Analog, Digital and Power **Electronics** 100 Important MCQS

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

NOTE-BOLD OF HON IS KIGH ANSWER
1. The p-region has a greater concentration ofas 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 withimpurities whereas a n-type
semiconductor material is doped withimpurities
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 ofas 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 ap-n junctiondiode?
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 arro	w direction in diode symbol indicates		
A) Directio	n of electron flow B) Direction of hole	es flow	
C) Opposite	e to Direction of hole flow D) none of t	he abo	ve
12.When th	ne diode is forward biased, it is equivale	ent to	
A)an off sw	vitch. B)an on switch. C)a high resistar	nce. D)	none of the above.
13. When t	ransistors are used in digital circuits the	ey usua	lly operate in the:
A) activ	ve region B) breakdown region C) satur	ration	and cutoff regions D) linear region
14. 14. A t	ransistor has a $^{\beta_{DC}}$ of 250 and a base c	urrent,	IB, of 20 ☐ A. The collector current
IC, equals:			
A.	500 µ A		
В.	5 mA		
C.	50 mA		
D.	5 A		
15.A cu	arrent ratio of IC/IE is usually less than	one an	d is called:
A.	beta	B.	theta
C.	alpha	D.	omega
16.The	ends of a load line drawn on a family o	fcurve	es determine:
A.	Saturation and cutoff		
В.	The operating point		
C.	The power curve		
D.	The amplification factor		

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рра 17. Wh	nich is beta's current ratio?			
A.	$I_{\rm C}/I_{\rm B}$	B.	$I_{\rm C}/I_{\rm E}$	
C.	$I_{ m B}/I_{ m E}$	D.	$I_{\rm E}/I_{\rm B}$	
18.A co	ollector characteristic curve is a graph sh	owing		
A.	emitter current (I_E) versus collector-emitter voltage (V_{CE}) with (V_{BB}) base bias voltage held constant			
В.	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 $IE = 4.2 \text{ mA}$ 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			

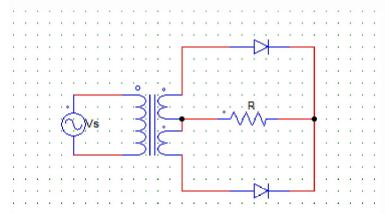
22. Total emitter current is:

 $A. I_E - I_C$

B.	$I_{\rm C} + I_{\rm E}$			
C.	$I_B + I_C$			
D.	$I_{\rm B}-I_{\rm C}$			
23. For a C	-C configuration to operate properly, the	collec	ctor-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. Wh	at is the collector current for a C-E config	guratio	on with a beta of 100 and a base current	
of 30	J A?			
A.	30 ⊔A			
B.	.3 ⊔ A			
С.	3 mA			
D.	25. MA			
25. The mo	st commonly used transistor circuit arrar	ngemen	nt is	
A) Commo	n base B. common emitter . C) comm	on col	lector D) None of the above.	
26. The inj	out/output relationship of the common-co	ollecto	r 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.	$ m V_{BE}$	D.	V_{CC}	

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28. If a	28. If an input signal ranges from 20–40 ⊔ A (microamps), with an output signal ranging				
from .5	from .5–1.5 mA (milliamps), what is the ac beta?				
A.	0.05	B.	20		
C.	50	D.	500		
29. The MO	OSFET combines the areas of&				
A) field eff	fect & MOS technology B) semiconduct	tor & T	TTL		
C) MOS teo	chnology & CMOS technology D) none	of the	mentioned		
30. Which	of the following terminals does not belor	ng to th	he MOSFET?		
a) Drain b)	Gate c) Base d) Source				
31. Choose	the correct statement				
a) MOSFE	T is a uncontrolled device b) MOSFET is	is a vo	oltage controlled device		
c) MOSFE	T is a current controlled device d) MOSF	FET is	a temperature controlled device		
32. The arro	ow on the symbol of MOSFET indicates				
a) that it is	a N-channel MOSFET b) the direction	of elec	ctrons		
c) the direc	ction of conventional current flow d) that	it is a	P-channel MOSFET		
33. The cor	ntrolling parameter in MOSFET is				
a) Vds b) l	Ig c) Vgs d) Is				
34. The outp	put characteristics of a MOSFET, is a plo	ot of			
a) Id as a fu	unction of Vgs with Vds as a parameter				
b) Id as a f	function of Vds with Vgs as a paramete	er			
c) Ig as a fu	unction 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 ofdiodes 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 pu	a) single pulse rectifier b) multiple pulse rectifier c) two pulse rectifier d) three pulse				

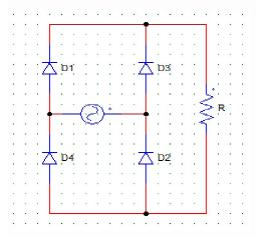
38. The below shown circuit is that of a



- 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 $Vs = Vm \sin \omega t$, with R load & ideal diodes.

