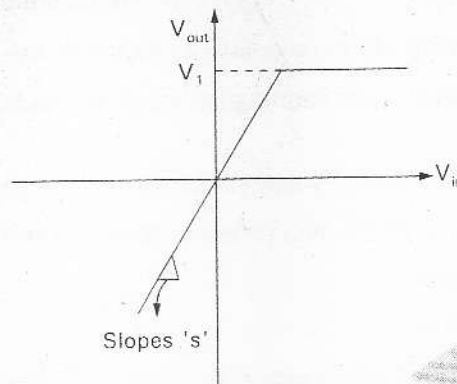


T.S - ECET - ECE - 2016 PAPER - SET - A

1. A full wave rectifier circuit uses a π filter (C1 - L-C2 filter). The ripple factor at the output of the circuit is
- (1) directly proportional to the load and inductive reactance
 - (2) inversely proportional to the two capacitive reactances
 - (3) directly proportional to the product of the two capacitive reactances
 - (4) independent of the supply voltage frequency

2. The figure given below shows the transfer characteristics of which one of the following



- (1) peak clipper
 - (2) bottom clipper
 - (3) clamper
 - (4) two level clipper
3. Consider the following circuit configurations
- | | |
|---------------------|---|
| 1) Common emitter | 2) Common base |
| 3) Emitter follower | 4) Emitter follower using darlington pair |

The correct sequence in increasing order of the input resistance of these configurations is

- | | |
|----------------|----------------|
| (1) 2, 1, 4, 3 | (2) 1, 2, 4, 3 |
| (3) 2, 1, 3, 4 | (4) 1, 2, 3, 4 |
4. IC LM7915 is a

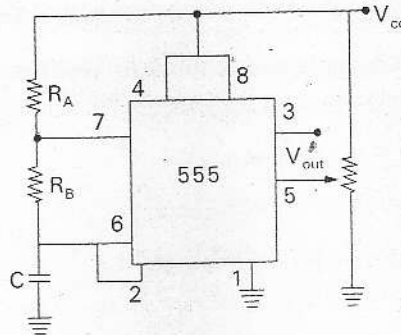
- (1) Voltage regulator which gives + 15 V as output voltage
- (2) Voltage regulator which gives + 09 V as output voltage
- (3) Voltage regulator which gives -09 V as output voltage
- (4) Voltage regulator which gives - 15 V as output voltage

5. **Assertion (A) :** A monostable multivibrator can be used to alter the pulse width of a repetitive pulse train

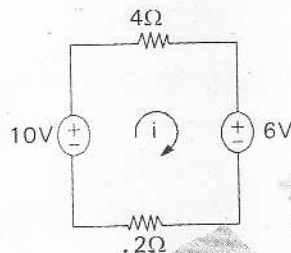
Reason (R) : monostable multivibrator has a single stable state

- (1) both A and R are true and R is the correct explanation of A
 (2) both A and R are true but R is NOT the correct explanation of A
 (3) A is true but R is false
 (4) A is false but R is true
6. For a JFET, let $V_{GSQ} = 6V$; $V_T = 4V$; & $I_{DSS} = 6mA$. The drain current would be
 (1) 1.95 mA (2) 1.5 mA
 (3) 0.05 mA (4) 3mA
7. A shunt series feedback amplifier is
 (1) voltage amplifier (2) current amplifier
 (3) transresistance amplifier (4) trans-conductance amplifier
8. **Assertion (A)** : miller sweep circuit producing saw-tooth waveform is a relaxation oscillator
Reason (R) : the active device alternately supplies power to the load and relaxes when it is cut off
 (1) both (A) and (R) are true and (R) is the correct explanation of (A)
 (2) both (A) and (R) are true (R) is NOT the correct explanation of (A)
 (3) (A) is true but (R) is false
 (4) (A) is false but (R) is true
9. In 555 timer the inverting input of voltage comparator one is biased by the voltage divider to a level of
 (1) V_{CC} (2) $\frac{2}{3} V_{CC}$
 (3) $\frac{3}{2} V_{CC}$ (4) $\frac{1}{2} V_{CC}$
10. Which of the following is used to calculate the full power bandwidth for a given output amplitude in Op-amp
 (1) slew rate (2) differential gain
 (3) common gain (4) CMRR
11. Consider the following statements
 In order to generate square wave from a sinusoidal input signal one can use
 1) schmitt trigger circuit 2) clippers and amplifiers
 3) monostable multi-vibrators
 Which of the above statements is/are correct
 (1) 1 alone (2) 1 and 2
 (3) 2 and 3 (4) 1, 2 and 3

