



**PAST PAPERS
OF
ANALOG
ELECTRONICS**

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Government College University, Faisalabad
External Semester Examination spring 2020
BS Physics (6th Semester)
 Maximum Marks: 75(50+25)

Course Code: PHYS40
 Course Title: Electronics II
 MCQs

Cr. Hr. 3(3-0)
 Time: 90 Minutes

Marks: 50

Choose the correct answer:

Question 1: A non-inverting amplifier whose output follows input is called
 a. summing amplifier b. subtractor c. voltage follower d. integrator

Question 2: Convert the hexadecimal number $(1E2)_{16}$ to decimal:
 a. 480 b. 482 c. 483 d. 484

Question 3: In an ideal differentiator, the feedback element is a
 a. resistor b. capacitor c. zener diode d. voltage divider

Question 4: When you apply triangular waveform to the input of a differentiator, the output is
 a. a dc level b. a sine waveform c. an inverted triangular waveform d. a square waveform

Question 5: Which of the followings is not the feature of ideal op-amp
 a. infinite input impedance b. infinite bandwidth c. infinite output impedance d. infinite CMRR

Question 6: The ratio of differential gain and common mode gain is called
 a. amplitude rejection b. differential mode rejection c. common-mode rejection d. phase

Question 7: Which of the followings is/are universal gate?
 a. OR gate b. NAND gate c. NOR gate d. Both b & c

Question 8: Monostable multivibrator is also called
 a. univibrator b. free running c. flip flop d. None of these

Question 9: In a digital system, $Y + \bar{Y} =$
 a. 0 b. 1 c. Y d. None of these

Question 10: A string or sequence of 8 bits is called a
 a. nibble b. byte c. word d. bit

Question 11: The binary number $(1101.01)_2$ equal to its decimal equivalent is
 a. $(5.15)_{10}$ b. $(5.25)_{10}$ c. $(5.05)_{10}$ d. $(4.25)_{10}$

Question 12: Schmitt trigger belongs to a class of
 a. Astable multivibrator b. Monostable multivibrator c. Bistable multivibrator d. All of these

Question 13: A NAND gate gives OFF output only when all its inputs are
 a. HI b. ON c. low d. false

Question 14: Crystal oscillator circuit works on the principle of the
 a. Photoelectric effect b. Piezoelectric effect c. Inverse Piezoelectric effect d. None of these

Question 15: How many op-amps are required to implement this equation $V_o = V_{in} ?$
 a. 4 b. 3 c. 2 d. 1

Question 16: A differential amplifier has a differential mode gain of 20000. CMRR = 80 dB. The common-mode gain is
 a. 2 b. 1 c. 1/2 d. 0

Question 17: Astable multivibrator is also called
 a. free running b. univibrator c. flip flop d. All of these

Question 18: Which of the following multivibrator is resistive-capacitive coupled?
 a. Astable b. Monostable c. Bistable d. All of these

Question 19: The circuit, which generates square waves is generally referred to as
 a. oscillator b. amplifier c. op-amp d. multivibrator

Question 20: The expression $A \oplus B$ represents
 a. OR gate b. NOR gate c. X-OR gate d. X-NOR gate

Question 21: The frequency at which the open-loop gain is equal to 1 is called
 a. the upper critical frequency b. the cutoff frequency c. the threshold frequency d. the unity-gain frequency

Question 22: An anti-aliasing amplifier has a in series with the input
 a. IFT b. diode c. Diode or IFT d. resistor

Question 23: The closed loop gain of op-amp is independent of
 a. input resistance b. output resistance c. resistance between inverting and non-inverting input terminals d. All of these

Question 24: In a digital system, $A + 1 =$
 a. 0 b. 1 c. A d. None of these

(PT-0)