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

- a) $2Vm/\pi$ b) Vm/π c) $Vm/\sqrt{2}$ d) $2Vm/\sqrt{2}$
- 40. The below shown circuit is that of a

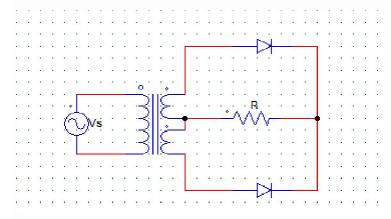


- a) full wave B-2 type connection b) full wave M-2 type connection
- c) half wave B-2 type connection d) half wave B-2 type connection
- 41. In a 1-phase full wave bridge rectifier with M-2 type of connection has secondary side voltage $Vs = Vm \sin \omega t$, with R load & ideal diodes.

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

a) Vm/π b) $Vm/\sqrt{2}$ c) Vm d) Vm^2

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



Where,

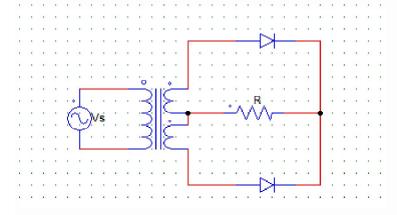
Vs = 230V AND Vs is the secondary side single winding rms voltage. $R = 1K\Omega$

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, $V_S = 230V$ AND $R = 1K\Omega$

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

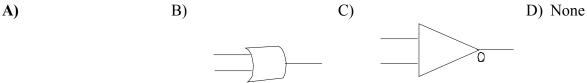
- (A) Figure A (B) Figure B (C) Figure C (D) None of the figures shown.
- 47. Which of the following equipment needs direct current?
- (A) Relays B) Telephones (C) Time switches (D) All of the above.
- 48. In large motor generator sets ac motor is usually
- (A) induction motor squirrel cage type (B) 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

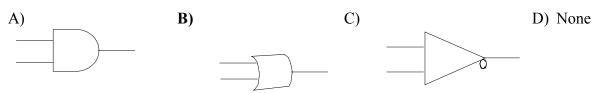
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- 1.In Active mode operation Transistor input & Output junctions respectively
- A) Forward bias, Reverse bias B) Reverse bias, Forward bias
- C) Forward bias, Forward bias D) Reverse bias, Reverse bias
- 2.In Cut-off mode operation Transistor input & 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 Impedance 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

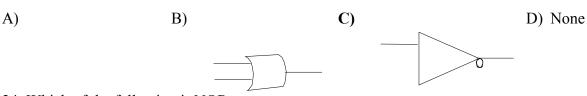
- A) Increases B) Decreases C) Both A&B D) None of these
- 13. With Negative Feed Back Stability
- A) Increases B) Decreases C) Both A&B D) None of these
- 14. With Positive Feed Back Stability
- A) Increases B) Decreases C) Both A&B D) None of these
- 15. With Positive Feed Back Bandwidth
- A) Increases 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



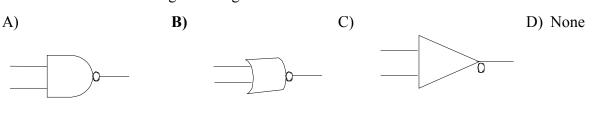
22. Which of the following is OR gate



23. Which of the following is NOT gate



24. Which of the following is NOR gate



25. Which of the following is NAND gate

A)

B)

C)

D) None



26. Which of the following is XOR gate

A)

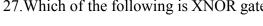
B)

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

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

30. Expression for Two input OR Gate

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

31. Expression for Two input NAND Gate

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

32. Expression for Two input NOR Gate

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

33. Expression for Two input XOR Gate

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

34. Expression for Two input XNOR Gate

A) $\overline{AB}+AB$ B) $\overline{AB}+AB$ 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 A+B+C+D-----
- A) $\overrightarrow{A} + \overrightarrow{B} + \overrightarrow{C} + \overrightarrow{D} + \cdots$ B) \overrightarrow{A} . B. \overrightarrow{C} . \overrightarrow{D} . C) Both A& B D) None of these
- 42. According to Demorgans theorem A. B. C. D-----
- **A)** $\vec{A} + \vec{B} + \vec{C} + \vec{D} + \cdots$ B) A. B. 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