Test Paper : III

Test Subject : **ELECTRONIC SCIENCE**

Test Subject Code : **K-3113**

Test Booklet Serial No. : ____________

OMR Sheet No. : ____________

Roll No. | | | | | | | | |

(Figures as per admission card)

Name & Signature of Invigilator/s

Signature: ____________ Signature : ____________

Name : ____________ Name : ____________

Paper : III

Subject : ELECTRONIC SCIENCE

Time : 2 Hours 30 Minutes

Maximum Marks : 150

Number of Pages in this Booklet : **16**

Number of Questions in this Booklet : **75**

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

1. ಈ ಪುಟದ ಮೇಲ್ತುದಿಯಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರನ್ನು ಬರೆಯಿರಿ.
2. ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ಎಪ್ಪತ್ತೈದು ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
3. ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ, ಪ್ರಶ್ನೆಪುಸ್ತಿಕೆಯನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪುಸ್ತಿಕೆಯನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ.
   (i) ಪ್ರಶ್ನೆ ಪುಸ್ತಿಕೆಗೆ ಪ್ರವೇಶಾವಕಾಶ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ಟಿಕ್ಕರ್ ಸೀಲ್ ಇಲ್ಲದ ಪ್ರಶ್ನೆಪುಸ್ತಿಕೆ ಸ್ವೀಕರಿಸಬೇಡಿ. ತೆರೆದ ಪುಸ್ತಿಕೆಯನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
   (ii) **ಪುಸ್ತಿಕೆಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳೆ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ, ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಿಕೆಯನ್ನು ಕೂಡಲೆ 5 ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪುಸ್ತಿಕೆಗೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.**
4. ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕಪ್ಪಾಗಿಸಬೇಕು.
   ಉದಾಹರಣೆ: (A) (B) ● (D)
   (C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
5. ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಗಳನ್ನು, **ಪತ್ರಿಕೆ III ಪುಸ್ತಿಕೆಯೊಳಗೆ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಮಾತ್ರವೇ ಸೂಚಿಸತಕ್ಕದ್ದು.** OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿನ ಅಂಡಾಕೃತಿ ಹೊರತುಪಡಿಸಿ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಗುರುತಿಸಿದರೆ, ಅದರ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
6. OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
7. ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಿಕೆಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
8. ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು, ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗಿರುತ್ತೀರಿ.
9. ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMR ನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯ ಕೂಡದು.
10. ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
11. **ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್‌ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.**
12. **ಕ್ಯಾಲ್ಕುಲೇಟರ್ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.**
13. **ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ.**

Instructions for the Candidates

1. Write your roll number in the space provided on the top of this page.
2. This paper consists of seventy five 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 question of Paper III are to be indicated in the **OMR Sheet kept inside the Booklet**. If you mark at any place other than in the ovals in OMR 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 – III

Note : This paper contains **seventy-five (75)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. What does a high resistance reading in both forward and reverse bias directions indicate ?

(A) A good diode

(B) An open diode

(C) A shorted diode

(D) A defective ohmmeter

2. Electron mobility and life time in a semiconductor at room temperature are 0.36 $m^2/(Vs)$ and 340 μs. The diffusion length is

(A) 3.13 mm

(B) 1.77 mm

(C) 3.55 mm

(D) 3.13 cm

3. For BJT, early voltage V_A is 100V. In common emitter configuration, quiescent V_{CE} is 10V. What percentage change in quiescent I_C would occur, if early voltage is made ∞ ?

(A) 10%

(B) 20%

(C) 5%

(D) 0%

4. A network function has zeros only in the left half of the S-plane, then it is said to be

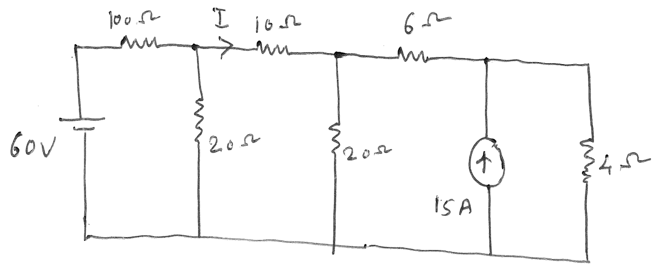
(A) a stable function

(B) a non-minimum phase function

(C) a minimum phase function

(D) an all pass function

5. Consider the following circuit



What is the current I in the above circuit ?

