BEL Placement Paper 4

Technical- Electronics

1. VSWR on a transmission line is always
1. Equal to 1
2. Equal to 0
3. Less than 1
4. Greater than 1
2. In a amplitude modulated wave, the value of Vmax is 10V and Vmin is 5V. The % modulation in this case is:
1. 2% b. 33.3% c. 50% d. 100%
3. The signal to noise ratio at the input of an amplifier can be improved:
1. By decrease the source impedance or resistance
2. By increasing the source impedance
3. By matching the source impedance with the input impedance of the amplifier
4. None of these
4. If the bandwidth of an amplifier is reduced, the thermal noise in the amplifier will:
1. Increase
2. Decrease
3. Not to be affected at all
4. Become random in nature
5. For the distortion to be minimum in a transmission line at audio frequencies, the condition is
1. L = CR / G
2. L = GR / C
3. LG = R
4. LR = G
6. When electromagnetic waves are propagated in a waveguide
1. They travel along the broader walls of the waveguide
2. They travel through the dielectric without touching the wall
3. They are reflected from the walls but they do not travel along them
4. None of these
7. Communication between satellite and ground station is through
1. Tropospheric scatter
2. Ground wave
3. Sky wave
4. Line of sight propagation
8. A mast antenna is used mainly for
1. UHF
2. Short wave
3. Medium wave
4. VHF
9. A crystal which has a sensitivity of -55 dBm with 1 MHz BW amplifier will have a sensitivity at 4 MHz BW amplifier equal to:
1. -55 dBm b. -58 dBm c. -52 dBm d. -60 dBm
10. Electromagnetic waves are refracted when they
1. Pass into a medium of different dielectric constant
2. Are polarized at right angles to the direction of propagation

3. Encounter a perfectly conducting surface
4. Pass through a small slot in a conducting medium
11. An aerial is fed from an amplitude modulation amplifier. Both the modulating voltage and modulated voltage are sinusoidal. The aerial current (rms) before modulation is 5 A and it increases to 5.8A after modulation. The percentage of modulation index will be
1. 88% b. 80% c. 81.21% d. 83.14%
12. In a frequency demodulation, Foster-Seeley discriminator uses a
1. Single tuned circuit
2. Double tuned circuit in which both the primary and secondary are tuned to the same frequency
3. Double tuned circuit in which both the primary and secondary are tuned to to different frequencies
4. Combination of two transistors in push-pull operation
13. The wavelength of an electromagnetic wave in wave guide
1. Is directly proportional to the phase velocity
2. Is inversely proportional to the phase velocity
3. Is greater than that in free space
4. Depends only on the wave guide dimensions and the free space wavelength
14. The scale used for moving coil meter is
1. Non-linear scale
2. Linear scale
3. A square scale
4. A log scale
15. To double the circuit range of a 50 mA, 2000W meter movement, the shunt resistance requires is
1. 40W b. 50W c. 2000W d. 25KW
16. A voltmeter utilizes a 20 mA meter movement. The sensitivity of the voltmeter is
1. 50 meg ohms per volt
2. 20 K ohms per volt
3. 50 kilo ohms per volt
4. 20 meg ohms per volt
17. A transformer, with a 20 : 1 voltage step-down ratio has 6V across 0.6 ohm in the secondary, then Is and Ip given by
1. 10A, 5A
2. 5A, 10A
3. 10A, 0.5A
4. 1A, 0.5A
18. The temperature coefficient of resistance of a resistor is
1. Negative
2. Positive
3. Zero
4. Infinity
19. To prevent loading of the circuit under test, the input impedance of the oscilloscope
1. Be low
2. Be high
3. Capacitive
4. Inductive
20. If the retrace is visible on the CRT display, then the trouble may be that
1. The fly back time of the time base saw tooth wave is not zero
2. The blanking control is not set properly
3. There is loss of SYNC signal
4. The intensity is too high

