| Test Paper $: \quad$ II |  |
| :--- | :--- |
| Test Subject | $:$ ELECTRONIC SCIENCE |
| Test Subject Code $: \quad$ K-3113 |  |

## Name \& Signature of Invigilator/s

Signature: $\qquad$
Name : $\qquad$

Test Booklet Serial No. :
OMR Sheet No. :
Roll No.


## Paper : II

Subject : ELECTRONIC SCIENCE
Time: 1 Hour 15 Minutes
Signature:
Name $\square$

## Number of Pages in this Booklet : 8

## ఆభ్యథァగళిగి స్చఎజనిగళు

















లుదాळరణొ: (A) (B)
(C) సియయాద లుత్తరపాగిద్దిగ.










 జొంజేలయ్యు చొడడు.



 13. శ్రం అల్ల్ల లుక్తరగలీగగ ગుణ అంచ్ ఇరుపుదిల్ల.

## Number of Questions in this Booklet : 50

## Instructions for the Candidates

1. Write your roll number in the space provided on the top of this page
2. This paper consists of fifty multiple-choice type of questions.
3. At the commencement of examination, the question booklet will be given to you. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as below :
(i) To have access to the Question Booklet, tear off the paper seal on the edge of this cover page. Do not accept a booklet without sticker-seal and do not accept an open booklet.
(ii) Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to pages/questions missing or duplicate or not in serial order or any other discrepancy should be got replaced immediately by a correct booklet from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given.
4. Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the oval as indicated below on the correct response against each item.
Example: (A) (B) (D)
where (C) is the correct response.
5. Your responses to the questions are to be indicated in the OMR Sheet kept inside the Paper I Booklet only. If you mark at any place other than in the ovals in the Answer Sheet, it will not be evaluated.
6. Read the instructions given in OMR carefully.
7. Rough Work is to be done in the end of this booklet.
8. If you write your name or put any mark on any part of the OMR Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, you will render yourself liable to disqualification.
9. You have to return the test OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
10. You can take away question booklet and carbon copy of OMR Answer Sheet soon after the examination.
11. Use only Blue/Black Ball point pen.
12. Use of any calculator or log table etc., is prohibited.
13. There is no negative marks for incorrect answers.

## ELECTRONIC SCIENCE Paper - II

Note: This paper contains fifty (50) objective type questions. Each question carries two (2) marks. All questions are compulsory.

1. The threshold voltage of channel MOSFET can be increased by
(A) Increasing the channel do past concentration
(B) Reducing the channel do past concentration
(C) Reducing the gate oxide thickness
(D) Reducing the channel Length
2. Which of the following rating is true ?
(A) Si diodes have higher PIV and narrower temperature ranges than Ge diodes
(B) Si diodes have lower PIV and narrower temperature ranges than Ge diodes
(C) Si diodes have lower PIV and wider temperature ranges than Ge diodes
(D) Si diodes have higher PIV and wider temperature ranges than Ge diodes
3. The number of independent loops for a network with ' n ' nodes and ' $b$ ' branches is
(A) $\mathrm{n}-1$
(B) $\mathrm{b}-\mathrm{n}$
(C) $b-n+1$
(D) independent of the number of nodes
4. For the pole-zero of following figure, the network function is

(A) $\frac{s^{2}(s+1)}{(s+3)(s+2+j)(s+2-j)}$
(B) $\frac{s^{2}(s+2+j)(s+2-j)}{(s+1)(s+3)}$
(C) $\frac{(s+1)\left(s^{2}+45+5\right)}{s^{2}(s+3)}$
(D) $\frac{s^{2}(s+3)}{(s+1)\left(s^{2}+45+5\right)}$
5. The change in the value of emitter resistance $R \varepsilon$ in differential amplifier
(A) affects the differential mode gain
(B) affects the common mode gain
(C) affect both differential and common mode gains
(D) Does not affect both differential and common mode gains.
6. Differential amplifiers are used in
(A) Instrumentation amplifiers
(B) Voltage followers
(C) Voltage Regulators
(D) Push pull amplifiers
7. 