(A) 0A

(B) 2A

(C) 5A

(D) 6A

6. A reciprocal network is described by

$$Z_{21} = \frac{S^2}{3S^2+2} \text{ and } Z_{22} = \frac{S^2+4S}{3S^2+2}.$$

Its transmission zeros are located at

(A) S = 0

(B) S = $\pm$j2

(C) S = 0 and at S = $\pm$j2

(D) S = 0 and at S = ∞

7. The percentage voltage regulation of voltage supply providing 100V unloaded and 95 at full load is

(A) 5.0%

(B) 0.53%

(C) 5.3%

(D) 50%

8. What starts a free running multivibrator ?

(A) a trigger

(B) an input signal

(C) an external circuit

(D) nothing

9. An IC operational amplifier has a typical open loop gain of 1200 and the common mode rejection of 55 dB. What is the Common Mode Rejection Ratio (CMRR) ?

(A) 550

(B) 560

(C) 570

(D) 580

10. Assuming that only X and Y logic inputs are available and their complements $\overline{X}$ and $\overline{Y}$ are not available, what is the minimum number of two input NAND gates require to implement $X \oplus Y$?

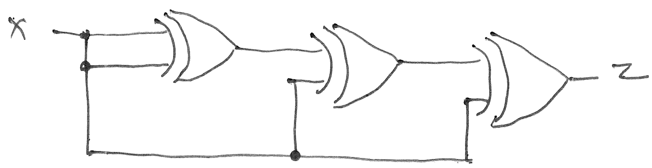
(A) 2

(B) 3

(C) 4

(D) 5

11. Output of the following circuit is



(A) 0

(B) 1

(C) X

(D) $\overline{X}$

12. A ring counter closely resembles

(A) up-down counter

(B) parallel-counter

(C) shift register

(D) ripple carry counter

13. In 8086, if the content of the code segment register is 1FAB and the contents of the IP register is 10AI, then the effective memory address is

(A) 1FBCO

(B) 304C

(C) FDB5

(D) 20B51

14. Consider the following instructions executed in 8086

PUSH AX ; AX has 20 H in it

PUSH BX ; BX has 34 in it

POP AX ;

ADD AX, BX ;

POP G ;

The value stored in G would be

(A) 20 H

(B) 34 H

(C) 54 H

(D) 68 H

15. Consider the following

1) Sign flag

2) Zero flag

3) Carry flag

4) Parity flag

Which of the above flags of 8085 gets affected by execution of the instruction SUB B ?

(A) 1 and 2

(B) 1 and 3

(C) 3 and 4

(D) 1, 2, 3 and 4

16. Which of the following is not a valid mathematical function in 'C' ?

(A) frexp (X) ;

(B) atan2 (X, Y) ;

(C) srand (X) ;

(D) fmod (X) ;

17. Comment on the output of following C program.

```
#include <stdio.h>
main( )
{
        int a = 1;
        printf("size of a is %d,", sizeof(++a));
        printf ("value of a is %d", a);
};
```

(A) Size of a is 4, value of a is 1

(B) Size of a is 4, value of a is 2

(C) Size of a is 2, value of a is 2

(D) Size of a is 2, value of a is 4

18. Predict the data type of the following mathematical operation in 'C' language.

2 * 9 + 3/2.0

(A) int

(B) long

(C) float

(D) double

19. In Gunn oscillator where the diode is operated in a tunable resonant circuit, most of the sample length of the Gunn device is maintained in the negative conductance state during most of the R.F. cycle for

(A) delayed domain mode

(B) quenched domain mode

(C) LSA mode

(D) hybrid mode

20. In a rectangular waveguide with broader dimension a and narrow dimension b, the dominant mode of microwave propagation would be