21. The lissajous pattern on CRO for two sinusoidal of frequency ratio 1 : 2 differing in phase by 90 degrees, is
1. A straight line
2. A circle
3. An ellipse
4. An eight-shaped
22. When an electron starts from rest under the influence of electric and magnetic fields perpendicular to each other, the path traversed by it will be
1. Ellipse
2. A parabola
3. Straight line
4. A cycloid
23. Frequency multipliers are usually
1. Class A amplifiers
2. Class B amplifiers
3. Class C amplifiers
4. Class AB amplifiers
24. The feedback network of a phase shift oscillator is usually consists of
1. RC circuit
2. RL circuit
3. LC circuit
4. C alone
25. Common base amplifier is most suitable for use in
1. Very high frequency circuits
2. Low frequency circuits
3. Medium frequency circuits
4. Low current circuits
26. If two amplifiers having identical bandwidth are cascaded, then the bandwidth of the resulting amplifier will be
1. Less than that of each stage
2. Greater than that of each stage
3. Same as that of each stage
4. Double of each stage
27. Which one of the following amplifier has largest bandwidth
1. RC coupled amplifier
2. Difference amplifier
3. Transformer coupled amplifier
4. Direct coupled amplifier
28. In an amplifier, the emitter resistance by passed by a capacitor
1. Reduces the voltage gain
2. Increases the voltage gain
3. Causes thermal run away
4. None of these
29. The term free running is usually associated with
1. Bistable multivibrator
2. Astable multivibrator
3. Monostable multivibrator
4. None of these
30. The signal fed at the input of an ideal push-pull amplifier has frequency components 150Hz’

300Hz, 450Hz and 600Hz. The output signal will contain
1. Only 150 Hz frequency component
2. Only 150 Hz and 450 Hz frequency component
3. Only 300 Hz and 600 Hz frequency components
4. All the frequency components
31. For which of the following configuration [s] does the input resistance of the amplifier depend strongly on the load resistance
1. CE b.CC c. CB d. CE and CB
32. An important advantage of the RC coupling scheme is
1. Economy
2. Excellent frequency reponse
3. High efficiency
4. Good impedance matching
33. The AC input to transistor oscillator is obtained from
1. The previous stage
2. A signal generator
3. DC power source
4. Its own internal circuit
34. The low frequency cut-off in an amplifier is due to
1. Only coupling capacitor
2. Only bypass capacitor
3. Both coupling and bypass capacitors
4. The internal transistor junction capacitances
35. In a half-wave rectifier the peak value of AC voltage across the secondary of the transformer is 20/2 V. If no filter circuit is used, the maximum DC voltage across the load will be
1. 28.28V b. 20V c. 14.14V d. None of these
36. Heat sinks ate used in a transistor working as power amplifier so as to
1. Increase the output power
2. Reduce the heat losses in toe transistors
3. Increase the voltage gain of the amplifier
4. Increase the collector dissipation rating of the transistors
37. In a power amplifier, the output power is proportional to
1. Vi b. Vi2 c. Vi3 d. Ö Vi
38. At half power frequencies the reduction in voltage gain of an amplifier equals
1. 6 dB b. 2 dB c. 3 dB d. 4 dB
39. the frequency of the ripple voltage at the output of a bridge rectifier operating from a 50 Hz supply is
1. 25Hz b. 50 Hz c. 100 Hz d. 200 Hz
40. Darlington pair is used for
1. High current gain
2. High power gain
3. High frequency operation
4. Low distortion
41. The function of a bleeder resistor in a power supply is
1. Same as that of a load resistor
2. To ensure a minimum current drain in the circuit
3. To increase the output current
4. To increase the output DC voltage
42. A JFET has a potential divider bias arrangement. By mistake the resistor between the gap and the

power supply terminal is removed. The JFET will
1. Continue to work as an amplifier
2. Have a forward bias gate with respect to source
3. Not work as an amplifier but will work as a switch
4. Immediately burn out
43. The ripple factor of half-wave rectifier is
1. 0.482 b. 1.11 c. 1.21 d. 1.57
44. In the high frequency region of an RC coupled amplifier the circuit behave like a
1. Differentiator
2. A current amplifier
3. Low pass filter
4. High pass filter
45. Astable multivibrator can be used as
1. Squaring circuit
2. Comparator circuit
3. Voltage to frequency converter
4. Frequency of voltage converter
46. If the gain of the amplifier as A and the voltage feed back is fraction B of the amplifier output voltage, the condition for maintenance of oscillation is
1. AB = 1 180o
2. AB = infinity
3. AB = 1 0o
4. AB < < 1
47. Nominal gain of an amplifier is 240. The noise level in the output without feed back is 300 mV. If a feed back Beta = 1/ 60 used, the noise level in the output will be
1. 1.66 mV b. 2.4mV c. 4mV d. 20mV
48. A zener diode is primarily used for
1. Rectification
2. Producing constant current
3. Producing constant voltage
4. Reverse bias
49. Cross over distortion is eliminated in a push-pull amplifier by
1. Using a transformer with a large step-up ratio
2. Using a transformer with a large step-down ratio
3. Providing a small forward bias to the transistors
4. Supplying both transistors with inphase signals
50. When a PNP transistor is saturated
1. Its base, emitter, and collector are all essentially at the same potential
2. Its emitter is at higher potential than the collector
3. Its collector is at higher potential than both base & emitter
4. None
51. For a RC high pass circuit
1. RC < < t
2. RC > > t
3. RC = t
4. None
52. An inverter is an equipment for transforming
1. AC to DC
2. AC to AC

