Govt. Polytechnic Nabarangpur

Question bank for Analog electronics &Opamp

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Unit-1: PN JUNCTION DIODE

1. What is a pn junction?
2. What is meant by reverse biasing of a pn junction?
3. What is forward resistance of a diode?

4. What is depletion region in p-n junction?

5. WHAT IS DC LOAD LINE OF A DIODE AND ITS IMPORTANT?

6 .DIFFERENCE BETWEEN ZENER BREAKDOWN AND AVALANCHE BREAKDOWN

7.WHAT IS A CLIPPER CIRCUIT AND DIFFERENT TYPES OF CLIPPERS?

8.WHAT IS A CLAMPER CIRCUIT AND ITS TYPES?

9.Define knee voltage & breakdown voltage

10. For a PN junction diode, the current in reverse bias may be
   A.Few miliamperes
   B.Between 0.2 A and 15 A
   C.Few amperes
   D.Few micro or nano amperes
11. When PN junction is in forward bias, by increasing the battery voltage
   A.Circuit resistance increases
   B.Current through P-N junction increases
   C.Current through P-N junction decreases
   D.None of the above happens
12. A PN junction
   A.Has low resistance in forward as well as reverse directions
   B.Has high resistance in forward as well as reverse directions
   C.Conducts in forward direction only
   D.Conducts in reverse direction only
13. The potential barrier existing across a PN junction corresponds to
   A.Width of the barrier
   B.Reverse bias of the junction
   C.Forward bias of the junction
   D.Height of the barrier
14. The depletion region of a PN junction is one that is depleted of
   A.Immobile charges

B.Mobile charges
C.Atoms
D.None of the above

15. explain working of diode.

Unit -2&3: SPECIAL SEMICONDUCTOR DEVICES & RECTIFIER CIRCUITS & FILTERS:

1. What is sensor?
2. What is PIN diode and its uses.
3. What is Zener Diode and its importance.

4. How many diodes a half wave rectifier has?

- One
- Two
- Three
- Four

5._____ rectifier consists of center-tapped transformer.

- Half wave
- Full wave
- Both a and b
- None of the above

6. The output generated from the rectifier is _____.

- Filtered
- Rippled
- Distorted
- Scattered

7. Clippers are also known as _____.

- Limiters
- Slicers
- Amplitude selectors
- All the above

PN junction in Zener diode is _____ doped.

- Lightly
- Heavily
- Moderately
- None of the above

Temperature can be monitored using _____ diodes.

- Light emitting diodes
- Thermal diodes
- LASER diodes
- Photodiodes

Materials used in tunnel diode manufacturing are _____.

- Silicon
- Germanium
- Zinc
- Both a and b

Unit4&5: TRANSISTORS & TRANSISTOR CIRCUITS:

1.Explain CB configuration of BJT.

2.CE configuration of BJT is used for which application?

3.Define Transistor biasing. What are the different methods of biasing?

4..Explain Self bias or voltage divider method

MCQ:

1. **The ratio of collector current by the base current is known as _____ gain**
   - Current
   - Voltage
   - Efficiency
   - None of the above
2. **How many junctions do NPN and PNP transistors have?**
   - One

- Two
- Three

3. The base of NPN transistors are made up of _____ semiconductor

- N-type
- P-type
- Both a and b
- None of the above
- Four

4. In an active region of operation the _____ junction is forward biased

- Emitter base
- Collector base
- Base collector
- None of the abov

5. The input resistance of common base is _____

- Low
- Very low
- High
- Very high

6. Which one of the following is a unipolar device?

- JFET
- BJT
- Both a and b
- None of the above

7.In cut off region _____ is reverse biased

- Base emitter
- Base collector

- Both a and b
- None of the above

Unit 6: TRANSISTOR AMPLIFIERS & OSCILLATORS:

1.what is Generalised approximate model? Analysis of CB, CE, CC amplifier using generalised approximate model.

2.Define multistage transistor amplifier.

3.Why feedback in needed in amplifier ?explain negative feedback amplifier.

4. What is Power amplifier and explain voltage amplifier and power amplifier.

5. What is oscillator and its type?

MCQ:

1. Which of the following improvements is (are) a result of the negative feedback in a circuit?

A. Higher input impedance

B. Better stabilized voltage gain

C. Improved frequency response

D. All of the above

2. Which of the following is (are) the determining factor(s) of the stability of a feedback amplifier?

A. A

B. Phase shift between input and output signals

C. Both A and the phase shift between input and output signals

D. None of the above

3. At what phase shift is the magnitude of βA at its maximum in the Nyquist plot?

A. 90°

B. 180°

C. 270°

D. 0°

4. The amplifier is unstable if the Nyquist curve plotted encloses (encircles) the –1 point, and it is stable otherwise.

A. True

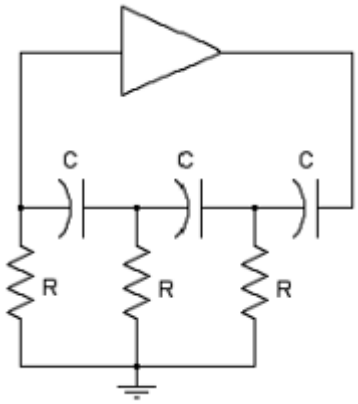
B. False

5 . An input signal is needed for an oscillator to start.

A. True

B. False

6. This circuit is a _____ oscillator.



A. phase-shift

B. Wien bridge

C. Colpitts

D. Hartley

7. What is the typical value of quality factor for crystal oscillators?

A. 20,000

B. 1000 c.100 d.10

Unit7: FIELD EFFECT TRANSISTOR

1. What are the Advantages of FET over BJT?
2. Define FET parameters (DC drain resistance AC drain resistance,Trans-conductance.
3. What are the Different types of Biasing of FET?

MCQ:

1. FET is a voltage controlled device.
a) True
b) False

2. Which of the following statement is true about FET?
a) It has high output impedance
b) It has high input impedance
c) It has low input impedance
d) It does not offer any resistance

3. Comparing the size of BJT and FET, choose the correct statement?
a) BJT is larger than the FET
b) BJT is smaller than the FET
c) Both are of same size
d) Depends on application

4. What is the value of current when the gate to source voltage is less than the pinch off voltage?
a) 1A
b) 5A
c) 100A
d) 0

5. What is the value of drain current when V_{gs}=pinch off voltage?
a) 0A
b) 1A
c) 2A
d) Cannot be determined

6.For a p-channel FET, What is the direction of current flow?
a) Source to drain
b) Drain to source

c) Gate to source
d) Gate to drain

Unit8: OPERATIONAL AMPLIFIERS:

1. What are the inverting and noninverting opamp?
2. What is Voltage follower & buffer?
3. What is Differential amplifier?

MCQ:

. Op-Amp is a _____ type of amplifier.

- Current
- Voltage
- Power
- Resistance

. Op-Amp has _____ gain.

- High
- Low
- Zero
- Medium

. Op-Amp was invented by _____.

- Henry
- Richard
- Karl D
- David

Op-Amp with positive input type configuration +V or V is called _____.

- Non-inverting type input
- Inverting type input
- Non-inverting type output
- Inverting type output

An ideal Op-amp has _____ output voltage.

- 1V , 3v, grounded, infinite