

Test Paper : III
Test Subject : ELECTRONIC SCIENCE
Test Subject Code : K-3114

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

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(Figures as per admission card)

Name & Signature of Invigilator/s

Signature: _____
Name : _____

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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

- ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರನ್ನು ಬರೆಯಿರಿ.
- ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ಎಪ್ಪತ್ತೈದು ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
- ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ ಪ್ರಶ್ನೆಪುಸ್ತಕವನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನಿವೃತ್ತ ಪ್ರಶ್ನೆಪುಸ್ತಕವನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರಿಶೀಲಿಸಲು ಕೋರಲಾಗಿದೆ.
(i) ಪ್ರಶ್ನೆ ಪುಸ್ತಕಕ್ಕೆ ಪ್ರವೇಶಾವಕಾಶ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ಪಿಕ್ಟರ್ ಸೀಲ್ ಇಲ್ಲದ ಪ್ರಶ್ನೆಪುಸ್ತಕ ಸ್ವೀಕರಿಸಬೇಡಿ. ತೆರದ ಪ್ರಶ್ನೆಪುಸ್ತಕವನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
(ii) ಪುಸ್ತಕಿಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳಿ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ, ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪ್ರಶ್ನೆಪುಸ್ತಕವನ್ನು ಕೂಡಲೇ 5 ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪ್ರಶ್ನೆಗಳ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.
- ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪ್ರಯೋಗ ಉತ್ತರಗಳಿವೆ. ನಿವೃತ್ತ ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕಪ್ಪಾಗಿಸಬೇಕು.
ಉದಾಹರಣೆ: (A) (B) (C) (D)
(C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
- ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಗಳನ್ನು, ಪತ್ರಿಕೆ III ಪ್ರಶ್ನೆಪುಸ್ತಕಗಳಿಗೆ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಮಾತ್ರವೇ ಸೂಚಿಸತಕ್ಕದ್ದು. OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿನ ಅಂಡಾಕೃತಿ ಹೊರತುಪಡಿಸಿ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಗುರುತಿಸಿದರೆ, ಅದರ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
- OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
- ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪ್ರಶ್ನೆಪುಸ್ತಕ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
- ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು, ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆಯಬಾರದು, ನಿವೃತ್ತ ಅನುಪ್ರಾಪ್ತಿಗೆ ಬಾಧ್ಯರಾಗಿರುತ್ತೀರಿ.
- ಪರೀಕ್ಷೆಯು ಮುಗಿದ ನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನಿವೃತ್ತ ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರಿಶೀಲಿಸಲು ಕೊಡಲು OMR ನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯಿ ಕೊಡಬೇಡಿ.
- ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರಿಶೀಲಿಸಿದ ಪ್ರಶ್ನೆಪುಸ್ತಕವನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
- ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.
- ಕ್ಯಾಲ್ಕುಲೇಟರ್ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯು ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.
- ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ.

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of seventy five multiple-choice type of questions.
- 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.
- 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) (C) (D)
where (C) is the correct response.
- 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.
- Read the instructions given in OMR carefully.
- Rough Work is to be done in the end of this booklet.
- 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.
- 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.
- You can take away question booklet and carbon copy of OMR Answer Sheet soon after the examination.
- Use only Blue/Black Ball point pen.
- Use of any calculator or log table etc., is prohibited.
- 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. When a semiconductor bar is heated at one end, a voltage across the bar is developed. If the heated end is positive the semiconductor is

