

Test Booklet

Series

A

Paper No.

03

Written Test Paper, 2021

**SKILL INSTRUCTOR
(ELECTRONICS)**

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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**SKILL INSTRUCTOR
(ELECTRONICS)**

1. Active devices can also be used as _____
 - (A) Amplifiers
 - (B) Choppers
 - (C) Converters
 - (D) Inverters
2. How do amplifiers work without violating Law of Conservation of Energy?
 - (A) They amplify one factor of the input and reduce others
 - (B) They work on the law of conservation of mass
 - (C) They violate the Law of Conservation of Energy
 - (D) They amplify the signal by taking an input from an external source
3. Tunnel diode can be used as an active device because _____
 - (A) its negative resistance region is used
 - (B) it conducts at a faster rate
 - (C) it triggers the flow of electrons in reverse bias
 - (D) of tunnelling effect
4. MOSFET has greatest application in digital circuit due to
 - (A) Low power consumption
 - (B) Less noise
 - (C) Small amount of space it takes on a chip
 - (D) All of the above
5. The collector of a transistor is doped
 - (A) heavily
 - (B) moderately
 - (C) lightly
 - (D) none of the above
6. In a transistor, the base current is about of emitter current
 - (A) 25%
 - (B) 20%
 - (C) 35%
 - (D) 5%
7. The period of the signal $Z(t) = \sin 3t + \cos 4t$ is _____
 - (A) periodic without a definite period
 - (B) periodic with a definite period
 - (C) non-periodic over an interval
 - (D) non-periodic throughout
8. Given the signal
$$X(t) = \begin{cases} \cos t, & \text{if } t < 0 \\ \sin t, & \text{if } t \geq 0 \end{cases}$$
The correct statement among the following is?
 - (A) Periodic with fundamental period 2π
 - (B) Periodic but with no fundamental period
 - (C) Non-periodic and discontinuous
 - (D) Non-periodic but continuous
9. An ideal op-amp requires infinite bandwidth because
 - (A) Signals can be amplified without attenuation
 - (B) Output common-mode noise voltage is zero
 - (C) Output voltage occurs simultaneously with input voltage changes
 - (D) Output can drive infinite number of device

10. How will be the output voltage obtained for an ideal op-amp?
- (A) Amplifies the difference between the two input voltages
 - (B) Amplifies individual voltages input voltages
 - (C) Amplifies products of two input voltage
 - (D) None of the mentioned
11. A certain OP-amp has bias currents of $50 \mu\text{A}$. The input offset current is
- (A) 700 nA
 - (B) $99.3 \mu\text{A}$
 - (C) $49.7 \mu\text{A}$
 - (D) None of these
12. Why are the Op-amps with open loop configuration not used in linear applications?
- (A) High risk of distortion
 - (B) High risk of clipping of output signal
 - (C) Both (A) and (B)
 - (D) None of the above
13. The summing amplifier is an application of :
- (A) Noninverting op-amp
 - (B) Inverting op-amp
 - (C) Integrator
 - (D) Differentiator
14. Today OP AMP are made with the help of _____.
- (A) Discrete devices
 - (B) Integrated Circuits
 - (C) Vacuum Tubes
 - (D) (A) and (C) are correct
15. Operational AMP is available in the packages of _____
- (A) DIP
 - (B) To-5 Case
 - (C) Flat Pack
 - (D) All are correct
16. Differential AMP is used in the _____ ICs.
- (A) Linear
 - (B) Non-Linear
 - (C) BGA
 - (D) All are correct
17. The expression for Absorption law is given by _____
- (A) $A + AB = A$
 - (B) $A + AB = B$
 - (C) $AB + AA' = A$
 - (D) $A + B = B + A$
18. $A(A + B) = ?$
- (A) AB
 - (B) 1
 - (C) $(1 + AB)$
 - (D) A
19. According to the property of minterm, how many combination will have value equal to 1 for K input variables?
- (A) 0
 - (B) 1
 - (C) 2
 - (D) 3
20. The dependency notation " ≥ 1 " inside a block stands for which operation?
- (A) OR
 - (B) XOR
 - (C) AND
 - (D) XNOR