(A) TE_{10}

(B) TM_{10}

(C) TE_{01}

(D) TM_{01}

21. In a reflex Klystron, the velocity modulation

(A) occurs near the reflector

(B) occurs in the resonator gap

(C) occurs near the accelerating grid

(D) does not occur at all

22. Capture effect is the characteristics o

(A) AM

(B) FM

(C) PCM

(D) FDM

23. The bandwidth of a 'N' bit binary coded PCM signal for modulating a signal having bandwidth of 'f' Hz is

(A) $\frac{f}{N}$Hz

(B) $\frac{f}{N^2}$Hz

(C) Nf Hz

(D) N^2f Hz

24. In a PCM system each quantization level is encoded into 8 bits. The signal to quantization noise ratio is equal to

(A) $\frac{1}{12}\times\left(\frac{1}{256}\right)^2$

(B) 48 dB

(C) 64 dB

(D) 256 dB

25. One of the following devices can be used as a relaxation oscillator

(A) SCR

(B) TRIAC

(C) BJT

(D) UJT

26. In an SCR circuit, the anode is grounded. The voltages at the gate and cathode at a particular working condition are measured to be –50V and –55V, respectively. Based on this observation, it could be inferred that

(A) The SCR is in forward blocking mode

(B) The SCR is in conducting mode

(C) The SCR is in reverse blocking mode

(D) The SCR is damaged

27. In optical fiber communication systems, FBG is used for

(A) Fiber optic local area network

(B) Non-linearity management

(C) Source

(D) Dispersion compensation

28. In wire wound strain gauges, the change in resistance is due to

(A) Change in diameter of the wire

(B) Change in length of the wire

(C) Change in both length and diameter

(D) Change in resistivity

29. A set of independent measurements of current was taken by six observers and recorded as 12.8 mA, 12.2 mA, 12.5 mA, 13.1 mA, 12.9 mA and 12.4 mA.

The arithmetic mean of the measurement is

(A) 12.85 mA

(B) 12.65 mA

(C) 12.75 mA

(D) 12.80 mA

30. In a control system integral error compensation _____________ steady state error.

(A) increases

(B) minimizes

(C) does not have any effect on

(D) saturates

31. Which of the following is/are valid statement(s) ?

I) Carbon is used as it does not belong to IV group of periodic table.

II) GaAs is used as semiconductor and does not belong to IV group of periodic table.

III) Si is used as widely used semiconductor as it is cheaper than Ge.

IV) Ge is still used in low voltage devices.

(A) II, IV

(B) I, II, III, IV

(C) II, III

(D) II, III, IV

32. Which of the following is/are valid statements ?

I) Max power transfer theorem yields voltage equivalent circuit.

II) Thevenin's theorem yield voltage equivalent circuit.

III) Super position theorem gives current equivalent circuit.

IV) Norton's theorem yield current equivalent circuit.

(A) I, III

(B) II, IV

(C) I, II, IV

(D) II, III, IV

33. Identify the following configurations with voltage gain.

I) Common emitter

II) Common base

III) Common collector

IV) Emitter follower

(A) I, IV

(B) I, II

(C) II, III

(D) I, II, IV

34. Which of the following is/are valid statement(s) ?

I) JK flip-flop is an example of a synchronous sequential circuit.

II) Decoder requires clock for its operation.

III) NAND gate can be used as universal gate.

IV) Multiplexer can be used as universal gate.

(A) III

(B) II, III

(C) III, IV

(D) III, I

35. Which of the following is/are valid statement(s) ?

I) 8086 has direction flag

II) 8255 can be used as a counter

III) 8086 has FIFO queue

IV) 8086 has built in counter

(A) I, IV

(B) III

(C) I, III

(D) II, III

36. Which of the following is/are valid statement(s) ?

I) Dowhile statement is a entry-controlled loop statement.

II) While (1) implies a finite loop.

III) External variables are alive and active in the entire program.

IV) Compound relational expression are used to test more than one condition in logical expression with operators.

(A) III, IV

(B) II, III, IV

(C) I, III, IV

(D) I

37. Which of the following is/are valid statement(s) ?

I) Gunn diode is not a TED.

II) Gunn diode is bulk semiconductor device.

III) Gunn diode exhibits negative resistance under certain conditions.

IV) Gunn diode is used for rectification.

(A) II, III

(B) I, II

(C) I, II, III

(D) III

38. Which of the following is/are valid statement(s) ?

I) Shot noise is found in transistor device.

II) Noise can be completely removed by local oscillator.

III) Johnson noise is due to load resistance.

IV) Super heterodyne operation increases the signal to noise ratio.

(A) II (B) I, III, IV

(C) II, III (D) I, IV

39. Which of the following is/are valid statement(s) ?

I) LED is a stimulated emission device.