- (A) p type
- (B) n-type
- (C) intrinsic
- (D) extrinsic

2. A FET is characterised as a

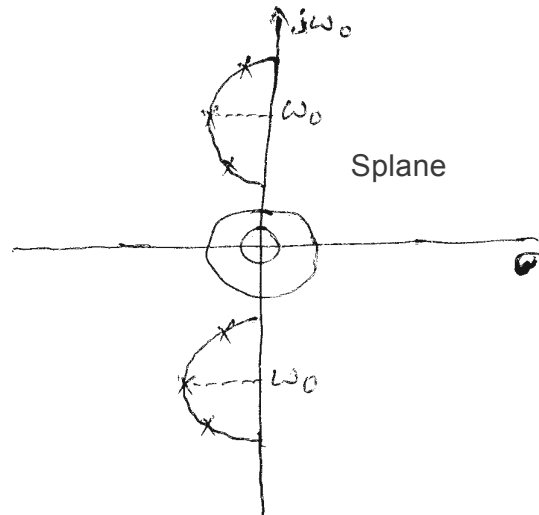
- (A) Bipolar device
- (B) Current controlled device
- (C) High input impedance device
- (D) Low input impedance device

3. A bipolar junction transistor has $\beta = 100$.

It's value of α is

- (A) 0.98
- (B) 0.95
- (C) 0.99
- (D) 0.90

4. The given figure shows the pole-zero pattern of a filter in the s-plane. The filter is a



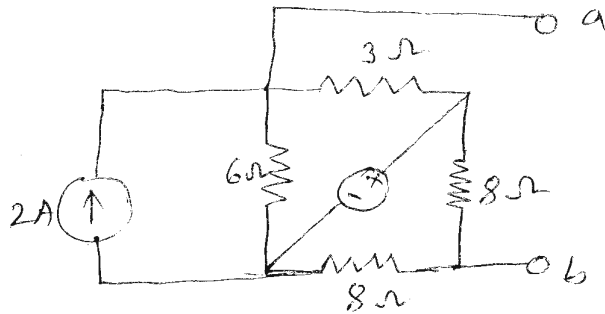
- (A) Band eliminator filter
- (B) Band-pass filter
- (C) Low pass filter
- (D) High pass filter

5. If two identical first order low pass filters are cascaded non-interactively then the unit step response of the composite filter will be

- (A) Critically damped
- (B) Under damped
- (C) Over damped
- (D) Oscillatory



6. The Thevenin impedance across the terminals ab of the network shown in the figure.



- (A) $2\ \Omega$
- (B) $6\ \Omega$
- (C) $6.16\ \Omega$
- (D) $\frac{4}{3}\ \Omega$

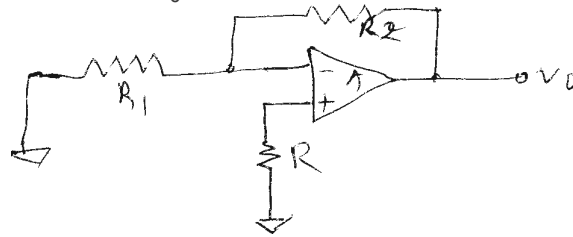
7. The specification of an op-amp that tells how fast the output can change is

- (A) CMRR
- (B) Frequency response
- (C) Offset
- (D) Slew rate

8. An integrated circuit used for VCO applications is

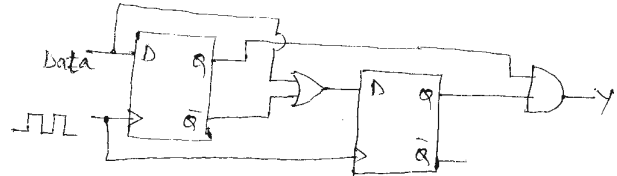
- (A) 741
- (B) 555
- (C) 565
- (D) 566

9. Which of the following conditions would give $V_0 = 0$ in the circuit ?



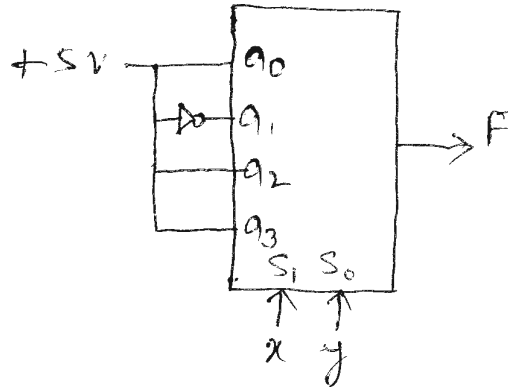
- (A) $R = R_1 + R_2$
- (B) $R = R_2/R_1$
- (C) $R = R_2 - R_1$
- (D) $R = R_1 \parallel R_2$