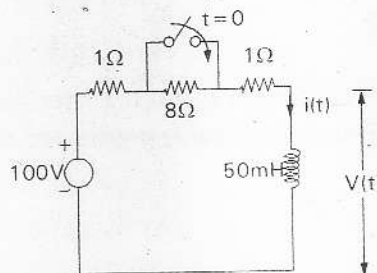
12. Circuit shown in the given figure represents _____ if we take the output at pin 3



- (1) monostable multi-vibrator
(2) astable multi-vibrator
(3) voltage-controlled oscillator
(4) ramp generator
13. The number of independent loops for a network with 'n' nodes and 'b' branches is
(1) $n-1$
(2) $b-n$
(3) $b-n+1$
(4) independent of the number of nodes
14. The current i in the circuit of Figure shown below is



- (1) -2.667 A
(2) -0.667 A
(3) 0.667 A
(4) 2.667 A
15. In a series RLC circuit $R = 2\text{K}\Omega$, $L = 1\text{H}$ and $C = \frac{1}{400} \mu\text{F}$. The resonant frequency in Hz is
(1) 2×10^4
(2) $\frac{10^4}{\pi}$
(3) 10^4
(4) $2\pi \times 10^4$
16. In the circuit given below, the switch is open for a long time. At time $t = 0$, the switch is closed. what are the initial and final values of voltage across the inductor



- (1) 0 V & 0 V (2) 0 V & 80 V
(3) 80 V & 0 V (4) 80 V & 80 V
17. Suppose there is a circuit which contains dependent sources and resistances only. Then its Thevenin's equivalent at any two points in the circuit would be
(1) a voltage source with a series resistance
(2) a current source with a parallel resistance
(3) either voltage source or current source only
(4) a resistance only
18. An RLC parallel circuit at resonance magnifies
(1) voltage (2) current
(3) frequency (4) power
19. According to maximum power transfer theorem, the maximum power delivered to the load from the source (in terms of supply voltage V_S and load resistance R_L) is
(1) V_S^2 / R_L (2) $V_S^2 / (2R_L)$
(3) $2V_S^2 / R_L$ (4) $V_S^2 / (4R_L)$
20. If an unit step voltage is applied to a perfect integrator circuit, then the output of the integrator is
(1) impulse (2) ramp
(3) square (4) a constant voltage
21. The transfer function $H(s) = \frac{V_o(s)}{V_i(s)}$ of a RLC circuit is given by $H(s) = \frac{10^6}{s^2 + 20s + 10^6}$. The quality factor (Q) of this circuit is
(1) 50 (2) 25
(3) 100 (4) 500
22. Condition for a distortionless transmission line (in terms of its primary parameters) is
(1) $RG = LC$ (2) $RC = LG$
(3) $GC = RL$ (4) $R = C$
23. The range of VSWR(S) is
(1) $0 < S < 1$ (2) $-1 < S < 1$
(3) $1 \leq S \leq \infty$ (4) $-1 \leq S \leq 0$
24. A 120 ohm load is to be matched to a 75 ohm line. Then the quarter-wave transformer that is used to match them must have the characteristic impedance of
(1) 75 Ω (2) 100 Ω
(3) 55 Ω (4) 95 Ω

25. When a thyristor is reversed biased, number of blocked p-n junctions are
 (1) 1 (2) 2
 (3) 3 (4) 4
26. In a single phase full converter, for continuous conduction, each pair of SCRs conduct for
 (1) π (2) α
 (3) $\pi + \alpha$ (4) $\pi - \alpha$
27. Compared to a single phase half bridge inverter the out-put power of a single phase full-bridge inverter is higher by a factor of
 (1) 2 (2) 4
 (3) 8 (4) 12
28. A single-phase full bridge VSI has inductance L as the load. For a constant source voltage, the current through the inductor is
 (1) square-wave (2) triangular wave
 (3) sine wave (4) pulsed wave
29. When a series LC circuit is connected to a dc supply of V volts through a thyristor, then peak current through a thyristor is
 (1) $V\sqrt{L * C}$ (2) $V\sqrt{\frac{L}{C}}$
 (3) $V / \sqrt{(L * C)}$ (4) $V\sqrt{\frac{C}{L}}$
30. A single phase full converter, if output voltage has a peak and average of 100 V and $100/\pi$ respectively. Then firing angle is
 (1) 45° (2) 140°
 (3) 60° (4) 130°
31. A step-down chopper is operated in continuous conduction mode in steady state with constant duty ratio D . If V_0 is the magnitude of the dc output voltage and if V_s is the magnitude of the dc input voltage, the ratio of V_0/V_s is given by
 (1) D (2) $1-D$
 (3) $\frac{1}{(1-D)}$ (4) $\frac{D}{(1-D)}$
32. A three-phase, ac voltage controller feeds a three-phase induction motor for speed control. The speed control will be more pronounced if
 (1) load torque T_L is constant (2) T_L is proportional to speed
 (3) T_L is proportional to speed-squared (4) T_L is inversely proportional to speed-squared

