

B.Sc.-I General Science Semester -II Examination, _____

ELECTRONICS Paper -III (BET201)

Subject Code:18002

Question Bank

Q.1: Define following Term/Answer in one sentence

[2 Marks]

- 1) Define binary logic?
- 2) Convert $(15)_{10}$ to Binary.
- 3) Which gates are called as the universal gates?
- 4) What is BIT and BYTE
- 5) What is TTL
- 6) What is CMOS
- 7) State Demorgan's theorem.
- 8) Simplify the following Boolean expression $XY+X(Y+Z)+Y(Y+Z)$.
- 9) Show how to connect NAND gates to get an AND gate and OR gate.
- 10) Define the laws of Boolean algebra.
- 11) Simplify the Boolean Expression $F= A+AB$
- 12) What is K-map? 1
- 13) Which gates are called as the universal gates?
- 14) What are called don't care conditions?
- 15) List out the advantages and disadvantages of K-map method?
- 16) Define combinational logic.
- 17) Define ROM.
- 18) Convert $(10)_{10}$ to Binary.
- 19) Which gates are called as the universal gates?
- 20) What is BYTE and WORD
- 21) Convert $(12)_{10}$ to Binary.
- 22) State De Morgan's theorem
- 23) What is BIT, BYTE and WORD
- 24) Define RAM.
- 25) List basic Gates.
- 26) Convert $(12)_{10}$ to Binary.
- 27) What is Volatile and Non-Volatile memory?
- 28) What is a FPGA?
- 29) What is PROM?
- 30) What is EPROM?
- 31) What is Electrically Erasable PROM (EEPROM)?
- 32) What is Flash memory?
- 33) What is PLD? 18. What is PAL?
- 34) What is PLA?

Q.2 Attempt any two of the following

[10 Marks]

1. Convert the following numbers
 - i) $(163.789)_{10}$ to Octal number
 - ii) $(11001101.0101)_2$ to Decimal
 - ii) $(4567)_{10}$ to Binary
 - iv) $(4D.56)_{16}$ to Binary
2. Explain half and full Adder.
3. Explain working of J-K flip flop.
4. What is Flip-Flop and Explain working of R-S flip flop.

5. Explain Multiplexer and give its application
6. Explain De- Multiplexer and give its application.
7. What is Flip-Flop and Explain working of D flip flop.
8. Explain in detail about the working of bipolar SRAM cell and single transistor DRAM cell with neat sketches.
9. Discuss in detail about various types of ROM
10. Explain the operation of TTL with neat diagram.
11. Explain the characteristics of CMOS logic family
12. Implement the basic gates using Universal gates.
13. Explain the operation of MOD-6 counter.
14. Explain about triggering of flip flops
15. Explain K map in detail with example.

Q.3 Attempt any four of the following.

[5 Marks]

1. Write difference between RAM and ROM.
2. Explain about TTL family?
3. Explain basic gates and its applications.
4. Explain Multiplexer and its applications.
5. What is flip-flop and give its types.
6. Explain classification of Number system.
7. Explain classification of Number system.
8. Explain SOP and POS form.
9. What is cache memory.
10. Explain about TTL family?
11. Explain basic gates and its applications.
12. Explain Half Adder.
13. What is memory and give its classification. How are Number systems classified?
14. Which gates are called as the universal gates?
15. Explain Half Adder.
16. What is counter.
17. What is Half adder?
18. What is Full adder?
19. What is Binary adder?
20. What is Half subtractor?
21. What is BCD adder?
22. What is Parity generator and parity checker?
23. What is code converter?
24. Give the applications of Demultiplexer.
25. List out the applications of decoder?
26. List out the applications of Mux.
27. List out the applications of comparators?
28. Distinguish between Decoder & Demux.
29. Design full adder using half adder.
30. Compare serial adder and parallel adder.
31. Design 2-bit comparator.
32. Explain about master slave JK flip flop.