II) P-I-N diode is a spontaneous emission device.

III) Single mode fiber is best suited for long distance communication.

IV) Silica fiber with 1.55 μm wavelength operation has lowest loss.

(A) III (B) I, II, III, IV

(C) II, III (D) III, IV

40. Which of the following is/are valid statement(s) ?

I) Proportional derivative controller are used for fast response system.

II) Proportional derivative controller has to be used with proportional controller.

III) On-off controller are best suited for accurate temperature controller system.

IV) Kitchen refrigerators use PID controllers.

(A) II, III, IV

(B) II

(C) I, II

(D) I, III

Q No. 41 to 50 :

Assertion – Reason type questions :

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 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 sheet 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 the correct explanation of (A).

(C) (A) is true and (R) is false.

(D) (A) is false and (R) is true.

41. **Assertion (A)** : In a semiconductor at high temperature the avalance breakdown voltage is higher.

    Reason (R) : At high temperature mean free path of electrons and holes are shorter therefore a larger field is required to cause ionisation.

42. **Assertion (A)** : Laplace transformation is a transformation of time domain to a frequency domain for continuous time signals.

    Reason (R) : Z-transformation is a transformation of time domain to a frequency domain for discrete time signals.

43. **Assertion (A)** : Virtual ground exists only for Op-Amps with infinite open loop gain.

    Reason (R) : Virtual ground is a ground for voltage but not for the current.

44. **Assertion (A)** : CMOS logic famil consumes least power amongst all logic families.

    Reason (R) : Construction of CMOS it self permits power consumption only during transition.

45. **Assertion (A)** : 8085 can handle 16 bit data.

    Reason (R) : 8085 has 16-bit AZU.

46. **Assertion (A)** : Branch instructions are most powerful instructions as they allow the microprocessor to change sequence of program.

    Reason (R) : Interrupts also change the sequence of program. Interrupts are also branching statements.

47. **Assertion (A)** : In a microwave communication links, rain causes fading and this is a great concern in communication systems.

    Reason (R) : Water droplets in the path of an electromagnetic wave will scatter the energy in the waves and this collective scattering will weaken the incident wave in the forward direction.

48. **Assertion (A)** : In PCM, the dynamic signal range and the quantisation noise are always design trade offs.

    Reason (R) : In PCM system, reduction in step size leads to increase in the quantisation noise.

49. **Assertion (A)** : LCD is a high speed display device.

    Reason (R) : LCD consumes low power.

50. **Assertion (A)** : Spectro photometers are used for microwave frequency analysis.

    Reason (R) : Spectro photometers use monochromators.

51. Following are the steps involved in IC fabrication.

I) Crystal growth

II) Epitaxial growth

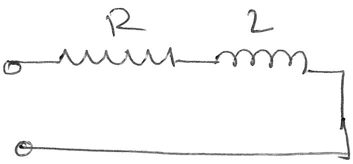
III) Photo etching

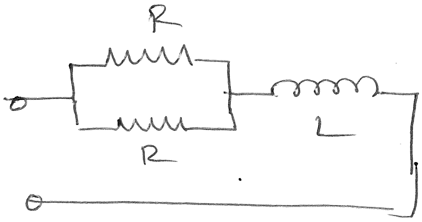
IV) Diffusion

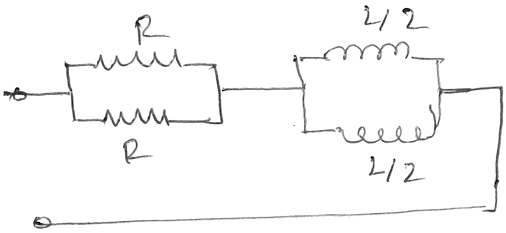
(A) IV, III, II, I (B) I, III, II, IV

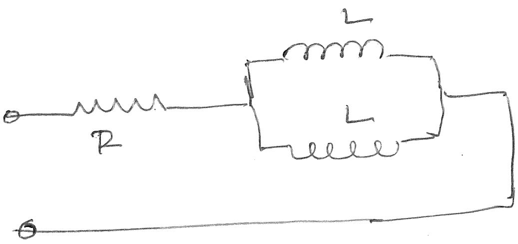
(C) I, II, III, IV (D) I, II, IV, III

52. The correct sequence of the time constants of the circuits shown below in the increasing order is

I) 

