
9. Electric flux density in electric field is referred to as
 - (A) Number of flux lines
 - (B) Ratio of flux lines crossing a surface and the surface area
 - (C) Direction of flux at a point
 - (D) Flux lines per unit area
10. The Ampere law is based on which theorem?
 - (A) Green's theorem
 - (B) Gauss divergence theorem
 - (C) Stoke's theorem
 - (D) Maxwell theorem
11. Two ports containing no sources in their branches are called?
 - (A) Active ports
 - (B) Passive ports
 - (C) One port
 - (D) Three port

12. The parameters Y_{11} , Y_{12} , Y_{21} , Y_{22} are called?
 (A) Open circuit impedance parameters
 (B) Short circuit admittance parameters
 (C) Inverse transmission parameters
 (D) Transmission parameters
13. Between the branch voltages of a loop the Kirchhoff's voltage law imposes
 (A) non-linear constraints
 (B) linear constraints
 (C) no constraints
 (D) None of the above
14. In a single phase transformer, the no-load current lags the applied voltage by
 (A) 90°
 (B) about 75°
 (C) 0
 (D) about 110°
15. Transformer operating in parallel will share a common load in the best possible manner if
 (A) leakage impedances are proportional to their kVA rating
 (B) pu leakage impedances are equal
 (C) leakage impedances are equal
 (D) any of the mentioned
16. Operating transformers in parallel gives the advantage of
 (A) reliable loading
 (B) increased capacity of power system
 (C) reducing the capacity of substation
 (D) all of the mentioned
17. A 400 V, 10 KVA transformer at 50 Hz, is operated at the frequency of 40 Hz, then the humming _____
 (A) increases
 (B) decreases
 (C) remains same
 (D) increases to very high
18. Armature reaction in a dc machine is
 (A) cross magnetizing in nature
 (B) magnetizing in nature
 (C) demagnetizing in nature
 (D) None of the mentioned
19. A dc shunt motor is connected to the source through 3-point starter. If the field id kept open and starter handle is moved from off to on position, then
 (A) motor will not start
 (B) armature will draw large current from source
 (C) no sparking would occur
 (D) All of the mentioned
20. A dc shunt motor is running at 1000 rpm at the rated load torque. If few of the field windings get short circuited then
 (A) motor speed will increase and more armature current is drawn
 (B) motor speed will decrease and more armature current is drawn
 (C) motor speed will increase and lesser armature current is drawn
 (D) motor speed will decrease and lesser armature current is drawn
21. Choose the most inappropriate out of the following for the no-load characteristics of the dc generator.
 (A) It is the open circuit characteristic of the machine
 (B) It is magnetization characteristic of the machine
 (C) It is conducted on the unloaded machine
 (D) None of the mentioned

22. The no load current of the induction motor is high due to
- long and high reluctance path between stator and rotor
 - mutual flux having moderate reluctance path between stator and rotor
 - leakage flux having low reluctance iron core
 - leakage flux having high reluctance iron core
23. An induction motor when started on load, it does not accelerate up to full speed but runs at 1/7th of the rated speed. The motor is said to be
- Locking
 - Plumming
 - Crawling
 - Cogging
24. The great advantage of the double squirrel-cage induction motor over single cage rotor is that its
- efficiency is higher
 - power factor is higher
 - slip is larger
 - starting current is lower
25. The rotor of the 3-phase induction motor rotates in the same direction as that of stator field. This can be explained by
- Newton's laws of motion
 - Farady's laws of electromagnetic induction
 - Lenz's law
 - Fleming's right hand rule
26. The emf method of the voltage regulation is applicable only to cylindrical rotor alternator due to _____
- resultant air gap flux is not affected by angular position of rotor
 - uniform angular position of rotor
 - non uniform angular position of rotor
 - saliency of the poles is a trouble while estimating the emf
27. Mmf method of voltage regulation is called _____ while the emf method is _____
- optimistic, pessimistic
 - pessimistic, pessimistic
 - optimistic, optimistic
 - pessimistic, optimistic
28. The static excitations mainly comprises of _____
- brushless excitation system
 - thyristor based excitation system
 - synchronous motor excitation system
 - brushless and thyristor based excitation system
29. If the DC excitation is suddenly dropped to 0, the three phase alternator _____
- runs as motor
 - stops to zero speed in few seconds
 - continues to run as motor but at lower speed
 - no change in the operating conditions
30. For the single phase 2-wire system, the maximum voltage between the outer wires and earth is _____
- 2V
 - $\sqrt{2}$ V
 - V
 - $V/\sqrt{2}$