10. When the output in the circuit below is '1' it is implied that data has



- (A) Changed from 0 to 1
- (B) Changed from 1 to 0
- (C) Changed either direction
- (D) Not changed

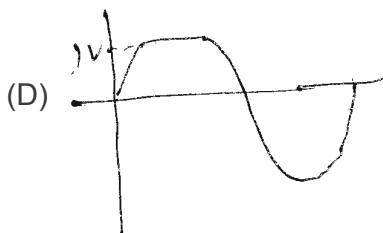
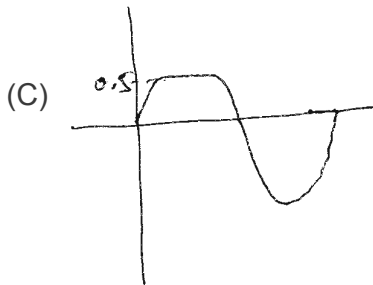
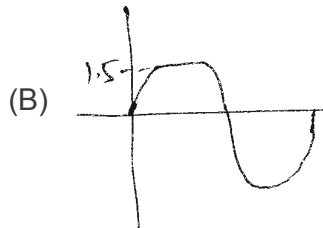
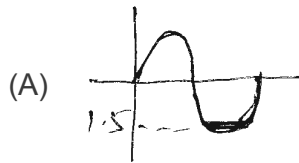
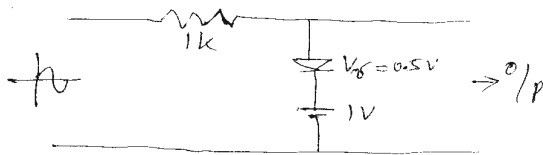
11. In the following circuit F is



- (A) $F = xy + \bar{x}y + x\bar{y} + \bar{x}\bar{y}$
- (B) $x\bar{y}$
- (C) $x + \bar{y}$
- (D) $\bar{x}y$



12. For the following circuit the output is



13. Hand shake signals are useful to ensure

- i) Readiness of device
- ii) Synchronize the timing
- iii) Prevent microprocessor from reading same data more than once
- iv) Writing new data after the device accepted the previous data

- (A) i and ii
- (B) i, ii and iii
- (C) iii and iv
- (D) i, ii, iii and iv

14. In 8255 if the D_7 bit of control word is '0' it is recognised as

- (A) Mode 0
- (B) Mode 1
- (C) BSR Mode
- (D) Mode 2

15. At the end of the following program the accumulator contains

```
MVI A, 08 H
MVI C, 06 H
rep : ADD C
      DCR C
      JN2 rep
      SUI 04 H
      HLT
```

- (A) 25 h
- (B) 19 h
- (C) 30 h
- (D) 18 h



16. In the following program

```
sum = 0 ;  
n = 1 ;  
do  
{  
    sum + = n ;  
    n + = 3 ;  
} while (n < = 28) ;
```

The value of sum is

- (A) 117
- (B) 135
- (C) 134
- (D) 145

17. Class is a

- (A) Collection of related function
- (B) Collection of data items of different data types
- (C) Collection of data items and related function
- (D) Collection of students

18. Variables that are both alive and active throughout the entire program are known as

- (A) Local variables
- (B) Fixed variables
- (C) External variables
- (D) Active variables

19. For a Gunn diode oscillator, the drift velocity of the electron is 10^7 cm/s and the active region length is 10×10^{-4} cm. The natural frequency of oscillations would be

