ANALOG ,DIGITAL AND POWER ELECTRONICS 100 IMPORTANT MCQ
NOTE-BOLD OPTION IS RIGH ANSWER

1. The p-region has a greater concentration of_____as compared to the n-region in a P-N junction.

A) holes B) electrons C) both holes & electrons D) phonons

2. A p-type semiconductor material is doped with____impurities whereas a n-type semiconductor material is doped with____impurities

A) acceptor, donor B) acceptor, acceptor C) donor, donor D) donor, acceptor

3. In the p & n regions of the p-n junction the____& the____are the majority charge carriers respectively.

A) holes, holes B) electrons, electrons **C) holes, electrons** D) electrons, holes

4. The n-region has a greater concentration of_____as compared to the p-region in a P-N junction diode.

A) holes **B) electrons** C) both holes & electrons D) phonons

5. Which of the below mentioned statements is false regarding a p-n junction diode?

A) Diode are uncontrolled devices B) Diodes are rectifying devices

C) Diodes are unidirectional devices **D) Diodes have three terminals**

6. In the p & n regions of the p-n junction the & the are the minority charge carriers respectively.

A) holes, holes B) electrons, electrons C) holes, electrons D) **electrons, holes**

7. Lets assume that the doping density in the p-region is 10^{-9} cm^{-3} & in the n-region is 10^{-17}cm^{-3}, as such the p-n junction so formed would be termed as a

A) $p^- n^-$ B) $p^+ n^-$ C) $p^- n^+$ D) $p^+ n^+$

8. When a physical contact between a p-region & n-region is established which of the following is most likely to take place?

A) Electrons from N-region diffuse to P-region B) Holes from P-region diffuse to N-region

C) Both of the above mentioned statements are true D) Nothing will happen

9. Which of the following is true in case of an unbiased p-n junction diode?

A) Diffusion does not take place

B) Diffusion of electrons & holes goes on infinitely

C) There is zero electrical potential across the junctions

D) Charges establish an electric field across the junctions

11. The arrow direction in diode symbol indicates

A) Direction of electron flow **B) Direction of holes flow**

C) Opposite to Direction of hole flow D) none of the above

12. When the diode is forward biased, it is equivalent to

A) an off switch. B) **an on switch**. C) a high resistance. D) none of the above.

13. When transistors are used in digital circuits they usually operate in the:

    A) active region B) breakdown region C) **saturation and cutoff regions** D) linear region

14. 14. A transistor has a β_{DC} of 250 and a base current, IB, of 20 μ A. The collector current, IC, equals:

    A.   500 μ A

    B.   5 mA

    C.   50 mA

    D.   5 A

15. A current ratio of IC/IE is usually less than one and is called:

    A.   beta   B.   theta

    C.   **alpha**   D.   omega

16. The ends of a load line drawn on a family of curves determine:

    A.   Saturation and cutoff

    B.   The operating point

    C.   The power curve

    D.   The amplification factor

17. Which is beta's current ratio?

    A.   **I_C/I_B**   B. I_C/I_E

    C. I_B/I_E D. I_E/I_B

18. A collector characteristic curve is a graph showing:

    A.   emitter current (I_E) versus collector-emitter voltage (V_{CE}) with (V_{BB}) base bias voltage held constant

    B.   **collector current (I_C) versus collector-emitter voltage (V_{CE}) with (V_{BB}) base bias voltage held constant**

    C.   collector current (I_C) versus collector-emitter voltage (V_C) with (V_{BB}) base bias voltage held constant

    D.   collector current (I_C) versus collector-emitter voltage (V_{CC}) with (V_{BB}) base bias voltage held constant

19. What is the current gain for a common-base configuration where IE = 4.2 mA and IC= 4.0 mA?

    A.   16.80   B.   1.05

    C.   0.20   **D.**   **0.95**

20. If a 2 mV signal produces a 2 V output, what is the voltage gain?

    A.   0.001   B.   0.004

    C.   100   **D.**   **1000**

21. Most of the electrons in the base of an NPN transistor flow:

    A.   out of the base lead

    B.   **into the collector**

    C.   into the emitter

    D.   into the base supply

22. Total emitter current is:

    A. $I_E - I_C$

B. $I_C + I_E$

C. $I_B + I_C$

D. $I_B - I_C$

23. For a C-C configuration to operate properly, the collector-base junction should be reverse biased, while forward bias should be applied to which junction?