Question Bank
Electronics Paper IV
Electronics Circuits (BET 202)

Q. 1: Define following terms/Answer in one sentence (2 Marks Each)

- 1) What is rectifier? Draw the i/p and o/p waveforms of half wave rectifier.
- 2) Define concept of efficiency?
- 3) Draw the circuit diagram of fixed bias.
- 4) What is an amplifier?
- 5) What are the advantage of Hartley Oscillator?
- 6) Define operating point or Q- point.
- 7) What is oscillator? Advantage of Colpitt's oscillator.
- 8) Draw the circuit diagram of collector to base bias.
- 9) What is rectifier? Draw i/p and o/p waveforms of full wave rectifier.
- 10) Write different types of biasing methods?
- 11) What is a rectifier?
- 12) What is PIV of a diode in a rectifier circuit?
- 13) What is the importance of peak inverse voltage?
- 14) Why half-wave rectifiers are generally not used in dc power supply?
- 15) Why diodes are not operated in the breakdown region in rectifiers?
- 16) What is meant by filter?
- 17) Why series inductor and L-section filters cannot be used with half-wave rectifiers?
- 18) Why π -filters are not suitable for varying loads?
- 19) What are the transistor parameters that vary with the temperature?
- 20) What is Bias? What is the need for biasing?
- 21) What do you understand by DC & AC load line?
- 22) What is the meant by operating point Q?
- 23) What are the types of biasing?

- 24) What are all the factors that affect the stability of the operating point?
- 25) Define stability factor 'S'?
- 26) What are the disadvantages of collector feedback bias?
- 27) Why voltage divider bias is commonly used in amplifier circuit?
- 28) Define the stability factors S' and S'' ?
- 29) Give the stability factor S for the fixed bias circuit.
- 30) Give the stability factor S for the Collector to base bias circuit.
- 31) Give the stability factor S for the Voltage divider bias circuit.
- 32) What are all the compensation techniques used for bias stability?
- 33) Why the input impedance of FET is more than that of a BJT?
- 34) How FET is known as Voltage variable resistor?
- 35) List the advantages of fixed bias method?
- 36) How self-bias circuit is used as constant current source?
- 37) What is Thermal runaway?
- 38) What are the different types of FET biasing circuits?
- 39) What is meant by stabilization?
- 40) What is meant by feedback?
- 41) Give the different types of feedbacks used in amplifier circuits.
- 42) Define the positive feedback.
- 43) Define negative feedback.
- 44) Give the classification of amplifiers.

Q. 2) Attempt any two

(10 Marks Each)

- a) Draw the circuit diagram of a half wave rectifier with necessary waveforms. Explain its working and parameters.
- b) Explain the working of class B push pull amplifier with neat circuit diagram.
- c) Explain voltage divider biasing method and derive an expression for the stability factor.
- d) Draw the circuit diagram of a full wave rectifier with necessary waveforms. Explain its working.
- e) Explain voltage divider biasing method and derive an expression for the stability factor.
- f) Explain the working of RC phase shift oscillator with its advantages and disadvantages.
- g) Explain half wave rectifier with working and waveforms.
- h) Explain full wave rectifier with working and waveform.
- i) Derive the expression for dc output current of half wave and full wave rectifier.
- j) Derive the expression for dc output voltage of half wave and full wave rectifier.
- k) Define ratio of rectification and derive the value of efficiency in half wave and full wave rectifier.
- l) Define the ripple factor and obtain the expression of ripple factor of half wave and full wave rectifier.
- m) Explain the working of bridge rectifier with circuit diagram and its waveform.
- n) Explain the concept of filter and explain clc filter in detail.
- o) Explain the concept of capacitor filter and inductor filter in detail
- p) Explain in detail operating point and dc load line and interpret the result.
- q) Explain in detail ac load line and selection of operating point.
- r) What is biasing and explain any two methods of biasing.
- s) Explain the concept of bias compensation also explain compensation with single diode and compensation with two diodes.

