ELECTRONIC MECHANIC

NSQF LEVEL - 5

1st Year (Volume II of II)

ASSIGNMENT / TEST

SECTOR: Electronic & Hardware

Sector : Electronic & Hardware

Duration : 2 - Year

Trades : Electronic Mechanic 1ˢᵗ Year (Volume II of II) NSQF Level - 5 - Assignment/ Test

First Edition : February 2019, Copies : 1,000

Rs.100/-

FOREWORD

The Government of India has set an ambitious target of imparting skills to 30 crores people, one out of every four Indians, by 2020 to help them secure jobs as part of the National Skills Development Policy. Industrial Training Institutes (ITIs) play a vital role in this process especially in terms of providing skilled manpower. Keeping this in mind, and for providing the current industry relevant skill training to Trainees, ITI syllabus has been recently updated with the help of Mentor Councils comprising of various stakeholder's viz. Industries, Entrepreneurs, Academicians and representatives from ITIs.

National Instructional Media Institute (NIMI), Chennai has come up with instructional material to suit the revised curriculum for **Electronic Mechanic Assignment/Test 1st Year (Volume II of II) NSQF LEVEL - 5 in Electronic & Hardware Sector under Semester Pattern** required for ITIs and related institutions imparting skill development. The NSQF Level 5 will help the trainees to get an international equivalency standard where their skill proficiency and competency will be duly recognized across the globe and this will also increase the scope of recognition of prior learning. NSQF level 5 trainees will also get the opportunities to promote life long learning and skill development. I have no doubt that with NSQF level 5 the trainers and trainees of ITIs, and all stakeholders will derive maximum benefits from these IMPs and that NIMI's effort will go a long way in improving the quality of Vocational training in the country.

The Executive Director & Staff of NIMI and members of Media Development Committee deserve appreciation for their contribution in bringing out this publication.

Jai Hind

RAJESH AGGARWAL
Director General / Addl. Secretary,
Ministry of Skill Development & Entrepreneurship,
Government of India.

New Delhi - 110 001

PREFACE

The National Instructional Media Institute (NIMI) was established in 1986 at Chennai by then Directorate General of Employment and Training (D.G.E & T), Ministry of Labour and Employment, (now under Directorate General of Training, Ministry of Skill Development and Entrepreneurship) Government of India, with technical assistance from the Govt. of the Federal Republic of Germany. The prime objective of this institute is to develop and provide instructional materials for various trades as per the prescribed syllabi NSQF (Level 5) under the Craftsman and Apprenticeship Training Schemes.

The instructional materials are created keeping in mind, the main objective of Vocational Training under NCVT/NAC in India, which is to help an individual to master skills to do a job. The instructional materials are generated in the form of Instructional Media Packages (IMPs). An IMP consists of Theory book, Practical book, Test and Assignment book, Instructor Guide, Audio Visual Aid (Wall charts and Transparencies) and other support materials.

The trade theory book provides related theoretical knowledge required to enable the trainee to do a job. The test and assignments will enable the instructor to give assignments for the evaluation of the performance of a trainee. The wall charts and transparencies are unique, as they not only help the instructor to effectively present a topic but also help them to assess the trainee's understanding. The instructor guide enables the instructor to plan his schedule of instruction, plan the raw material requirements, day to day lessons and demonstrations.

IMPs also deals with the complex skills required to be developed for effective team work. Necessary care has also been taken to include important skill areas of allied trades as prescribed in the syllabus.

The availability of a complete Instructional Media Package (IMF) in an institute helps both the trainer and management to impart effective training.

The IMPs are the outcome of collective efforts of the staff members of NIMI and the members of the Media Development Committees specially drawn from Public and Private sector industries, various training institutes under the Directorate General of Training (DGT), Government and Private ITIs.

NIMI would like to take this opportunity to convey sincere thanks to the Directors of Employment & Training of various State Governments, Training Departments of Industries both in the Public and Private sectors, Officers of DGT and DGT field institutes, proof readers, individual media developers and coordinators, but for whose active support NIMI would not have been able to bring out this materials.