A.   **collector-emitter**   B.   base-emitter

C.   collector-base   D.   cathode-anode

24. What is the collector current for a C-E configuration with a beta of 100 and a base current of 30 μA?

A.   30 μA

B.   .3 μA

C.   **3 mA**

D.   25. MA

25. The most commonly used transistor circuit arrangement is

A) Common base   **B. common emitter**. C) common collector D) None of the above.

26. The input/output relationship of the common-collector and common-base amplifiers is:

A.   270 degrees

B.   180 degrees

C.   90 degrees

D.   **0 degrees**

27. With a PNP circuit, the most positive voltage is probably:

A.   **ground**   B. V_C

C. V_{BE} D. V_{CC}

28. If an input signal ranges from 20–40 μA (microamps), with an output signal ranging from .5–1.5 mA (milliamps), what is the ac beta?

A.   0.05   B.   20

C.   **50**   D.   500

29. The MOSFET combines the areas of___&_____

A) field effect & MOS technology B) semiconductor & TTL

C) MOS technology & CMOS technology D) none of the mentioned

30. Which of the following terminals does not belong to the MOSFET?

a) Drain b) Gate c) **Base** d) Source

31. Choose the correct statement

a) MOSFET is a uncontrolled device b) **MOSFET is a voltage controlled device**

c) MOSFET is a current controlled device d) MOSFET is a temperature controlled device

32. The arrow on the symbol of MOSFET indicates

a) that it is a N-channel MOSFET **b) the direction of electrons**

c) the direction of conventional current flow d) that it is a P-channel MOSFET

33. The controlling parameter in MOSFET is

a) Vds **b) Ig**   c) Vgs d) Is

34. The output characteristics of a MOSFET, is a plot of

a) Id as a function of Vgs with Vds as a parameter

b) Id as a function of Vds with Vgs as a parameter

c) Ig as a function of Vgs with Vds as a parameter

d) Ig as a function of Vds with Vgs as a parameter

35. The ripple factor of a full-wave rectifier circuit compared to that of a half wave rectifier circuit without filter is

(A) half of that for a half 'wave rectifier **(B) less than half that for a half-wave rectifier circuit**

(C) equal to that of a half wave rectifier.(D) none of the above.

36. A single-phase full wave mid-point type diode rectifier requires   number of diodes whereas bridge type requires _

a) 1,2 **b) 2,4 c)** 4,8 d) 3,2

37. A single-phase full wave rectifier is a

a) single pulse rectifier b) multiple pulse rectifier c) **two pulse rectifier** d) three pulse

38. The below shown circuit is that of a
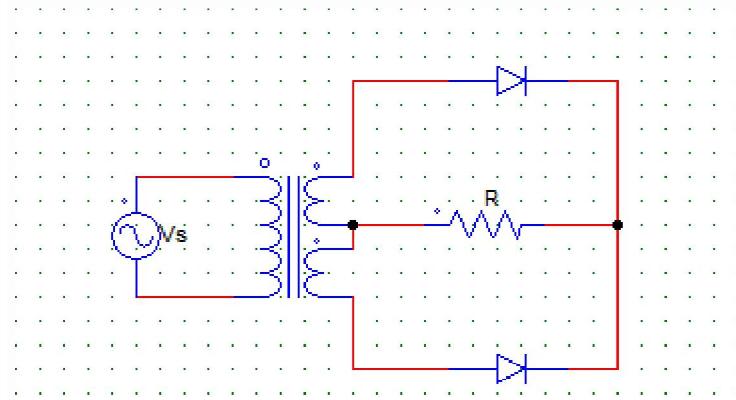
a) full wave B-2 type connection **b) full wave M-2 type connection**

c) half wave B-2 type connection d) half wave M-2 type connection

39. In a 1-phase full wave bridge rectifier with M-2 type of connection has secondary side voltage Vs = Vm sin ωt, with R load & ideal diodes.