II) 

III) 

IV) 

(A) I, II, III, IV (B) IV, II, I, III

(C) IV, III, I, II (D) III, IV, II, I

53. The input resistance of a common em stage can be increased by

I) Unbypassing emitter resistance

II) Boot Strapping

III) Biasing it at low quiescent current

IV) Using compounded BJTs

The correct sequence in descending order of the effectiveness of these methods is

(A) I, IV, II, III (B) II, IV, I, III

(C) IV, II, I, III (D) IV, III, I, II

54. Arrange the following logic families in the increasing order of propagation delay.

I) CMOS II) TTL

III) ECL IV) DTL

(A) I, IV, II, III (B) IV, III, II, I

(C) IV, I, II, III (D) I, II, IV, III

55. Following are the instructions of 8085 microprocessor.

I) MVI A, 00H

II) CALL

III) HLT

IV) LXI H, FFFF

Arrange them increasing order of time consumption :

(A) I, II, III, IV (B) I, IV, II, III

(C) III, I, IV, II (D) III, I, II, IV

56. Arrange the following in the increasing order of number of capacitor elements.

I) Phase shift oscillator

II) Astable multivibrator

III) Bistable multivibrator

IV) Monoshot multivibrator

(A) I, II, III, IV (B) III, IV, II, I

(C) III, II, I, IV (D) III, I, IV, II

57. Following are the microwave components in receiver system.

I) Parabolic Antenna

II) Receiver

III) Low noise block converter

IV) Feed horn

(A) IV, I, III, II (B) I, II, III, IV

(C) I, III, IV, II (D) I, IV, III, II

58. The following are the 4 different blocks used in super heterodyne receiver.

I) Mixer

II) I. F. Amplifier

III) Envelop detector

IV) RF stage

(A) IV, III, II, I (B) IV, I, II, III

(C) IV, II, III, I (D) I, IV, II, III

59. Following are the four detectors :

I) Photo transistors

II) Avalanche photodiode

III) LDR

IV) PN diode

Arrange them in the increasing order of response speed.

(A) III, I, IV, II (B) III, II, IV, I

(C) III, IV, II, I (D) I, III, IV, II

60. Following are the transducers :

I) Thermistor

II) RTD

III) Semiconductor strain gauze

IV) Potentiometer

Arrange them in the increasing order of linearity :

(A) I, II, III, IV (B) I, IV, II, III

(C) I, III, II, IV (D) III, IV, II, I

61.

List – I	List – II
a) BJT	i) Pinch off effect
b) FET	ii) Avalanche breakdown
c) Zener diode	iii) Negative resistance characteristics
d) Tunnel diode	iv) Punch through effect

Codes :

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

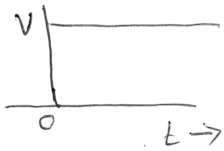
62.

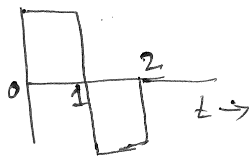
List – I	List – II
a) Norton's theorem	i) Effects of independent source in a linear circuit are additive
b) Super position theorem	ii) law of non-accumulation of charge holds good
c) Thevenin's theorem	iii) Current source with shunt resistance
d) Kirchoff's current law	iv) Voltage source with series resistance

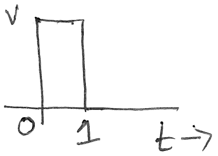
Codes :

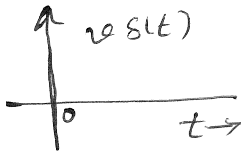
	a	b	c	d
(A)	iii	i	iv	ii
(B)	iii	ii	iv	i
(C)	iii	iv	ii	i
(D)	i	ii	iii	iv

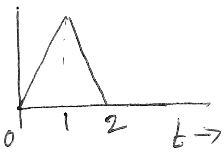
63. **List – I** **List – II**

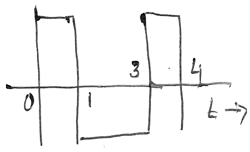
a) 

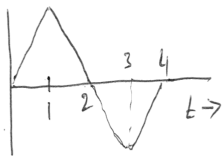
i) 

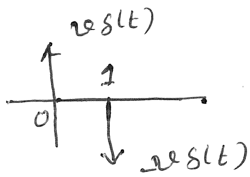
b) 

ii) 

c) 

iii) 

d) 

iv) 

Match the above for differentiator circuit :

Codes :

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

64. **List – I** **List – II**

a) Shift register i) Clock generator
b) Four bit counter ii) Divide by n counter
c) Ring counter iii) Stepper motor
d) Multivibrator iv) Decimal counter

Match the device in List – I to applications in List – II.