What logic function is performed by the circuit shown above.
(A) Ring Counter
(B) Ripple Counter
(C) Full Adder
(D) Half Adder
8. The number of two input multiplexers required to construct a $2^{10}$ input multiplexer is
(A) 31
(B) 10
(C) 1023
(D) 127
9. When CPU is interrupted, it
(A) Stops execution of instructions
(B) Acknowledges interrupt and branches to subroutine
(C) Acknowledges interrupt and continue
(D) Acknowledges interrupt and waits for next instructions from the interrupting device.
10. NMI input in a microprocessor is
(A) Edge sensitive
(B) Level sensitive
(C) Both edge and level triggered
(D) Edge triggered and level sensitive
11. What is the output of the following ' C ' code?
\# include < stdio.h >
int * f() ;
int main ()
\{
int * $\mathrm{P}=\mathrm{f}(\mathrm{)}$;
print f("\%dln", * P) ;
\}
int * ${ }^{(1)}$
\{ int $\mathrm{j}=10$; return \& ${ }^{\text {; }}$
\}
(A) 10
(B) Compile time error
(C) Segmentation fault
(D) Undefined behaviour
12. What is the output of the following ' C ' code ? \# include < stdio.h >
main ()
\{ float $f$;
$\mathrm{f}=10 / 3$;
printf ("\%f",f) ;
\}
(A) 3
(B) 0
(C) 0.3
(D) 3.3
13. A transmission line of $100 \Omega$ characteristics impedance is connecteo to a load of $200 \Omega$. The power reflection coefficient is
(A) 0.333
(B) 0.5
(C) 0.111
(D) 0.707
14. $\nabla \times E=-\frac{\partial B}{\partial t}$ is
(A) Gauss law
(B) Faraday's law
(C) Columb's law
(D) Ampere's law
15. The IF amplifier in a superhetrodyne receiver contains a
(A) band stop filter
(B) band pass filter
(C) low pass filter
(D) high pass filter
16. If the radiated power of an Am transmitter is 10 kw , the power in the carrier for modulation index 0.6 is
(A) 8.24 kw
(B) 8.47 kw
(C) 9.26 kw
(D) 9.6 kw
17. The d.c. series motor should always be started with load because
(A) at no load, it will rotate at dangerously high speed
(B) it will fail to start
(C) it will not develop high starting torque
(D) it will not give high power to load
18. For an SCR, dv/dt protection is achieved through the use of
(A) RL in series with SCR
(B) $L$ in series with SCR
(C) RC across SCR
(D) RC in series with SCR
19. The best suited optical fiber for communication purpose with LED as a source is
(A) single mode optical fiber
(B) graded index optical fiber
(C) multimode step index fiber
(D) dispersion shifted optical fiber

## Total Number of

20. Which of the following statements is correct for a system with gain margin close to unity or a phase margin close to zero?
(A) The system is highly oscillatory
(B) The system is highly stable
(C) The system is relatively stable
(D) The system has slow speed of response

## Directions:

## Q. No. (s) 21 to 30 :

The following items consists of two statements, one labelled the "Assertion (A)" and the other labelled the "Reason (R)". You are to examine these two statements carefully and decide if the Assertion (A) and the Reason (R) are individually true and if so, whether the Reason is a correct explanation of the Assertion. Select your answers to these items using the codes given below and mark your answer accordingly.

## Codes:

(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 correct explanation of (A)
(C) (A) is true, but (R) is false
(D) (A) is false, but (R) is true
21. Assertion (A) : In common collector amplifier, voltage gain is greater than unity and this configuration is called as Emitter follower.

Reason (R): Common collector stage is used for impedance matching as its input impedance is very large as compared to output impedance.
22. Assertion (A) :Gray code is unweighted code.
Reason (R): Gray code is not self complementary.
23. Assertion (A) : TDM and FDM accomplish the same end by different means.
Reason (R): FDM involves simpler instrumentation as compared to TDM.
24. Assertion (A) : Dual slope A/D converter is the most preferred conversion technique employed in most of the digital multimeters.
Reason (R) : Dual slope A/D converter provides high accuracy while at the same time suppresses the harm effect on the input signal.
25. Assertion (A) : If a network contains a diode, Thevenin's theorem cannot be applied.
Reason (R) : Thevenin's theorem is applicable to linear and bilateral networks only.
26. Assertion (A) : Operational amplifiers should have a high Slew rate for good transient response.
Reason ( $\mathbf{R}$ ): Slew rate is the maximum rate of change of the output voltage of the operational amplifier when a large amplitude step is applied to its input.
27. Assertion (A) : The TTL 54/74 ALS family has smallest delay power product.
Reason (R) : Power consumption in TTL $54 / 74$ ALS is reduced as there is decrease in resistance values and consequently current reduction.
28. Assertion (A) : The 'CALL' instruction is used to transfer program control to a subprogram or subroutine.
Reason (R): The instruction pushes the current program counter contents on to the stack and loads the given address into the PC, and program control is transferred to the given address in the instruction.
29. Assertion (A) : Microwave radiation can penetrate ionosphere.
Reason (R): Medium waves are used for satellite communication.
30. Assertion (A) : The 'DO-WHILE' statement is used less frequently than the 'WHILE' statement.
Reason (R) : For most applications, it is more natural to test for continuation of a loop at the beginning rather than at the end of the loop.
31. Following are the materials used in manufacturing electronic devices