- t) Explain how transistor works as an amplifier also explain CB amplifier.
- u) Explain common base and common collector amplifier with circuit diagram.
- v) Explain the theory of coupling and explain resistance capacitance coupled amplifier and state its advantages and disadvantages.
- w) Explain transformer coupled amplifier in detail with its advantages and disadvantages.
- x) Explain class A amplifier in detail.
- y) Explain class B amplifier in detail.
- z) Explain class A push pull amplifier and class B push pull amplifier.
- aa) Explain class AB and class AB push pull amplifier in detail.
- bb) Explain class C amplifier and complementary symmetry push pull amplifier.
- cc) Describe RC phase shift
- dd) Describe Hartley oscillator and derive the value of frequency.
- ee) Write a short note on Wien bridge oscillator. Obtain the expression for frequency.
- ff) Explain colpitts oscillator and write the proof for its frequency.
- gg) Explain the comparison between RC phase shift, Hartley, colpitts and wein bridge oscillator.

Q. 3) Attempt any four

(5 Marks each)

- 1) Difference between HWR & FWR.
- 2) Draw & explain class A power amplifier.
- 3) Write note on Wien Bridge Oscillator
- 4) Explain the concept of positive feedback.
- 5) Explain voltage divider bias method.
- 6) For a transistor colpitt oscillator $L=100\mu\text{H}$, $C_1=C_2=0.01\mu\text{f}$, calculate the frequency of oscillators generated.
- 7) Write a short note on transistor as a switch.
- 8) Write a short note on Bridge rectifier.
- 9) Compare class A and class B power amplifier.
- 10) Write a short note Zener diode as a regulator.
- 11) Write a short note on Positive Voltage Regulator.
- 12) Define Biasing and state the need of biasing.
- 13) Explain half wave rectifier
- 14) Write the short note on full wave rectifier
- 15) Write the comparison between half wave, full wave and bridge rectifier.
- 16) State and prove the expression of efficiency of bridge rectifier.
- 17) Explain the inductor filter with its working
- 18) Write the short note on capacitor filter.
- 19) Explain the working of LC filter with circuit diagram.
- 20) Write the short note on CLC filter filter.
- 21) Give the expression for dc output current and dc output voltage in case of bridge rectifier.
- 22) Discuss the operating point and dc load line with circuit diagram.
- 23) Explain ac load line and selection of operating point.
- 24) Explain the difference between ac load line and dc load line.

- 25) Write the short note on need of stabilization with thermal runaway.
- 26) Explain fixed bias circuit with its drawbacks.
- 27) Write a short note on collector to base bias circuit with its drawbacks.
- 28) Explain emitter biasing method with its drawbacks.
- 29) Explain voltage divider bias with its stability factor.
- 30) What is bias compensation and explain bias compensation using single diode.
- 31) Explain how transistor works as an amplifier.
- 32) Explain CE amplifier in detail.
- 33) Write a short note on common base amplifier.
- 34) Explain the working of common collector amplifier.
- 35) Why coupling is necessary? Explain RC coupled amplifier in detail.
- 36) Explain transformer coupled amplifier with its working.
- 37) Write a short note on direct coupled amplifier.
- 38) What is amplifier and discuss the concept of voltage amplifiers and current amplifiers.
- 39) Write a short note on class A amplifier.
- 40) Explain class B amplifier with circuit diagram.
- 41) Explain class A push pull amplifier. Why class A push pull amplifier has designed?
- 42) Explain class B push pull amplifier. Why it has designed?
- 43) Write a short note on class AB amplifier
- 44) Explain in brief class C amplifier.
- 45) What is feedback and explain the concept of positive and negative feedback.
- 46) Explain barkhausen criteria for oscillation.
- 47) Write a short note on RC phase shift oscillator.
- 48) Explain the working of wein bridge oscillator with circuit diagram.
- 49) What are LC oscillators? Write a short note on Hartley oscillator.
- 50) Explain colpitts oscillator and state its advantages and disadvantages.