- (A) 1 MHz
- (B) 10 MHz
- (C) 10 GHz
- (D) 100 GHz

20. An antenna has 40Ω antenna resistance and 60Ω radiation resistance. The efficiency of the antenna is

- (A) 30%
- (B) 60%
- (C) 50%
- (D) 40%

21. As a result of reflections from a plane conducting wall, electromagnetic waves acquires an apparent velocity greater than the velocity of light in space. This is called

- (A) Velocity of propagation
- (B) Normal Velocity
- (C) Group Velocity
- (D) Phase Velocity



22. A carrier is simultaneously modulated by two sine waves with modulation indices of 0.4 and 0.3. The resultant modulation index will be
- (A) 1.0
(B) 0.7
(C) 0.5
(D) 0.25
23. Quantisation means conversion of
- (A) Continuous time to discrete time
(B) Continuous amplitude to discrete amplitude
(C) Continuous amplitude to discrete time
(D) Discrete amplitude to continuous amplitude
24. If the sampling frequency is close to the Nyquist Rate ($f_s = 2f_x$) then the band width of filtered TDM waveform is
- (A) greater than FDM
(B) same as FDM
(C) less than FDM
(D) better than FDM
25. What is typical value of interbase resistance of UJT ?
- (A) 20 k Ω
(B) 0 to 4 k Ω
(C) 12 k Ω to 20 k Ω
(D) 4 k Ω to 10 k Ω
26. Device which senses mechanical deflections is
- (A) p-i-n diode
(B) LVDT
(C) Thermocouple
(D) Synchros
27. Which of the following is band gap of GaAs photodiode ?
- (A) 0.35 eV
(B) 0.7 eV
(C) 1.1 eV
(D) 1.43 eV
28. The transfer function is $\frac{K}{(s+1)(s+2)(s+3)}$. The break point lies between
- (A) 0 and -1
(B) -1 and -2
(C) -2 and -3
(D) beyond -3
29. Which of the following is active device ?
- (A) Condenser microphone
(B) Load cell
(C) Piezo electric pressure meter
(D) RTD thermometer



30. It is given that $G(s) = \frac{k}{s^2(1+sT)}$. This

system is operated in a closed loop with unity feedback. What is the order and type of closed loop system ?

- (A) 3 and 2
- (B) 2 and 3
- (C) 3 and 1
- (D) 3 and 0

31. Which of the following is/are valid statement(s) ? During an electron transition across the energy gap in an indirect energy gap material like silicon ?

- i) The momentum of the electron changes.
- ii) The direction of motion of the electron changes.
- iii) The potential energy of the electron changes.
- iv) The kinetic energy of the electron changes.

- (A) i, ii and iii
- (B) ii, iii and iv
- (C) i, iii and iv
- (D) i, ii and iv

32. Consider the following statements for a z-port network.

- i) $z_{11} = z_{22}$
- ii) $h_{12} = h_{21}$
- iii) $y_{12} = -y_{21}$
- iv) $BC - AD = -1$

Which of the following is/are valid statement(s) for the network to be reciprocal ?

- (A) i and ii are correct
- (B) ii and iii are correct
- (C) iii and iv are correct
- (D) iv alone is correct

33. Which of the following method(s) are used to increase CMRR ?

- i) By using current source at emitter of differential amplifier
 - ii) Using push full stage
 - iii) Using Darlington pair
 - iv) Using FET
- (A) i, ii and iii
 - (B) i, iii and iv
 - (C) ii, iii and iv
 - (D) i

34. DAC is not usually used now a days. Which of the following statement (s) is/are valid ?

- i) DAC is not available.
 - ii) PWM is used as an attenuation to DAC.
 - iii) DAC required large wafer space.
 - iv) DAC requires more power.
- (A) iv
 - (B) ii
 - (C) ii, iii and iv
 - (D) i, ii and iv