3. DC to DC
4. DC to AC
53. Suppose you wish to amplify the potential difference between two points in a circuit when neither of these points is grounded. Which one the following will you prefer?
1. RC coupled amplifier
2. Transformer coupled amplifier
3. Difference amplifier
4. Direct coupled amplifier
54. In an emitter follower, the output voltage is
1. 180o out of phase from the input voltage
2. 90o out of phase from the input voltage
3. in phase with the input voltage
4. None
55. A silicon controlled rectifier can be considered to be:
1. Two pnp transistor connected back to back
2. Two npn transistor connected back to back
3. One npn and one pnp transistor connected back to back
4. Two zener diodes connected back to back
56. A rf signal contains three frequency components 870 KHz, 875 KHz 880 KHz. This signal needs to be amplified. The amplifier used should be
1. Audio frequency amplifier
2. Wide band amplifier
3. Push pull amplifier
4. None
57. In the emitter follower circuit
1. The output current and voltage are inphase with the input current and voltage respectively
2. The input and output impedances are equal
3. There is current series negative feedback
4. The output impedance is much higher than the input impedance
58. The frequency response of a system is the range of frequencies between the upper and lower
1. 1 dB points
2. 6 dB points
3. 3 dB points
4. None
59. In a class C amplifier the output current is zero for
1. Half cycle
2. Full cycle
3. Less than half cycle
4. More than half cycle
60. When RL [load resistance] equals the internal resistance of a generator, which of the following is maximum:
1. Power in RL
2. Current through RL
3. Voltage across RL
4. Efficiency of the circuit
61. negative feedback in an amplifier results in:
1. increased gain and increased bandwidth
2. increased gain and reduced bandwidth
3. reduced gain and increased bandwidth

4. reduced gain and reduced bandwidth
62. A class B push-pull amplifier suffers from
1. Cross-over distortion
2. Excessive harmonic distortion
3. Inter modulation distortion
4. None
63. An oscillator of the LC type that has split capacitor in the tank circuit is
1. Hartely oscillator
2. Wein bridge oscillator
3. Colpitts oscillator
4. None
64. Clamping circuits are also known as
1. AC restorer
2. DC restorer
3. Voltage to frequency converter
4. None
65. Which of the following has the greater mobility
1. Positive ion
2. Negative ion
3. Electrons
4. Holes
66. An N type semiconductor as a whole is
1. Positively charged
2. Electrically neutral
3. Negatively charged
4. None
67. In a semiconductor, the forbidden energy gap is of the order
1. 1 ev b. 6 ev c. 7 ev d. 0.1 ev
68. In LED, light is emitted because
1. Recombination of charges take place
2. We make the light fall on LED
3. Diode emits light when heated
4. None
69. UJT is also called
1. A voltage controlled device
2. A current controlled device
3. A relaxation oscillator
4. None
70. The transistor configuration which provides higher output impedance is
1. CC b. CB c. CE d. None
71. Tunnel diodes are fabricated from
1. Silicon
2. Germanium
3. Either silicon or germanium
4. Either germanium or gallium
72. N channel FETs are superior to P channel FETs because
1. They have a higher input impedance
2. They have a high switching time
3. They consume less power

4. Mobility of electrons is greater than that of holes
73. Diac is a solid state device which works as a
1. 2 terminal bidirectional switch
2. 2 terminal unilateral switch
3. 3 terminal bidirectional switch
4. None
74. Triac is a solid device which works as a
1. 2 terminal bidirectional switch
2. 3 terminal bidirectional switch
3. 4 terminal bidirectional switch
4. 2 terminal unilateral switch
75. Compared to a CB amplifier, a CE amplifier has
1. Lower input resistance
2. Higher output resistance
3. Lower current amplification
4. Higher current amplification
76. The input and output signals of a common emitter amplifier are:
1. Always equal
2. Out of phase
3. In phase
4. Always negative
77. The operation of a JEET involves
1. A flow of minority carriers
2. A flow of majority carriers
3. Recombination
4. Negative resistance
78. Solar cell is an example of a
1. Photo conductive device
2. Photo emissive device
3. Photo voltage device
4. None
79. Bretters and bolometers are used in the measurement of
1. Microwave power
2. VSWR
3. Transmission losses
4. None
80. A klystron operates on the principle of
1. Velocity modulation
2. Amplitude modulation
3. Pulse modulation
4. Frequency modulation
81. The unit of the amplification factor of a triode is
1. Decibels
2. Volt
3. Neper
4. None
82. A change in base current from 30 to 40 mA changes the collector current from 500 to 900 mA. The B factor for this power transistor equals
1. 900 b. 500 c. 3 d. 40