The expression for the average value of the output voltage can be given by

a) 2Vm/π b) Vm/π c) Vm/√2 d) 2Vm/√2

40. The below shown circuit is that of a
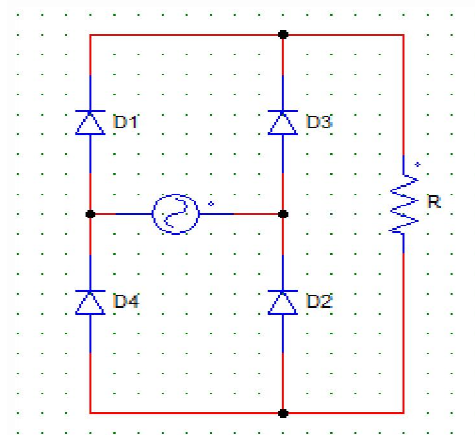
a**) full wave B-2 type connection** b) full wave M-2 type connection

c) half wave B-2 type connection d) half wave B-2 type connection

41. In a 1-phase full wave bridge rectifier with M-2 type of connection has secondary side voltage Vs = Vm sin ωt, with R load & ideal diodes.

The expression for the rms value of the output voltage can be given by

a) Vm/π **b) Vm/√2** c) Vm d) Vm^2

42. For the circuit shown below, find the power delivered to the R load
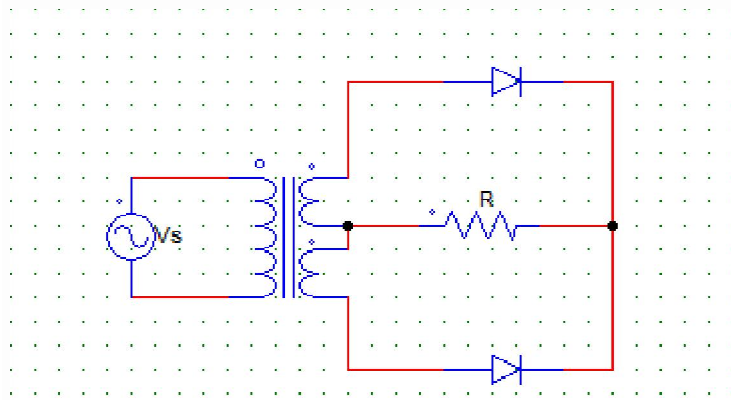
Where,

Vs = 230V AND Vs is the secondary side single winding rms voltage. R = 1KΩ

a) 46 W **b) 52.9 W** c) 67.2 W d) 69 W

43. The PIV experienced by the diodes in the mid-point type configuration is

a) Vm **b) 2Vm c)** 4Vm d) Vm/2

44. For the circuit shown below, find the value of the average output current.
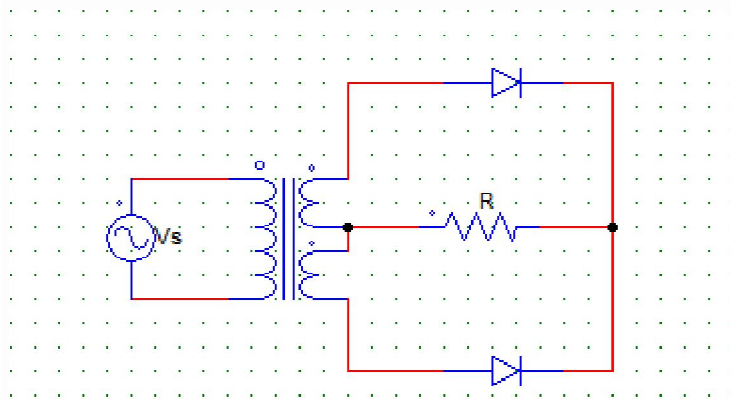
Where, Vs = 230V AND R = 1KΩ

Vs is the secondary side single winding rms voltage.

a) 100Ma b) 107mA c) 200mA **d) 207mA**

45. In the circuit, let Im be the peak value of the sinusoidal source current. The average value of the diode current for the below given configuration is

(A) Figure A **(B) Figure B** (C) Figure C (D) None of the figures shown.

47. Which of the following equipment needs direct current?

(A) Relays B) Telephones (C) Time switches (D**) All of the above.**

48. In large motor generator sets ac motor is usually

(A) induction motor squirrel cage type **(B) synchronous motor**

(C) induction motor wound rotor type (D) any of the above.

49. The rms value of half wave-rectified sine wave with i_m as peak value is

(A) 0.707 i_m (B) 0.66 i_m **(C) 0.5 i_m** (D) 0.318 i_m.

50. Peak inverse voltage for a diode is the

(A) voltage corresponding to rated maximum voltage

(B) maximum voltage that can be applied across the diode in the conducting direction

(C) maximum voltage that can be applied across the diode in the non-conducting direction

(D) none of the above.