35. Which of the following statement(s) about DIV instruction of 8086 is/are valid ?

- i) Numerator may be any one of the registers of 8086.
 - ii) If operand register is 8-bit, then numerator is always 16 bit register.
 - iii) The μp stops working when operand register is 8 bit and quotient is greater than FF.
 - iv) If operand is 16 bit register, then upper 16 bit numerator value should store in DX register.
- (A) i, ii, iii and iv
 - (B) i, ii and iii
 - (C) ii, iii and iv
 - (D) i, iii and iv



36. Which of the following statement(s) are about calling function by reference is/are valid ?
- Address of the actual arguments are passed to formal arguments.
 - Value of the actual arguments are passed to formal arguments.
 - Changes to formal arguments affect the actual arguments.
 - Changes to formal arguments does not affect the actual arguments.
- (A) i and iv
(B) i and iii
(C) ii and iv
(D) ii and iii
37. Which of the following parameter(s) is/are responsible for the change of phase of a propagating electromagnetic wave ?
- Loss in the media.
 - Permeability of the media.
 - Frequency of the wave.
 - Velocity of the wave.
- (A) i, ii and iii
(B) ii, iii and iv
(C) i, iii and iv
(D) i and iv
38. Which of the following(s) can be used to remove unwanted side-bands in SSB ?
- Filter system.
 - Phase shift method.
 - Third method.
 - Balanced modulator.
- (A) i, ii and iii
(B) i, ii and iv
(C) ii, iii and iv
(D) i, iii and iv
39. Which of the following principle(s) PIN diode works ?
- Intrinsic region increase the light capture area.
 - Reverse bias voltage is applied to reduce drift time.
 - Produces voltage from incident light.
 - Tunneling effect in intrinsic region.
- (A) i and ii
(B) i, ii and iii
(C) iii, iv
(D) ii and iv
40. Which of the following statement(s) are valid for a minimum phase system ?
- All the poles of the transfer function should lie in the left of s-plane.
 - The zeros of the transfer function can lie anywhere in the s-plane.
 - Given the magnitude characteristic over the entire frequency range, the phase angle characteristic can be uniquely determined.
- (A) i, ii and iii
(B) only i and iii
(C) only i and ii
(D) only ii and 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) : Tunnel diodes are used as clock generators in μp boards.

Reason (R) : Tunnel diode exhibits negative resistance region.

42. Assertion (A) : The function given by

$$Z(s) = \frac{Ks(s^2 + 2)(s^2 + 10)}{(s^2 + 1)(s^2 + 6)}$$
 represents.

an LC driving point impedance function.

Reason (R) : Poles and zeros interlace on the imaginary axis of the complex s -space.

43. Assertion (A) : The semiconductor devices like BJTs have maximum temperature of operation, beyond which they do not function.

Reason (R) : Extrinsic, p-type and n-type semiconductors behave as intrinsic beyond that temperature and the effect of doping is lost.

44. Assertion (A) : Dual slope A/D convertor has excellent linearity.

Reason (R) : The capacitor in the A/D convertor increases the speed performance.

45. Assertion (A) : In μC PCON is used to control data rate of UART.

Reason (R) : In serial communication data rate of transmitter and receiver need not be matched.

46. Assertion (A) : Inline function is a function that is expanded inline when it is expanded.

Reason (R) : All members of a class are inline.

47. Assertion (A) : TE_{10} mode is the dominant mode in a rectangular waveguide.

Reason (R) : TE_{10} mode has the lowest cut off frequency for which the wavelength is double the broad wall dimensions.

48. Assertion (A) : Modern long distance communication is carried out via satellite.

Reason (R) : It covers the entire globe without appreciable fading of signal.

49. Assertion (A) : Optical fibers have very less loss compared to the other type of signal carriers.

Reason (R) : Optical fibers does not induce electrical shocks.