21. The time required for a gate or inverter to change its state is called _____
- (A) Rise time
 - (B) Decay time
 - (C) Propagation time
 - (D) Charging time
22. TTL was invented in 1961 by _____
- (A) Baker clamp
 - (B) James L. Buie
 - (C) Chris Brown
 - (D) Frank Wanlass
23. TTL inputs are the emitters of a _____
- (A) Transistor-transistor logic
 - (B) Multiple-emitter transistor
 - (C) Resistor-transistor logic
 - (D) Diode-transistor logic
24. TTL devices consume substantially _____ power than equivalent CMOS devices at rest.
- (A) Less
 - (B) More
 - (C) Equal
 - (D) Very High
25. One example of the use of an S-R flip-flop is as _____
- (A) Transition pulse generator
 - (B) Racer
 - (C) Switch debouncer
 - (D) Astable oscillator
26. Whose operations are more faster among the following?
- (A) Combinational circuits
 - (B) Sequential circuits
 - (C) Latches
 - (D) Flip-flops
27. When is a flip-flop said to be transparent?
- (A) When the Q output is opposite the input
 - (B) When the Q output follows the input
 - (C) When you can see through the IC packaging
 - (D) When the Q output is complementary of the input
28. A decimal counter has _____ states.
- (A) 5
 - (B) 10
 - (C) 15
 - (D) 20
29. Synchronous counter is a type of _____
- (A) SSI counters
 - (B) LSI counters
 - (C) MSI counters
 - (D) VLSI counters
30. A 4-bit binary up counter has an input clock frequency of 20 kHz. The frequency of the most significant bit is _____
- (A) 1.25 kHz
 - (B) 2.50 kHz
 - (C) 160 kHz
 - (D) 320 kHz
31. The B/H curve can be used to determine?
- (A) Iron loss
 - (B) Hysteresis loss
 - (C) Voltage loss
 - (D) Eddy current loss
32. If the magnetic susceptibility of a material is positive then the material is
- (A) para-magnetic.
 - (B) ferromagnetic.
 - (C) anti-ferromagnetic.
 - (D) Any of the above.

33. Which among the following sentences is correct?
- (A) Lenz's law is used to find the direction of induced current
- (B) Fleming's right hand rule is used to find the direction of induced current
- (C) Fleming's left hand rule is used to find the direction of force
- (D) All of these
34. In a magnetic material hysteresis loss takes place primarily due to
- (A) Rapid reversals of its magnetisation
- (B) Flux density lagging behind the magnetising force
- (C) Molecular friction
- (D) Its high retentivity
35. The average value of a 12 V peak sine wave over one complete cycle is
- (A) 0 V
- (B) 1.27 V
- (C) 7.64 V
- (D) 6.37 V
36. A sine wave has a frequency of 50 Hz. Its angular frequency is _____ radian/second.
- (A) 100π
- (B) 50π
- (C) 25π
- (D) 5π
37. The form factor is the ratio of
- (A) Peak value to r.m.s. value
- (B) r.m.s. value to average value
- (C) Average value to r.m.s. value
- (D) None of the above
38. The peak value of a sine wave is 200 V. Its average value is
- (A) 127.4 V
- (B) 141.4 V
- (C) 282.8 V
- (D) 200 V
39. In three phase system, the line voltage V_{RY} is equal to?
- (A) phasor sum of V_{RN} and V_{NY}
- (B) phasor difference of V_{RN} and V_{NY}
- (C) phasor sum of V_{RN} and V_{NY}
- (D) algebraic sum of V_{RN} and V_{NY}
40. The relation between V_{RY} , V_{ph} in a star connected system is?
- (A) $V_{RY} = V_{ph}$
- (B) $V_{RY} = \sqrt{3} V_{ph}$
- (C) $V_{RY} = 3\sqrt{3} V_{ph}$
- (D) $V_{RY} = 3V_{ph}$
41. The double energy transient occur in the
- (A) Purely inductive circuit
- (B) R-L circuit
- (C) R-C circuit
- (D) R-L-C circuit
42. The purpose of a parallel circuit resonance is to magnify
- (A) current
- (B) voltage
- (C) power
- (D) frequency
43. The product of apparent power and cosine of the phase angle between circuit voltage and current is
- (A) True power
- (B) Reactive power
- (C) Volt-amperes
- (D) Instantaneous power

44. Which is the most widely used material in the core of the transformer?
- Cold rolled grain oriented sheet steel
 - Cold rolled grain steel
 - Soft iron
 - Steel
45. While comparing potential transformer to an auto transformer, a potential transformer transfers power _____
- inductively
 - conductively
 - both conductively as well as inductively
 - electromagnetic induction
46. The statements which support the points that auto transformers are advantageous?
- Weight of conductor reduces
 - Ohmic losses reduces
 - Leakage reactance reduces
 - Lower short-circuit current
- I, II, III
 - II, III, IV
 - I, II, III, IV
 - I, IV
47. It is advised not to run dc series motor with no load. Why?
- Because infinite torque will be produced
 - Because zero torque as no load will not let machine start
 - Because zero torque at no load will make speed infinite
 - None of the mentioned
48. The induced emf in the armature of a 4-pole dc machine is _____
- directly proportional to speed
 - directly proportional to speed and field strength applied to it
 - directly proportional to field strength applied to it
 - inversely proportional to speed and inversely proportional to field strength applied to it
49. Which of the following can be used for braking purposes in electric trains?
- Induction generator
 - Induction motor
 - DC series motor
 - DC differentially compounded generator
50. The direction of rotation of a DC series motor shaft can be changed by _____
- Interchanging supply terminals
 - Interchanging field terminals
 - Not possible
 - Cannot be determined

ROUGH WORK

ANSWERS KEY- Skill Instructor(Electronics)

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