**Answers: 1. A 2. A 3. C 4.B 5.D 6.D 7.B 8.C 9.D10.A 11.B 12.B 13.C 14.B 15.C
16.A 17.A 18.B 19.D 20.D 21.B 22.C 23.A 24.C 25.B 26.D 27.A 28.C 29.A 30.C 31.B 32.B 33.
B 34.B 35.B 36.B 37.C 38.B 39.A 40.A 41.B 42.B 43.B 44.D 45.B 46.C 47.D 48.B 49.C 50.C**

ANALOG AND DIGITAL ELECTRONICS

1.In Active mode operation Transistor input & Output junctions respectively

A**) Forward bias, Reverse bias** B) Reverse bias, Forward bias

C) Forward bias , Forward bias D) Reverse bias, Reverse bias

2.In Cut-off mode operation Transistor input & Output junctions respectively

A) Forward bias, Reverse bias B) Reverse bias, Forward bias

C) Forward bias , Forward bias **D) Reverse bias, Reverse bias**

3.In Saturation mode operation Transistor input & Output junctions respectively

A) Forward bias, Reverse bias B) Reverse bias, Forward bias

C) Forward bias , Forward bias D) Reverse bias, Reverse bias

4.During Active mode Transistor becomes

A)Rectifier **B) Amplifier** C) Clipper D) None of these

5.H-Parameters means

A) Transmission B) Impedance **C) Hybrid** D) None of these

6.Transistor H-Parameters

A) **h11,h12,h21,h22**   B) h21,h23,h24,h22 C) h23,h22,h25,h26

7. In Hybrid Parameters h11 is called

A) Forward current gain B) Reverse Voltage gain   **C) Input Im**pedance   D) Output Admittance

8. In Hybrid Parameters h12 is called

A) Forward current gain **B) Reverse Voltage gain**   C) Input Impedance   D) Output Admittance

9. In Hybrid Parameters h21 is called

A) Forward current gain B) Reverse Voltage gain   C) Input Impedance   D) Output Admittance

10. In Hybrid Parameters h22 is called

A) Forward current gain B) Reverse Voltage gain   C) Input Impedance   **D) Output Admittance**

11.With Positive Feed Back gain

A) Increases B) Decreases   C) Both   D) None of these

12. With Negative Feed Back gain

A) Increases **B) Decreases** C) Both A&B D) None of these

13. With Negative Feed Back Stability

A) **Increases** B) Decreases C) Both A&B D) None of these

14. With Positive Feed Back Stability

A) Increases **B) Decreases** C) Both A&B D) None of these

15. With Positive Feed Back Bandwidth

A) Increases **B) Decreases** C) Both A&B D) None of these

16. Wit Negative Feed Back Bandwidth

A) Increases B) Decreases C) Both A&B D) None of these

17. With Positive Feed Back Noise& Distortion

A) Increases **B) Decreases** C) Both A&B D) None of these

18. With Nagative Feed Back Noise& Distortion

A) Increases B) Decreases C) Both A&B D) None of these

19. Binary Number System IS having Base of

A) 1 **B)2** C)3 D)0

20. In Binary Number System the output states

A) 0,1 B)1,1 C)0,0 D)2.0

21. Which of the following is AND gate

A)   B)   C)   D) None
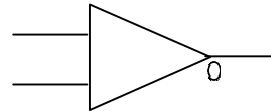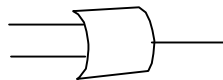
22. Which of the following is OR gate

A)   **B)**   C)   D) None
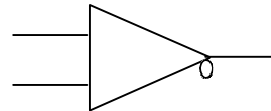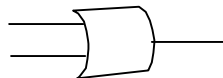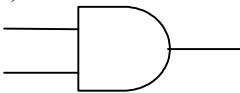
23. Which of the following is NOT gate

A)   B)   **C)**   D) None
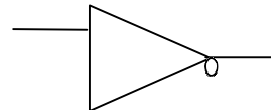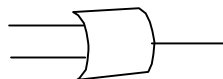
24. Which of the following is NOR gate