31. Charging current in medium transmission line is _____
 (A) Maximum at receiving end
 (B) Maximum at sending end
 (C) More in between sending and receiving end
 (D) Equal throughout the line
32. High voltage transmission lines are transposed because then
 (A) Phase voltage imbalances can be minimized
 (B) Voltage drop in the lines can be minimized
 (C) Computations of inductance becomes easier
 (D) Corona losses can be minimized
33. What is the main drawback of overhead system over underground system?
 (A) Surge problem
 (B) High initial cost
 (C) Higher charging current
 (D) Underground system is more flexible than overhead system
34. What is the empirical formula to calculate the number of strands?
 (A) $3n(n + 2n) + 2$
 (B) $3n(n + 1) + 2$
 (C) $3n(n + 1) + 1$
 (D) None of the above
35. A 200 bus power system has 160 PQ bus. For achieving a load flow solution by N-R in polar coordinates, the minimum number of simultaneous equation to be solved is _____
 (A) 359
 (B) 334
 (C) 357
 (D) 345
36. A protection system engineer is planning to provide the complete protection, he can achieve this by _____
 (A) a two phase fault relays and three earth fault relays
 (B) a two phase fault relays and two earth fault relays
 (C) two phase fault relays and three earth fault relays
 (D) three phase fault relays and two earth fault relays
37. If all the sequence voltages at the fault point in a power system are equal, then fault is _____
 (A) LLG fault
 (B) Line to Line fault
 (C) Three phase to ground fault
 (D) LG fault
38. Which of the following reactance is eliminated first in synchronous generator just after the symmetrical fault?
 (A) Damper winding reactance
 (B) Field winding reactance
 (C) Armature winding reactance
 (D) Leakage reactance
39. The output of the feedback control system must be a function of _____
 (A) Output and feedback signal
 (B) Input and feedback signal
 (C) Reference input
 (D) Reference output
40. If root loci plots of a particular control system do not intersect the imaginary axis at any point, then the gain margin of the system will be:
 (A) Infinite
 (B) 1
 (C) 0
 (D) 0.707

41. The relationship between an input and output variable of a signal flow graph is given by the net gain between the input and output node is known as the overall _____
- (A) Overall gain of the system
 - (B) Stability
 - (C) Bandwidth
 - (D) Speed
42. A linear time invariant system is stable if :
- (A) System in excited by the bounded input, the output is also bounded
 - (B) In the absence of input output tends zero
 - (C) Both (A) and (B)
 - (D) System in excited by the bounded input, the output is not bounded
43. What is meant by the PIV rating of a diode?
- (A) Maximum reverse bias potential which can be applied across a diode without breakdown
 - (B) Maximum forward bias potential which can be applied across a diode without breakdown
 - (C) Minimum potential required by a diode to reach conduction state
 - (D) Maximum power allowable to a diode
44. Which of the following statement about a common base transistor is true?
- (A) Very low input impedance
 - (B) Very low output Impedance
 - (C) Current gain is greater than unity
 - (D) Voltage gain is very low
45. Which of these is incorrect for an operational amplifier?
- (A) It has a high voltage gain
 - (B) It is a direct coupled amplifier
 - (C) It is only useful for amplifying AC signals
 - (D) It was originally designed to perform mathematical operations
46. What is the use of the compensation capacitor in op-amp?
- (A) Improves the amplification of op-amp
 - (B) Decreases the slew rate of op-amp
 - (C) Increases the bandwidth of op-amp
 - (D) Op-amp acts as all pass filter
47. Which of the following is not true about 8085 microprocessor?
- (A) It is an 8-bit microprocessor
 - (B) It is a 40 pin DIP chip
 - (C) It is manufactured using PMOS technology
 - (D) It has 16 address lines
48. Which of the following is a type of digital logic circuit?
- (A) Combinational logic circuits
 - (B) Sequential logic circuits
 - (C) Both (A) and (B)
 - (D) None of the mentioned
49. Which of the following method of measurement does a bridge circuit uses?
- (A) relative
 - (B) comparison
 - (C) absolute
 - (D) differential
50. Potential transformers are used to measure _____
- (A) high currents
 - (B) low voltages
 - (C) high voltages
 - (D) low currents

ROUGH WORK

ANSWER KEY – Skill Instructor(Electrical)

1. D	26. A
2. B	27. A
3. C	28. B
4. C	29. A
5. C	30. D
6. A	31. A
7. A	32. A
8. C	33. A
9. B	34. C
10. C	35. A
11. B	36. D
12. B	37. A
13. B	38. A
14. B	39. B
15. B	40. A
16. D	41. A
17. A	42. C
18. A	43. A
19. D	44. A
20. A	45. C
21. D	46. B
22. A	47. C
23. C	48. C
24. D	49. B
25. A	50. C