R. P. DHINGRA
Chennai - 600 032   **EXECUTIVE DIRECTOR**

ACKNOWLEDGEMENT

INTRODUCTION

ASSIGNMENT/TEST

This contains Assignment/Test concerning to the trade theory topic of each exercises of the **1st Year (Volume II of II) Electronic Mechanic Trade NSQF Level-5** under Electronic and Hardware Sector. It may be noted that the assignments have direct relationship with the knowledge objectives given in the manual on Trade Practical and also with the contents presented in the manual on Trade Theory. The results of the assignment/test indicate how far the objectives which are predetermined have been achieved by the learners.

TRADE PRACTICAL

The trade practical manual is intented to be used in workshop . It consists of a series of practical exercises to be completed by the trainees during the **1st Year (Volume II of II) NSQF Level-5** course of the **Electronic Mechanic** trade supplemented and supported by instructions/ informations to assist in performing the exercises. These exercises are designed to ensure that all the skills in compliance with NSQF LEVEL - 5

The manual is divided into Ten modules. The titles of the ten modules are given below.

Module 1: Transistor Amplifier

Module 2: Oscillators

Module 3: Wave shaping circuits

Module 4: Power Electronic Components

Module 5: MOSFET & IGBT

Module 6: Opto - Electronics

Module 7: Basic Gates, Combinational Circuits, Flip Flops

Module 8: Electronic Circuit Simulator

Module 9: Counter & Shift Registers

Module 10: Op-Amp & Timer 555 Applications

TRADE THEORY

The manual of trade theory consists of theoretical information for the **1st Year (Volume II of II) Electronic Mechanic Trade NSQF Level-5.** The contents are sequenced according to the practical exercise contained in the manual on Trade practical. Attempt has been made to relate the theoretical aspects with the skill covered in each exercise to the extent possible. This co-relation is maintained to help the trainees to develope the perceptional capabilities for performing the skills.

The Trade theory has to be taught and learnt along with the corresponding exercise contained in the manual on trade practical. The indicating about the corresponding practical exercise are given in every sheet of this manual.

It will be preferable to teach/learn the trade theory connected to each exercise atleast one class before performing the related skills in the shop floor. The trade theory is to be treated as an integrated part of each exercise.

The material is not the purpose of self learning and should be considered as supplementary to class room instruction.

CONTENTS

LEARNING / ASSESSABLE OUTCOME
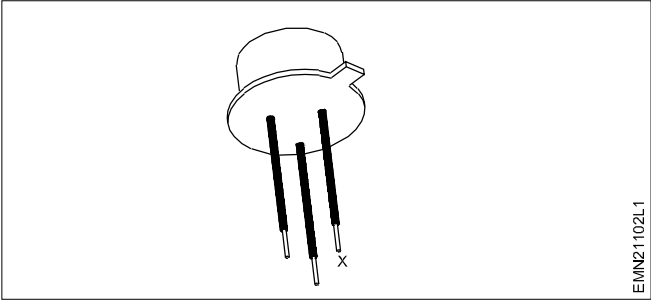
On completion of this book you shall be able to

- **Construct, test and verify the input/output characteristics of various analog circuits.**

- **Plan and construct different power electronic circuits and analyze the circuit functioning.**

- **Select the appropriate optoelectronic components and verify the characteristics in different circuits.**

- **Simulate and analyze the analog and digital circuits using Electronic simulator software.**

- **Identify, place, solder, desolder and test different SMD discrete components and ICs package with due care and following safety norms using proper tools/setup.**

- **Construct and test different circuits using ICs 741 Operational Amplifiers & ICs 555 Time, Linear integrated circuits and Execute the result.**

Choose the correct answer

1　What is the power handling capacity of high power transistors?

　　A　2 to 10 watts

　　B　5 to 10 watts

　　C　Less than 2 watts

　　D　More than 10 watts

2　High power transistors are used usually mounted on a physically large piece of metal known as ...

　　A　heat sink

　　B　fiber sink

　　C　plastic sink

　　D　ceramic sink

3　The function of the emitter region of a transistor is to ...
　　A　collects current carrier

　　B　control flow of voltage

　　C　control flow of current

　　D　produce current carrier

4　What is the name of the terminal marked 'x' of the transistor shown in Figure?

　　A　Base

　　B　Shield

　　C　Emitter

　　D　Collector

5　In some power transistors the metal body itself is the...

　　A　base

　　B　emitter

　　C　collector

　　D　heat sink

6　The current gain in common emitter configuration is indicated by the symbol...

　　A　β (beta)