33. Number of links in an eight node fully connected mesh network is
(1) 48 (2) 16
(3) 28 (4) 64
34. Shannon limit for information carrying capacity of a 2.7 kHz telephone channel for an SNR of 1000 is about
(1) 27 Mbps (2) 27 Kbps
(3) 2.7 Kbps (4) 2.7 Mbps
35. Multiple Access protocol CSMA/CD is a
(1) physical link layer protocol (2) channelization protocol
(3) controlled access protocol (4) random access protocol
36. The layer which is below transport layer in OSI model is
(1) presentation layer (2) data link layer
(3) network layer (4) physical layer
37. Telephone signals in PSTN are sent through a
(1) message switched network (2) virtual circuit packet switched network
(3) datagram packet switched network (4) circuit switched network
38. Data rate supported by standard Ethernet is
(1) 100 Mbps (2) 10 Kbps
(3) 100 Kbps (4) 10Mbps
39. Allocation of same channels to more than one cell if the cells are physically separated by large distances is referred to as
(1) frequency reuse (2) cell splitting
(3) hand off (4) sectoring
40. The frequency range of radio waves used by bluetooth technology for exchange of data is
(1) 20 MHz to 240 MHz (2) 2.4 GHz to 2.485 GHz
(3) 8 GHz to 12 GHz (4) 300 MHz to 2.285 GHz
41. If the modulation index of an AM signals is increased from 0.5 to 1.0, the transmitted power increased by
(1) 100% (2) 25%
(3) 33% (4) 50%
42. Boosting of higher audio frequencies in FM to improve noise immunity is called
(1) De-emphasis (2) Pre-emphasis
(3) compression (4) expansion
43. Modulation technique used by Television video signal transmission is
(1) DSB-FC modulation (2) DSB-SC modulation
(3) SSB modulation (4) VSB modulation

44. UHF range signals are propagated using
 (1) space waves (2) ground waves
 (3) sky waves (4) surface waves
45. Slope overload distortion occurs in
 (1) pulse code modulation (2) delta modulation
 (3) frequency modulation (4) adaptive delta modulation
46. Error correcting code which can detect 2 errors or correct a single error is
 (1) huffman code (2) hamming code
 (3) shannon-fano code (4) arithmetic code
47. The ability of a receiver to distinguish between two adjacent carrier frequencies is referred to as
 (1) selectivity (2) sensitivity
 (3) linearity (4) fidelity
48. The number of symbols in Quadrature phase shift keying is
 (1) four (2) eight
 (3) two (4) sixteen
49. The basic data rate of bearer channel is ISDN is
 (1) 8 Kbps (2) 64 Kbps
 (3) 382 Kbps (4) 16 Kbps
50. Intermediate frequency used in commercial medium wave super heterodyne receiver is
 (1) 455 KHz (2) 2100 KHz
 (3) 1450 KHz (4) 1830 KHz
51. Dominant mode in a rectangular waveguide is
 (1) TE_{01} (2) TM_{01}
 (3) TE_{10} (4) TM_{10}
52. Phase velocity of a transverse electric mode TE_{mn} in a rectangular waveguide is
 (1) greater than the velocity of light in free space
 (2) equal to the velocity of light in free space
 (3) less than the group velocity of the mode
 (4) greater than the velocity of TM_{mn} mode in rectangular waveguide
53. The antenna which is circularly polarized is
 (1) rhombic antenna (2) helical antenna
 (3) turnstile antenna (4) horn antenna
54. Antenna used for TV reception is
 (1) log periodic antenna (2) helical antenna
 (3) turnstile antenna (4) yagi uda antenna