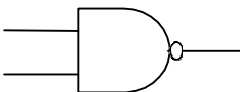A)   **B)**   C)   D) None
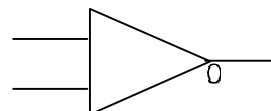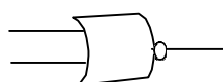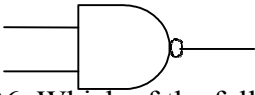
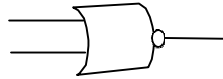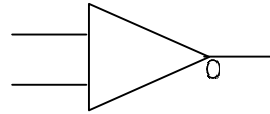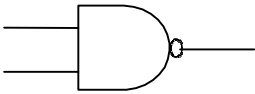25. Which of the following is NAND gate
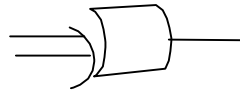
A)   B)   C)   D) None
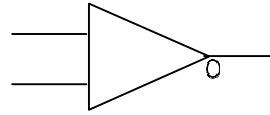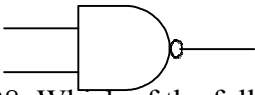
26. Which of the following is XOR gate

A)   **B)**   C)   D) None
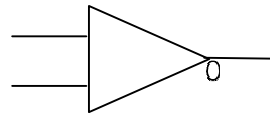
27.Which of the following is XNOR gate

A)   **B)**   C)   D) None

28. Which of the following is Universal Gate

A) NAND   B) NOR   **C) Both A&B**   D) None of these

29. Expression for Two input AND Gate

A)AB   B) A+B   C) A-B   D)A/B

30. Expression for Two input OR Gate

A)AB   **B) A+B**   C) A-B   D)A/B

31.Expression for Two input NAND Gate

A)$\overline{AB}$ B) $\overline{A}$+B   C) A-B   D)A/B

32. Expression for Two input NOR Gate

A) $\overline{AB}$ **B) $\overline{A+B}$**   C) A-B   D)A/B

33. Expression for Two input XOR Gate

A) $\overline{A}B+AB$ **B)$\overline{A}B+A\overline{B}$**   C) Both   D) None of these

34. Expression for Two input XNOR Gate

A) $\overline{A}B+A\overline{B}$ B)A$\overline{B}$+AB   C) Both   D) None of these

35. According to Bolean Alzebra   A+0 =

A) A   B)0   C)1   D) None of these

36. According to Bolean Alzebra   A+1 =

A) A   B)0   **C)1**   D) None of these

37. According to Bolean Alzebra   A.0 =

A) A **B)0** C)1 D) None of these

38.According to Bolean Alzebra   A.1 =

A) A B)0 C)1 D) None of these

39.According to Bolean Alzebra   A.A =

A) A B)0 C)1 D) None of these

40.According to Bolean Alzebra   A+A =

A) A B)0   C)1 D) None of these

41.According to Demorgans theorem $\overline{A+B+C+D}$---------

A) $\overline{A}+\overline{B}+\overline{C}+\overline{D}$+------- **B) $\overline{A}. \overline{B}. \overline{C}. \overline{D}$**.------- C) Both A& B   D) None of these

42. According to Demorgans theorem $\overline{A. B. C. D}$---------

A) $\overline{A}+\overline{B}+\overline{C}+\overline{D}$+------- B) $\overline{A}. \overline{B}. \overline{C}. D$.------- C) Both A& B   D) None of these

43.In Any Flip Flop No-of States

A)2 B)1 C)0 D) None of these

44.SR Flip Flop is called

A) SET-RESET B) RESET-SET C) Both A&B D) None of these

45.In D-Flip Flop Output is

A) Same as Input   B) 0   C) 1 D) None of these

46. In OFF State output is

A) 1   **B) 0** C) both A&B   D) None of these

47. In ON State output is

A) 1   B) 0 C) both A&B   D) None of these

 48. In NOT Gate Output is

 A) Complement of input   B) Same of input   C) both A&B D) None of these

49.In Which of the following Flip Flops Output Follows Input

A) J-K Flip Flop B) S-R Flip **Flop C) D-Flip Flop** D) None of these

50.The Expression for XOR Gate is

A) A+B B) AB C) A   B **D)None of these**

ANSWERS: 1.A 2.D 3.C 4.B 5.C 6.A 7.C 8.B 9.A 10.D 11.A 12.B 13.A
14.B 15.B 16.A 17.B 18.A 19.B 20.A 21.A 22.B 23.C 24.B 25.A 26.B 27.B 28.C
29.A 30.B 31.A 32.B 33.B 34.A 35.A 36.C 37.B 38.A 39.A 40.A 41.B 42.A 43.A 44.A

45.A 46.B 47.A 48.A 49.C 50.D