- Question 25: A multivibrator which has one stable and one quasi stable state is called
 a. Astable multivibrator b. Monostable multivibrator c. Bistable multivibrator d. All of these
- Question 26: A system that generates, stores and processes data in term of two discrete states is called
 a. Digital system b. isolated system c. Analog system d. None of these
- Question 27: Common Mode Rejection Ratio (CMRR) of a practical op-amp is
 a. zero b. infinite c. high d. low
- Question 28: A non-inverting close loop op-amp circuit generally has gain
 a. less than one b. greater than one c. zero d. equal to one
- Question 29: Which of the followings is not a fundamental gate?
 a. OR gate b. AND gate c. NOR gate d. NOT gate
- Question 30: The number of NAND gates used to form OR gates are
 a. 2 b. 3 c. 4 d. 1
- Question 31: Instrumentation amplifier is the extension of
 a. inverting amplifier b. non-inverting amplifier c. difference amplifier d. summing amplifier
- Question 32: If both the inputs given to a gate are 1, such that the output is 0 then it may be
 a. NAND gate b. NOR gate c. X-NOR gate d. Both a & b
- Question 33: In digital electronics, $1 + (\overline{A.B})$ is always equal to
 a. 0 b. 1 c. A d. B
- Question 34: The ANDing of input and output of a NOT gate is always equal to
 a. 0 b. 1 c. input d. output
- Question 35: In case of non-inverting op-amp if $R_1 = R_2/2$ then
 a. $V_o = 3V_{in}$ b. $V_o = 2V_{in}$ c. $V_{in} = 3V_o$ d. $V_{in} = 2V_o$
- Question 36: Logic gate which gives the inversion of input signal at the output is called
 a. NAND gate b. NO1 gate c. NOR gate d. All of these
- Question 37: In the field of Boolean algebra, $\overline{1 + \overline{1}}$ =
 a. 1 b. 2 c. 0 d. None of these
- Question 38: CMRR can also be expressed in dB as
 a. $\log \left| \frac{A_d}{A_c} \right|$ b. $\log \left| \frac{A_c}{A_d} \right|$ c. $20 \log \left| \frac{A_d}{A_c} \right|$ d. $20 \log \left| \frac{A_c}{A_d} \right|$
- Question 39: If the input to a log amplifier is x, then the output is proportional to
 a. e^x b. $\ln x$ c. e^{-x} d. None of these
- Question 40: In a phase shift oscillator, we use.....RC sections.
 a. 2 b. 3 c. 4 d. many
- Question 41: In a zero-level detector, the output changes state when the input
 a. is positive b. is negative c. crosses zero d. has a zero rate of change
- Question 42: Hartley oscillators is commonly used in
 a. Radio receivers b. Radio transmitters c. TV receivers d. None of these
- Question 43: An oscillator produces oscillations
 a. damped b. undamped c. modulated d. None of these
- Question 44: The maximum time rate of change of output voltage is called
 a. electric field b. flow rate c. slew rate d. electric current intensity
- Question 45: The difference between the two input currents entering the two terminals of a balanced amplifier is called
 a. input offset current b. input bias current c. Both a & b d. None of these
- Question 46: The 4-bit binary number equivalent to hexadecimal number F is
 a. 1011 b. 1101 c. 1110 d. 1111
- Question 47: In binary division $1011011 \div 111$ is given by
 a. 1011 b. 1010 c. 1111 d. 1101
- Question 48: A type of multivibrator which has two stable states is called
 a. Astable multivibrator b. Monostable multivibrator c. Bistable multivibrator d. All of these
- Question 49: The term "flip flop" is associated with
 a. Astable multivibrator b. Monostable multivibrator c. Bistable multivibrator d. None of these
- Question 50: What are the features of instrumentation amplifier?
 a. low noise b. high gain accuracy c. high input impedance d. all of these



Govt. Postgraduate College of Science, Faisalabad

Mid Examination, Fall Semester –2019

Time allowed : 1 : 00 hour

Title : Electronics

BS–Physics Fifth Semester

Total Marks: 12

Credit Hours : 3(3 – 0)

Course Code: Phy – 507

Note: Attempt all questions.

Q.1 What is Thevenin's Theorem. Explain its procedure in simple steps. [03]

Q.2 What is rectification. How diode acts as half wave rectifier. Calculate average output voltage, root mean square current, form factor, ripple factor and efficiency.

[09]

GOVERNMENT COLLEGE UNIVERSITY, FAISALABAD



Paper for Govt. Affiliated colleges under semester system.