55. An X band transponder of a satellite at 35760 Km with an input power of 18 Watts has a transmit antenna gain of 30dB. The EIRP of the antenna is
(1) 54 kW (2) 48 kW
(3) 18 kW (4) 0.5 kW
56. Numerical aperture of a step index fiber with the core and cladding refractive indices of n_1 and n_2 respectively is
(1) $(n_1 + n_2)$ (2) $(n_1 + n_2)^2$
(3) $\sqrt{(n_1^2 + n_2^2)}$ (4) $\sqrt{(n_1^2 - n_2^2)}$
57. Device used as fiber optic source in optical communications is
(1) injection Laser diode (2) PIN diode
(3) photo diode (4) schottky barrier diode
58. Microwave device which uses a slow wave structure for its operation is
(1) two cavity Klystron (2) Pi-Mode magnetron
(3) travelling wave tube (4) reflex Klystron
59. Maximum range of radar does not depend on
(1) power gain of the antenna (2) radar cross section
(3) radar transmitted power (4) radar echo display method
60. The point on the satellite orbit which is closest to the earth is
(1) apogee (2) zenith
(3) descending node (4) perigee
61. A splice is
(1) an optical detector (2) a permanent fused fiber to fiber joint
(3) a demountable fiber optic connector (4) a step index single mode fiber
62. An antenna coupling device which isolates the sensitive receiver from the high transmitter powers but directs both is called
(1) router (2) isolator
(3) duplexer (4) gateway
63. Johnson counter is also called
(1) ripple counter (2) modulo N counter
(3) twisted ring counter (4) decade counter
64. Gray code 1001 is equal to _____ in decimal
(1) 12 (2) 13
(3) 14 (4) 15

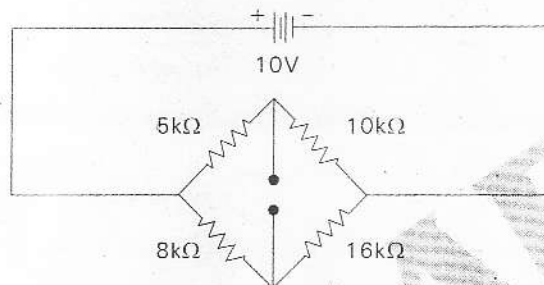
65. The decimal number-34 is expressed in the 2's complement form as
(1) 01011110 (2) 10100010
(3) 11011110 (4) 01011101
66. The _____ logic gate is used to compare two bits for equality is
(1) AND (2) OR
(3) EX-OR (4) EX-NOR
67. The minimum number of two input NOR gates required to realize two input EX-NOR gate is
(1) 4 (2) 5
(3) 6 (4) 7
68. To check for or to generate the proper parity in a given code is by using _____ gates
(1) AND (2) OR
(3) EX-OR (4) EX-NOR
69. If an Octal-to-binary priority encoder has its 0, 2, 5 and 6 inputs at active level, the active HIGH binary output is
(1) 110 (2) 010
(3) 101 (4) 000
70. The minimum interval required for the logic levels to remain on the inputs after the triggering edge of clock in a clocked flip flop is
(1) set up time (2) hold time
(3) raise time (4) propagation delay time
71. A 4-bit ripple counter consists of flip flops such that each have a propagation delay of 12 nsec. For the counter to recycle from 1111 to 0000, it takes a total time of
(1) 12 nsec (2) 24 nsec
(3) 48 nsec (4) 36 nsec
72. With a 100 KHz clock frequency, 8 bits can be serially entered into shift register in
(1) 80 μ sec (2) 8 μ sec
(3) 80 msec (4) 10 μ sec
73. A flash memory is
(1) volatile (2) non-volatile
(3) SRAM (4) DRAM
74. Conversion time of an 8 bit successive approximation type ADC if the clock frequency is 10 MHz is
(1) 0.1 μ sec (2) 12.75 μ sec
(3) 0.8 μ sec (4) 8 μ sec

75. The correct sequence of steps to perform "fetch" operation in microprocessor
- 1) places the address of first byte of instruction on the address bus
 - 2) gets opcode on the databus
 - 3) opcode is decoded
- (1) 1, 2, 3 (2) 2, 1, 3
(3) 3, 1, 2 (4) 3, 2, 1
76. Find the memory requirement of the 8085 for the following program
- | | |
|------|----------|
| LXI | B, 2475H |
| LXI | D, 3794H |
| LDAX | B |
- (1) 3 bytes (2) 7 bytes
(3) 5 bytes (4) 8 bytes
77. HOLD-HLDA pair provides the handshaking required for _____ operation
- (1) UART (2) interrupt controller
(3) keyboard-display control (4) DMA
78. "Cycle steal" operation is with
- (1) DMA controller (2) interrupt controller
(3) keyboard-display controller (4) microcontroller
79. Bit set/reset mode is in
- (1) 8251 (2) 8255
(3) 8257 (4) 8051
80. The resolution of 5 bit DAC is
- (1) $\frac{1}{32}$ (2) 32
(3) $\frac{1}{31}$ (4) 31
81. Base pointer usually provides offset addresses inside
- (1) data segment (2) code segment
(3) extra segment (4) stack segment
82. FAR CALL or FAR JUMP is to branch if program area is outside _____ segment in 8086
- (1) 4K byte (2) 16K byte
(3) 32K byte (4) 64 Kbyte
83. Direction flag (DF) in 8086 is a
- (1) status flag (2) control flag
(3) interrupt flag (4) mode flag