50. Assertion (A) : Impulse response is only a function of the terms in natural response.

Reason (R) : The differentiation and differencing operations eliminate the constant terms associated with the particular solution in the step response and change only the constants associated with the exponential terms in the natural response.



51. Arrange the following devices in the increasing order of vapour utilization.

- i) BJT
 - ii) Resistor
 - iii) Capacitor
 - iv) MOS
- (A) iv, i, ii and iii
(B) iv, ii, i and iii
(C) iv, i, iii and ii
(D) ii, iii, iv and i

52. Arrange the stages of fabrication in the correct order.

- i) Photolithography
 - ii) Metalisation
 - iii) Bonding
 - iv) Etching
- (A) i, iii, iv, ii
(B) i, ii, iv, iii
(C) iv, iii, i, ii
(D) i, iv, ii and iii

53. Arrange the correct sequence in increasing order of the input resistances of following circuits .

- i) Common emitter
 - ii) Common base
 - iii) Emitter follower
 - iv) Emitter follower using Darlington pair
- (A) ii, i, iv, iii
(B) i, ii, iv and iii
(C) ii, i, iii and iv
(D) i, ii, iii and iv

54. Arrange the following logic families in the increasing order of power consumption.

- i) MOS
 - ii) DTL
 - iii) ECL
 - iv) RTL
- (A) i, ii, iv, iii
(B) i, ii, iii, iv
(C) i, iv, iii, ii
(D) iii, iv, ii, i

55. In which order the following signals are generated with regard to machine cycle ?

- i) Read Control Sign
 - ii) ALE
 - iii) Address
 - iv) Data
- (A) iv, iii, ii and i
(B) iii, ii, iv, i
(C) i, ii, iv, iii
(D) ii, iv, iii, i

56. Arrange the following operators w.r.t the precedence from lowest priority.

- i) $<<$
 - ii) $*$
 - iii) \wedge
 - iv) $++$
- (A) iv, ii, i, iii
(B) ii, iv, i, iii
(C) iii, i, ii, iv
(D) iii, i, iv, ii



57. Arrange the correct sequence of connection of following components in TWTA.

- i) Oscillator
- ii) Low-pass filter/high pass filter
- iii) 40 dB directional coupler with matched load
- iv) Power meter

- (A) i, ii, iii, iv
- (B) iv, ii, i, iii
- (C) i, iv, iii, ii
- (D) ii, iii, iv, i

58. Arrange the following modulation techniques in the increasing order of power content.

- i) DSB – SC
- ii) SSB – SC
- iii) SSB – FC
- iv) DSB – SC

- (A) ii, iv, iii, i
- (B) ii, iii, iv, i
- (C) ii, iv, i, iii
- (D) iii, ii, iv, i

59. Arrange the following optical fiber mechanical connection losses in the order of their increasing magnitude.

- i) Lateral loss
- ii) Longitudinal loss
- iii) Angular loss
- iv) Delta-mismatch loss

- (A) i, iii, ii, iv
- (B) iv, ii, i, iii
- (C) iv, ii, iii, i
- (D) i, iii, iv, ii

60. Arrange the components of spectrophotometer from input end to output end.

- i) Monochromator
- ii) Tungston/Halogen lamp
- iii) Collimeter
- iv) Thermal sensor

- (A) i, iii, iv, ii
- (B) iv, ii, i, iii
- (C) ii, iii, i, iv
- (D) i, ii, iv, iii

61. List – I

List – II

- | | |
|------------------------------------|-------------------------------------|
| a) n-type semiconductor | i) Middle of bandgap |
| b) p-type semiconductor | ii) Above conduction band |
| c) Intrinsic semiconductor | iii) Near but below conduction band |
| d) Degenerate n-type semiconductor | iv) Near but above valence band |

Codes :

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



- 62. List – I List – II**
(Network)
 a) LC i) Negative real
 b) RC ii) imaginary
 c) RLC iii) Either real or complex
 d) RL

Codes :

