**Model Question (SET-1)**

**ANALOG ELECTRONICS & OPERATIONAL AMPLIFIER**

**SEMESTER-4TH SEM BRANCH: ELECTRICAL**

**FULL MARKS: 80**

1. Answer all (2\*10)
2. What are pure and impure semiconductors? Give some examples.
3. Why FET is referred to as voltage controlled device and BJT is referred to as current controlled device?
4. Define Barkhausen condition for sustained oscillation.
5. Define transistor biasing. What is its need? State its types.
6. What is doping? Why doping is been done?
7. What is Transconductance of FET?
8. Define CMRR.
9. Why negative feedback is used in amplifiers and positive feedback in oscillators?
10. What is the operating frequency of a Wein bridge, Hartley, colpitt and crystal oscillator?
11. Why trivalent and pentavalent impurities are referred to as acceptor & donor impurities respectively.
12. Answer any six question (5\*6)
13. Explain the working of PN junction diode under forward biasing condition.
14. Derive the expression for gain with negative feedback.
15. Explain the operation of colpitt oscillator with a neat sketch.
16. Differentiate between FET & BJT.
17. Derive the IB & VCE of emitter stabilized biasing with its circuit diagram.
18. Explain the operation of capacitor input filter.
19. Discuss the essentials of transistor oscillators.
20. Write in detail the advantages and disadvantages of negative feedback.
21. Classify solids according to their electrical conductivity with respect to energy band diagram. (10)
22. Describe the operation, advantages and disadvantages of full wave bridge rectifier. Derive its efficiency. (10)
23. With a neat sketch discuss in detail the operation, advantages and disadvantages of push-pull amplifier (10)
24. Describe the working of RC phase shift oscillator with a neat circuit diagram (10)

**Model Question (SET-2)**

**ANALOG ELECTRONICS & OPERATIONAL AMPLIFIER**

**SEMESTER-4TH SEM BRANCH: ELECTRICAL**

**FULL MARKS: 80**

1. Answer all (2\*10)
2. Define positive and negative feedback. State its applications.
3. Why 3 phase shift networks are used in RC phase shift oscillator?
4. By adding which impurities p type and n type semiconductor can be formed? State some examples.
5. Draw the energy band diagram for insulators, conductors and semiconductors?
6. Define breakdown voltage and knee voltage?
7. How do tunnel diodes behave in forward and reverse biasing condition?
8. Why inductor offers high reactance to ac component and capacitor offers high reactance to dc component?
9. Among NPN and PNP transistor which transistor is most preferred and why?
10. Answer any six question (5\*6)
11. Explain the working of tunnel diode with its VI characteristics?
12. Explain the operation, advantages and disadvantages of Centre tapped full wave rectifier?
13. Explain how a transistor acts as an amplifier with example?
14. Differentiate between FET and BJT.
15. Derive current and voltage equations from the voltage divider method of transistor biasing.
16. Explain the different stages of operational amplifier.
17. Explain the principle of negative feedback with the help of block diagram.
18. Write down the difference between Zener breakdown and avalanche breakdown.
19. Discuss in detail the operation of pie filter. Explain why this filter is most preferred among all the filters? (10)
20. Draw and explain all the transistor circuit configurations with their input & output characteristics curve? (10)
21. Discuss the operation, advantages and disadvantages of class B push pull amplifier. Derive its rectifier efficiency. (10)
22. Describe the VI characteristics of PN junction diode under forward & reverse bias condition with a neat sketch. (10)