(Final Fall Semester 2019-20 Examination)

BS Physics 5th Semester

Course Title: Electronics-I

Course Code: PHY 507

Credit Hours: 3 (3-0)

Roll No _____

Academic Session: 2017-21

Time Allowed: 1hr-10 min

SUBJECTIVE PART

Maximum Marks: 24

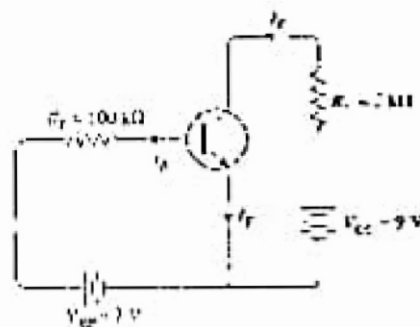
Q-2 a) What are diode clippers? Discuss the operation of biased diode clippers. (5)

b) Sketch the circuit of a half wave rectifier with a capacitor filter also describe its operation in detail. (3)

Q-3 a) Discuss the performance of a common base transistor amplifier in detail. (5)

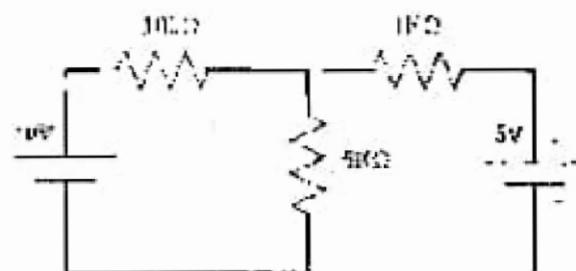
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b) Determine I_b , I_c , I_e and V_{ce} in the given circuit. ($\beta_{DC} = 100$) (3)



Q-4 a) Describe the construction of JFET and explain how pinch off is obtained in an n channel JFET. (5)

b) Using Superposition Theorem calculate the current flowing through 5K resistor of the given circuit. (3)





UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Fourth Semester – Spring 2022

Paper: Basic Electronics

Course Code: PHYS-2003

Roll No. 000000

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

- Q.1. Answer the following short questions. (15x2=30)
- (i) State the difference between a pentavalent atom and a trivalent atom. What are other names for these atoms?
 - (ii) Describe the process of recombination.
 - (iii) How is the pn junction formed?
 - (iv) State the two ways to forward bias a pn junction. Also draw a circuit diagram with proper labeling.
 - (v) Draw the ideal $I-V$ characteristic curve of a diode.
 - (vi) Define peak inverse voltage (PIV).
 - (vii) Describe the purpose of a filter circuit in power supply.
 - (viii) In what region of their characteristic curve are Zener diodes operated?
 - (ix) Draw circuit diagram of photodiode with proper biasing condition.
 - (x) Describe the difference between positive and negative clippers in terms of input/output relationships.
 - (xi) State Kirchhoff's voltage law.
 - (xii) What are the two types of bipolar junction transistors (BJTs)? How do they differ from each other?
 - (xiii) The BJT is a three terminal device. Name the three terminals.
 - (xiv) When a transistor is used as a switch, in what two states it is operated?
 - (xv) State Thevenin's theorem.

Answer the following questions

(3x10=30)

1. (a) Describe how electron and hole currents are produced in intrinsic (pure) semiconductors? Also explain how these currents could be modified by adding impurities to the intrinsic semiconductors? (5)
- (b) Explain the formation of depletion region in a pn -junction with the help of energy band diagram. (5)
2. (a) Draw a circuit diagram for the bridge full-wave rectifier and explain basic circuit operation. Write the expressions for peak output voltage and peak inverse voltage for the bridge circuit when diode drops are taken into account. (6)
- (b) The transformer in a bridge full-wave rectifier circuit is specified to have a 12 V rms secondary voltage for the standard 110 V across the primary. Determine peak secondary voltage, peak output voltage, and PIV rating for diodes in bridge circuit. (4)
3. (a) Describe the structure and basic operation of bipolar junction transistor (BJT). (5)
- (b) Draw a set of collector characteristic curves of bipolar junction transistor that show how the collector current, I_c , varies with the collector-to-emitter voltage, V_{CE} , for specified values of base current, I_B . Explain cutoff, active, saturation and break down regions of the curve. (5)

Bahauddin Zakariya University, Multan
 Analog Electronics -II (PHYS-310)
 BS - PHYSICS

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BS-472-19-23

Semester: 6th (Final)
 Max. Marks: 60

Session: 2019-2023
 Time allowed: 2.30 hrs

Attempt all the Questions

Q.1:

Each question has four possible answers. Encircle the correct one.