83. The field effect transistor can be used as
1. Variable capacitance
2. A constant voltage source
3. A variable resistance
4. A constant current source
84. Why NPN transistor are preferred over PNP transistor
1. NPN transistor have low heat dissipation
2. NPN transistor can handle large power
3. NPN transistor are cheap and easily available
4. None
85. The germanium transistors are seldom used above
1. 60oC b. 75oC c. 125oC d. 175oC
86. In a FET the drain voltage above which there is no increase in the drain current is called
1. Pick off voltage
2. Critical voltage
3. Pinch off voltage
4. Break down voltage
87. A reflex klystron has
1. Only one cavity working both as the buncher & the catcher
2. Two cavities one for buncher and one for the catcher
3. Three cavities, two for buncher and one for catcher
4. No cavity at all
88. Bipolar junction transistors are seldom used as switching devices because
1. BJTs are not economical fro using as switching devices
2. They can handle only high voltage but not high currents
3. They need separate circuits when used as switching device
4. Of slow response and inability to withstand high voltage
89. The voltage at which the electron flow starts from the anode is called
1. Break down voltage
2. Peak inverse voltage
3. Peak voltage
4. Pinch off voltage
90. The heater filament of a vacuum tube is generally supplied with AC voltage (and not DC voltage) for heating because
1. It results in a uniform heating of filament so that the electron emission also uniform
2. It is very easy to obtain AC voltage from AC power mains
3. The DC voltage that would be required for heating has much greater magnitude than the AC voltage
4. When DC is used for heating, a different type of filament is required which very expensive
91. The dopant used for P type semiconductor is
1. Phosphorous
2. Boron
3. Carbon
4. Sodium
92. An example of negative resistance characteristic device
1. BJT b. MOSFET c. UJT d. PINdiode
93. The average DC voltage obtained from a bridge rectifier with a sine wave input V sin wt is
1. V / 2 b. 2V c. 4V d. V
94. The maximum theoretical efficiency of a class B amplifier is
1. About 20%

2. About 50%
3. About 75%
4. 100%
95. A cascade amplifier is
1. A CE amplifier followed by CC amplifier
2. A CE amplifier followed by CB amplifier
3. A CC amplifier followed by CB amplifier
4. A CB amplifier followed by CE amplifier
96. Toggle switches can be debounced using
1. Astable multivibrator
2. Shift register
3. RS flip flop
4. None
97. A band pass filter has a centre frequency at 5 KHz. The 3 dB cut off frequencies are 4.5 KHz and 5.5 KHz. The Q factor of the filter is
1. 5 b. 0.2 c. 5.2 d. 0.45
98. The domestic buzzer makes use of
1. Hall effect
2. Tunneling effect
3. Natural resonance
4. Piezoelectric effect
99. The device which uses avalanche breakdown is
1. PIN diode
2. Zener diode
3. Impart diode
4. GUNN diode
100. The correct relation between Alpha and Beta of a transistor is
1. a / b-1 b.b=a-1 c. b = a / 1-a d. a = b + 1/ b

Answer

1. d

2. b

3. a

4. b

5. a

6. b

7. d

8. c

9. c

10. a

11. d

12. c

13. c

14. b

15. c

16. c

17. c

18. a

19. b

20. d

21. d

22. d

23. c

24. a

25. a

26. b

27. d

28. d

29. b

30. d

31. b

32. a

33. d

34. c

35. d

36. d

37. b

38. a

39. c

40. a

41. b

42. c

43. c

44. c

45. c

46. c

47. d

48. c

49. c

50. a

51. a

52. d

53. c

54. c

55. c

56. d

57. c

58. c

59. c

60. a

61. c

62. a

63. c

64. b

65. c

66. b

67. a

68. a

69. a

70. b

71. d

72. d

73. a

74. b

75. d

76. b

77. b

78. c

79. a

80. a

81. d

82. d

83. c

84. d

85. b

86. c

87. a

88. d

89. b

90. b

91. b

92. c

93. d

94. b

95. b

96. c

97. a

98. d

99. c

100.c