1) Si 02
2) Si
3) Ge
4) C

Arrange these materials in the increasing order of band gap.
(A) 1, 2, 3, 4
(B) $3,2,4,1$
(C) $4,2,3,1$
(D) $3,4,1,2$
32. Consider the following devices

1) RTZ
2) High speed TTL
3) $E C L$
4) CMOS

The correct sequence for their decrease in power dissipation is
(A) $3,1,2,4$
(B) 1, 3, 4, 2
(C) $3,4,2,1$
(D) $1,4,3,2$
33. Give the sequence of memory in terms of capacity from highest to lowest

1) Cache memory
2) Pen drive
3) RAM
4) Hard disk
(A) $4,3,2,1$
(B) 1, 2, 3, 4
(C) $4,2,3,1$
(D) $2,1,4,3$
34. Consider the following microwave frequency bands
1) $X$ band
2) KU band
3) $S$ band
4) Lband

Arrange there band in the order of increasing frequencies
(A) 1, 2, 4, 3
(B) $4,3,1,2$
(C) $4,1,2,3$
(D) $2,4,1,3$
35. Following are the transducers

1) RTD
2) Strain gauze
3) Thermocouple
4) Thermistor

Arrange these in the order of the sensitivity from lowest to highest
(A) $4,2,3,1$
(B) $3,2,1,4$
(C) $1,2,3,4$
(D) $3,1,2,4$

## Directions: Q. No. 36 to 45

In the following questions, match List - 1 and List - II and select the correct answer using the codes given below the lists :
36. List-I
List - II
a) n-p-n transistor
i)

b) Tunnel diode
ii)

c) FET
iii)

d) MOSFET
iv)


## Codes:

|  | a | b | c | d |
| :--- | :---: | :---: | :---: | :--- |
| (A) | i | ii | iii | iv |
| (B) | ii | iii | iv | i |
| (C) | ii | iv | i | iii |
| (D) | iii | i | ii | iv |

37. List-I

## List - II

a) Zener diode
i) Removes ac ripple
b) Filter capacitor
ii) Supplies ac input voltage
c) Diode
iii) Constant dc output voltage
d) Power
iv) Rectification transformer

## Codes:

|  | a | b | c | d |
| :--- | ---: | ---: | ---: | ---: |
| (A) | iv | iii | i | ii |
| (B) | i | ii | iii | iv |
| (C) | iii | ii | i | iv |
| (D) | iii | i | iv | ii |


38. List - I
a) PLL
b) Error
i) Triangle wave amplifier
c) Schmitt trigger iii) Demodulator
d) Integrator
iv) Square wave

List - II

Codes :

|  | a | b | c | d |
| :--- | ---: | :--- | :--- | :--- |
| (A) | iii | ii | iv | i |
| (B) | i | ii | iii | iv |
| (C) | iii | iv | i | ii |
| (D) | iv | iii | ii | i |

39. List-I
a) TTL
b) ECL
c) HTL
d) CMOS

## List - II

i) High noise immunity
ii) Low power dissipation
iii) Current hogging
iv) Totem-pole output

Codes:

|  | a | b | c | d |
| :--- | ---: | ---: | ---: | ---: |
| (A) | iii | ii | i | iv |
| (B) | i | ii | iii | iv |
| (C) | iv | iii | i | ii |
| (D) | iv | ii | i | iii |

40. List-I
a) 8085
b) 8086
c) 8051
d) 8255

## List - II

i) PPI
ii) 8 bit data and 16 address lines
iii) Pipelining
iv) Four I/O ports

Codes:

|  | a | b | c | d |
| :--- | ---: | :--- | :--- | :--- |
| (A) | ii | iii | iv | i |
| (B) | i | ii | iii | iv |
| (C) | iii | ii | iv | i |
| (D) | iv | iii | ii | i |

Match the operations in FORTRAN
41. List-I
a) $\geq$
b) $\neq$
i) . GE.
c) $\leq$
ii) .LE.
d) $>$
iii) .GT.