(10x1=10)

- i. FET controls
 (a) current (b) voltage (c) charge (d) capacitance
- ii. Collector feedback bias configuration requires ----- feedback
 (a) positive (b) negative (c) no (d) both positive and negative
- iii. Maximum value of collector current in biased transistor is
 (a) βI_{C1B} (b) $I_{C(sat)}$ (c) greater than I_E (d) $I_E - I_B$
- iv. Reverse h- parameter $h_{rb} =$ -----
 (a) 0 (b) 1 (c) -1 (d) r_e
- v. Small scale integration (SSI) contains number of circuits per chip
 (a) 30 (b) 100- 100000 (c) 30 -100 (d) less than 30
- vi. The transistor was invented in
 (a) 1940 (b) 1948 (c) 1960 (d) 1965
- vii. Small signal amplifier belongs to
 (a) Class A (b) Class B (c) Class C (d) Class AB
- viii. In OP-amp Common mode gain is
 (a) Unpredictable (b) unity (c) very low (d) very high
- ix. Low frequency response of an amplifier is determined in part by
 (a) voltage gain (b) type of transistor (c) the supply voltage (d) the coupling capacitance
- x. Phase shift oscillator has ----- RC circuit
 (a) one (b) two (c) three (d) four

Q.2:

(20x1=20)

Write short answer of the following.

- i. What is stability factor?
- ii. Discuss briefly thermal runaway in BJT.
- iii. Draw AC equivalent circuits of BJT for Common emitter.
- iv. What is Darlington connection?
- v. Define Etching and Epitaxy.
- vi. Enlist the characteristics of power supply
- vii. What do you know about active band pass filters?
- viii. What is role of Negative feedback in Op-Amp?
- ix. What is oscillator?
- x. Explain the term Slew rate.

Q.3:

What is h-parameter? Explain h-parameters of CE- configuration?

(10)

Q.4:

Derive the relation of voltage gain of inverting Amplifier?

(10)

Q.5:

What are Multivibrators? Explain circuit operation of A stable Multivibrator, also draw its output wave form.

(2+6+2=10)

EMERSON UNIVERSITY MULTAN
DEPARTEMENT OF PHYSICS
MIDTERM EXAMS 2022

Course title: Analoge Electronics 2 Course code:PHYS-310 Total marks:30
 Programme: BS physics Semester: 6th. Time: 1 hr & 20 mnts
 Course Instructor :Muhammad Zeshan Haider(Assistant professor)

Q. 1 Answer all the short questions briefly with reference of suitable diagram and proper reasoning with to the point logic.(18)

- (a) How can you achieve bias stability in a circuit where collector current decreases from its normal value? Give proper logic.
- (b) Draw the circuit diagram of PNP transistor in CE mode using universal bias and show the direction of currents.
- (c) How can you define a Q point of a transistor and draw the best location of Q point on a dc load line.
- (d) The Q point of a transistor is located at cut off. Give the consequences of this effect.
- (e) Give the detailed mechanism in which transistor can be destroyed.
- (f) Define a not stiff voltage divider bias circuit. What is value of base voltage in this condition?
- (g) A dc load line has a -ive slope. Justify the answer with proper logic and suitable circuit.
- (h) What are drawbacks of a Base bias circuit?
- (i) How can we achieve the stable Q point if external factors can be used to vary collector current in a collector feedback bias technique?

Q. 2 Answer the long questions in detailed concept using diagrams.

- (a) What are the points to label the Q point on a dc load line? Prove that a dc load line is a straight line. (05)
- (b) What is emitter bias circuit? Draw the circuit diagram of a PNP transistor using emitter bias technique in order to find a relation for collector current and discuss the Q point stability of this circuit against the variations in temperature effect. (07)