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

- 63. List – I List – II**
(Structures/ Characteristics) (Reasons)
 a) n-channel JFET is better than P-channel JFET i) Reverse bias increases along the channel
 b) Channel is not completely closed at pinch off ii) High electric field near the drain and directed towards source
 c) Channel is wedge shaped iii) Low leakage current at the gate terminal
 d) Input impedance is high iv) Better frequency performance since $\mu_n \gg \mu_B$

Codes :

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

- 64. List – I List – II**
 a) AM Broadcast i) Tropospheric Waves
 b) FM Broadcast ii) 535 KHz – 1600 KHz
 c) TV Broadcast iii) Repeater tower
 d) Point-to-point communication iv) VSB modulation
 v) Multipath phenomenon

Codes :

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

- 65. List – I List – II**
 a) Serial port i) Port Pin P3.2
 b) Counter low byte ii) DPL
 c) INTO iii) TLO
 d) Data Pointer iv) RXD

Codes :

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



- 66. List – I List – II**
- | | |
|------------------------|----------|
| a) Logical operator | i) <= |
| b) Bitwise operator | ii) & & |
| c) Assignment operator | iii) < < |
| d) Relational operator | iv) + = |

Codes :

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

- 67. List – I List – II**
- | (Devices) | (Application) |
|-------------------------|---|
| a) Step-recovery diodes | i) Switching circuit |
| b) Tunnel diode | ii) To produce multiple harmonics in comb generator |
| c) PIN diode | iii) Microwave amplifier |
| d) Reflex Klystron | iv) Low power Microwave generator |

Codes :

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

- 68. List – I List – II**
- | | |
|-----------------------|-----------------------------|
| a) Television | i) Either AM or FM used |
| b) Radio | ii) Both AM and FM are used |
| c) Radar | iii) PCM is used |
| d) Data communication | iv) Digital system |

Codes :

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

- 69. List – I List – II**
- | (Optical devices) | |
|-------------------|---|
| a) Laser | i) emits monochromatic light of low intensity |
| b) Solar cell | ii) Consumes electrical power due to the incident |
| c) Photo diode | iii) Delivers power to a load |
| d) LED | iv) Emits monochromatic light of high intensity |

Codes :

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



- | | |
|---|---|
| <p>70. List – I
(System)</p> <p>a) $\frac{400}{s^2 + 12s + 400}$</p> <p>b) $\frac{900}{s^2 + 90s + 900}$</p> <p>c) $\frac{225}{s^2 + 30s + 225}$</p> <p>d) $\frac{625}{s^2 + 625}$</p> | <p>List – II</p> <p>i) Undamped</p> <p>ii) Critically damped</p> <p>iii) Under damped</p> <p>iv) Over damped</p> |
|---|---|

Codes :

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

The memory hierarchy in a system consists of secondary memory like hard disk, primary memory and cache memory. The hard disk is slow, while the cache is fastest. Cache is more costlier than hard disk. The processor generates the address of memory and it is the duty of operating system to get the required data.

- 71.** Primary memory is made up of
- (A) RAM
 - (B) RAM and ROM
 - (C) EPROM
 - (D) ROM
- 72.** The operating system brings data from
- (A) Hard disk to RAM
 - (B) RAM to cache
 - (C) Cache to Hard disk
 - (D) Input to cache
- 73.** In terms of Access time
- (A) CAT > RAT
 - (B) CAT ≥ MAT
 - (C) CAT ≤ RAT
 - (D) RAT > CAT
- 74.** Cache memory is part of
- (A) Main memory
 - (B) Secondary memory
 - (C) Registers
 - (D) Between main processor and memory
- 75.** The cost and size of memory go in the following order
- (A) RAM, Cache, Hard disk
 - (B) Cache, RAM, Hard disk
 - (C) Hard disk, Cache, RAM
 - (D) Cache, Hard disk, RAM



Total Number of Pages : 16

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Total Number of Pages : 16