List - II

Codes:

|  | a | b | c | d |
| :--- | ---: | :--- | :--- | :--- |
| (A) | i | ii | iii | iv |
| (B) | iii | ii | iv | i |
| (C) | i | iv | ii | iii |
| (D) | i | iii | iv | ii |

42. List - I
a) Klystron
i) impedance measurement
b) Gunn diode
ii) detection
c) Smith Chart
iii) velocity modulation
d) Point Contact iv) negative diode
resistance

## List - II

## Codes:

|  | a | b | c | d |
| :--- | ---: | :---: | :---: | :--- |
| (A) | iii | ii | iv | i |
| (B) | iii | iv | i | ii |
| (C) | i | ii | iii | iv |
| (D) | iv | iii | ii | i |

43. List-I
a) PCM
b) $A M$
c) DSSB
d) FM

Codes:

|  | a | b | c | d |
| :--- | ---: | :---: | :---: | :---: |
| (A) | i | iv | iii | ii |
| (B) | iii | ii | iv | i |
| (C) | i | ii | iii | iv |
| (D) | iii | iv | i | ii |

## Total Number of P

44. List-I
a) LED
b) PIN diode

List - II
c) Optical fiber
i) Plasma
ii) Silica
d) Display device
iii) GaAs

Codes:

|  | a | b | c | d |
| :--- | :---: | :---: | :---: | :---: |
| (A) | iii | iv | ii | i |
| (B) | iii | ii | i | iv |
| (C) | i | iii | ii | iv |
| (D) | i | ii | iii | iv |

45. Pertaining to the control system match the following :

## List - I

a) Externally introduced signal
b) Automatic toaster
c) Intial output

## List - II

i) Open loop control system
ii) Transient response
iii) Stimulus response not equal to input
d) Closed loop system
iv) Tendency to stabilize

Codes:

|  | a | b | c | d |
| :--- | ---: | ---: | ---: | ---: |
| (A) | i | iii | ii | iv |
| (B) | iv | iii | i | ii |
| (C) | iii | i | ii | iv |
| (D) | i | ii | iii | iv |

Microprocessors and mocrocontrollers have revitalized the instrumentation world. Moreover they have entered in almost all the walks of societal life. Though there are many manufacturers of microprocessors, Intel has pioneered their development. 8085 is a 8 bit microprocessor manufactured by INTEL in 1971. In general the timing reference is very important in any microprocessor for which the externally connected crysal serves as reference. The microprocessor like the 8085 operates through a systematic instruction execution mechanism governed by means of ' T ' states, instruction cycles and machine cycles. Moreover the 8085 is also equipped
with different types of register majority of th
are 8 bit, few special purpose having 16 temporary storage capability. 8085 microprocessor also comes with a fairly good interrupt structure which can be enabled by using an instruction. There is a non-markable interrupt, level triggered interrupts in addition to the software interrupts. The capabilities of the 8085 microprocessor can be further argumented by interfacing peripheral chips such as PPI 8255, 8279 and 8253 just to name a few.
46. In 8085 name the 16 bit register
(A) Stack pointer
(B) Accumulator
(C) Register H
(D) Register B
47. Under which mode of 8255 , it will have the following features
i) A 5 bit control port is available
ii) Three I/O lines are available at port C
(A) Mode 2
(B) Mode 0
(C) Mode 1
(D) Mode 3
48. In 8085 name the level triggering interrupts
(A) INTR and TRAP
(B) RST 5.5 and RST 7.5
(C) RST 7.5 and RST 6.5
(D) RST 6.5 and RST 5.5
49. In case of 8085 , what is SIM ?
(A) Sorting Interrupt Mask
(B) Select Interrupt Mask
(C) Set Interrupt Mask
(D) Softer Interrupt Mask
50. In the context of microprocessors, which of the following statement is true?
(A) The group of machine cycle is called a state
(B) A machine cycle consists of one or more instruction cycle
(C) An instruction cycle is made up of machine cycles and a machine cycle is made up of number of states
(D) A T state consists of instruction cycles and machine cycles.