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84. 8086 looks up for interrupt vector table in its memory space in address
(1) 00000-000FFH (2) 00000-001FFH
(3) 00000-002FFH (4) 00000-003FFH
85. The operation of a thermocouple is based on
(1) seeback effect (2) peltier effect
(3) thomson effect (4) faraday's laws
86. The gauge factor of a resistance wire strain gauge is a measure of
(1) sensitivity of the gauge (2) dynamic range of displacement measure
(3) resolution (4) resistivity
87. According to CCIR-B standards in the interlaced scanning pattern, number of lines scanned in one field are
(1) 625 (2) 525
(3) 525/2 (4) 625/2
88. One of the following camera tubes is based on photo emissive principle
(1) videocon (2) saticon
(3) image orthicon (4) new vicon
89. The difference between picture and sound carrier frequencies in standard TV broadcast channels is
(1) 0.25 MHz (2) 1.25 MHz
(3) 4.5 MHz (4) 6 MHz
90. Screen aspect ratio in HDTV is
(1) 4:3 (2) 20"9
(3) 25:9 (4) 16:9
91. The number of lines scanned per frame in the raster on the TV picture tube screen is
(1) 525 (2) 262
(3) 20 (4) 10
92. One half the spacing between the start positions for scanning even and odd fields in a TV is
(1) blanking period (2) exact interleaving
(3) linear scanning (4) fish tailing
93. In a CRO which of the following is not a part of electron gun
(1) cathode (2) grid
(3) accelerating anode (4) X-Y plates
94. Which of the following voltmeters would you use for measuring voltage across $20\text{k}\Omega$ resistance
(1) voltmeter having a resistance of $5\text{k}\Omega$ (2) voltmeter having a sensitivity of 1 kW/V
(3) voltmeter having sensitivity of 10 kW/V (4) voltmeter having a sensitivity of 0.5 kW/V


95. An LVDT is used to measure displacement. The LVDT feeds a voltmeter of 0.5 V range through a 250 gain amplifier. For a displacement 0.5 mm the output of LVDT is 2mV. The sensitivity of instrument is
- (1) 0.1V/mm (2) 0.5V/mm
(3) 1V/mm (4) 5V/mm
96. A digital voltmeter has a read out range from 0 to 999 counts. If the full scale reading is 9.999V, the resolution is
- (1) 1V (2) 0.01V
(3) 1mV (4) 1 μ V
97. In schering bridge, the potential of detector above earth potential is about
- (1) a few volts (2) 10 kV
(3) 1000V (4) 100kV
98. In the wheatstone bridge in figure, each resistance is increased by 0.05%. The value of v_0 will be



- (1) 50mV (2) 5mV
(3) 0.1mV (4) 0mV
99. When measuring phase angle between two waves using a CRO, the time base generator is connected to
- (1) X plate (2) Y plate
(3) both X and Y plate (4) neither X nor Y plates
100. Which of the following is not correct
- (1) voltmeter should have a very high resistance
(2) an ammeter should have a very low resistance
(3) a shunt should have a very low resistance
(4) an electronic voltmeter draws appreciable current from source

KEY

1) 3	2) 1	3) 3	4) 4	5) 1	6) 2	7) 1,4	8) 4	9) 2	10) 1
11) 1	12) 2	13) 3	14) 3	15) 2	16) 1	17) 4	18) 2	19) 4	20) 2
21) 1	22) 2	23) 3	24) 4	25) 2	26) 1	27) 2	28) 2	29) 4	30) 3
31) 1	32) 3	33) 3	34) 2	35) 4	36) 3	37) 4	38) 4	39) 1	40) 2
41) 3	42) 2	43) 4	44) 1	45) 2	46) 2	47) 1	48) 1	49) 2	50) 1
51) 3	52) 1	53) 2	54) 4	55) 3	56) 4	57) 1	58) 3	59) 4	60) 4
61) 2	62) 3	63) 3	64) 3	65) 3	66) 4	67) 1	68) 3	69) 1	70) 2
71) 3	72) 1	73) 2	74) 3	75) 1	76) 2	77) 4	78) 1	79) 2	80) 2
81) 1,4	82) 4	83) 2	84) 4	85) 1	86) 1	87) 4	88) 3	89) 3	90) 4
91) 1	92) 2	93) 4	94) 3	95) 3	96) 2	97) 1	98) 4	99) 4	100) 4


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