Codes :

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

65. **List – I** **List – II**

a) Register B i) Memory pointer
b) Register HL ii) General purpose register
c) Register PC iii) Next memory location pointer
d) Stack pointer iv) LIFO memory point

Match the above list with regard to 8085 :

Codes :

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

66. **List – I** **List – II**

a) rand () / RAND_max ; i) illegal declaration
b) int long y : 33 ; ii) pointer to an array
c) int (*a) [7] ; iii) random number generation
d) ungetc (c, f_p) ; // where declarations are int c and FILE*f_p iv) returning either character or EOF

In context with 'C' language match the statements in List – I with their intended functionality in List – II.

Codes :

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

67. List – I / List – II

a) PIN diode — i) Microwave amplification

b) GaAs MOSFET — ii) Microwave tunning

c) Klustron — iii) Microwave switching

d) Varactor diode — iv) Microwave source

Codes :

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

68. List – I / List – II

a) Compounding — i) Super heterodyne receiver

b) Aliasing — ii) Boosting of higher frequency components

c) Pre-emphasis — iii) Overlapping of slide bands

d) Down conversion — iv) Non-uniform quantisation

Codes :

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

69. List – I / List – II

a) DC to DC — i) Rectifier

b) DC to AC — ii) Cycloconverter

c) AC to DC — iii) Chopper

d) AC to AC — iv) Inverter

Codes :

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

70. List – I / List – II

a) LVDT — i) Velocity

b) Thermopile — ii) Pressure

c) Bourdon tube — iii) Linear displacement

d) Moving coil type — iv) Radiation

Codes :

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

Transmission line is a medium through which electromagnetic energy is transmitted from one place to another with minimum loss. A transmission line is a distributed parameter circuit having resistance per unit length, inductance per unit length, conductance per unit length and capacitance per unit length. In a transmission line the velocity of propagation depends merely on the inductance per unit length and capacitance per unit length. The transmission line can be analysed by the method of distributed circuit theory. Here the analysis involves only one space co-ordinate in addition to the time variable. The transmission line equations are similar to Helmholtz equation and provide two travelling waves propagating in opposite directions. These two travelling waves will generate a standing wave inside the transmission line. From the amplitude of these two travelling waves one can calculate the reflection coefficient and voltage standing wave ratio. In a loss less transmission line one can neglect the series resistance per unit length and shunt conductance per unit length. The important parameter of a transmission line is its characteristic impedance Z_0. It is independent of the length of the transmission line and depends only on the distributed parameters. If a transmission line is terminated on a load impedance Z_L the input impedance can be calculated. The input impedance of a loss less transmission line is

$$Z_{in} = Z_0\left[\frac{Z_L \cos rl + \partial Z_0 \sin rl}{Z_0 \cos rl + \partial Z_L \sin rl}\right].$$

71. When an electromagnetic wave propaga through a open circuited transmission line when it reaches the open circuit end then,

(A) Voltage at the open end is zero

(B) Voltage at the open end is maximum

(C) Current at the open end is maximum

(D) Both voltage and current are zero

72. The input impedance of a $\lambda/4$ short circuited transmission line of characteristic impedance $100\,\Omega$ is

(A) $100\,\Omega$ (B) $50\,\Omega$

(C) ∞ (D) Zero

73. The voltage reflection coefficient of a transmission line terminated with the characteristic impedance is

(A) ∞

(B) 1

(C) Zero

(D) Between 1 and ∞

74. The primary constants of a transmission line are

(A) R and L

(B) R and C

(C) R, L and C

(D) R, L, C and G

75. In a loss less transmission line one can neglect

(A) Series inductance and shunt capacitance

(B) Series resistance and shunt conductance

(C) Series resistance and inductance

(D) Series resistance and shunt conductance

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Space for Rough Work

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work