　　B　δ (Delta)

　　C　α (alpha)

　　D　χ (Gamma)

7　The common collector configuration is also known as...

　　A　voltage divider

　　B　voltage doubler

　　C　emitter follower

　　D　collector follower

8　In transistor type code BC107, the second letter 'c' indicates that it is a ...

　　A　low power AF transistor

　　B　high power AF transistor

　　C　radio frequency transistor

　　D　medium power AF transistor

9　V_{EB}(max) stands for ...

　　A　maximum DC current gain

　　B　maximum permissible emitter base voltage

　　C　maximum permissible collector base voltage

　　D　maximum permissible collector emitter base voltage

10　What is the ratio of the change in output current to the change in the input current in transistor?

　　A　Amplification

　　B　Emitter follower

　　C　Voltage regulator

　　D　Impedance matching

11　The value of β of a transistor is generally ...

　　A　1

　　B　above 500

　　C　less than 1

　　D　between 20 and 500

Choose the correct answer

1 Which type of gain is produced by the common base transistor configuration?

   A power gain

   B voltage gain

   C current gain

   D resistance gain

2 The transistors used in digital circuits are usually operate in the ...

   A linear region

   B active region

   C break down region

   D saturation and cut off regions

3 The Q point at the top of DC load line of CE amplifier represent the....

   A cut off point

   B minimum current gain

   C maximum current gain

   D intermediate current gain

4 In a transistor the three current parameters are...

   A α ,β,χ

   B I_E,I_B,I_C

   C db, Av, Ai

   D V_{BE},V_{BC},V_{CE}

5 The transistor is at cut-off condition when both the emitter and collector junctions are....

   A reverse biased

   B forward biased

   C no signal biasing

   D unbalanced biasing

6 The Q point at the bottom of DC load line of CE amplifier represents the....

   A cut off point

   B minimum current point

   C maximum current point

   D intermediate current point

7 Which resistor protects the transistor due to excessive current?

   A Bias resistor

   B Load resistor

   C Base resistor

   D Emitter resistor

8 Which instrument is used to trace transistor characteristics curve?

   A Data tracer

   B Curve tracer

   C Signal tracer

   D Circuit tracer

9 The current gain of CB amplifier is.....

   A Beta

   B Alpha

   C Theta

   D Omega

10 Which is transistor current ratio Beta?

   A I_E I_C

   C I_C / I_E

   B I_C / I_B

   D I_E / I_B

11 The collector characteristics of the transistors, the middle point of the load line is called ...

   A early effect

   B cut off point

   C quiescent point

   D static collector curves

12 In a transistor amplifier the input voltage 80 mV and the output voltage 7.2V, then the voltage gain is....

   A 90

   B 180

   C 270

   D 360

13 The operating point of a transistor is also known as....

    A cut off point

    B turning point

    C saturation point

    D quiescent point

14 The intersection point of DC and AC load lines of the transistor represents ...

    A biasing

    B voltage gain

    C current gain

    D operating point

15 The transistor is operated at a saturated condition when both the emitter and collector are in ...

    A self bias

    B forward bias

    C reverse bias

    D balanced bias

16 Transistor is normally off without current unless forward voltage is applied in the ...

    A current flow circuit

    B base emitter circuit

    C power output circuit

    D collector emitter circuit

17 Which semiconductor component is used as automatic switch ?

    A UJT

    B FET

    C Diode

    D Transistor

18 When used as switch the transistor is operated into cut off or saturation by the base current varied by the ...

    A base current

    B base bias voltage

    C emitter base voltage

    D collector base voltage

19 The application of transistor as a switch is used in ...

    A relay circuit

    B filter circuit

    C rectifier circuit

    D RC delay circuit

20 What is the voltage drop across the collector and emitter of transistor?

    A 4.5 V
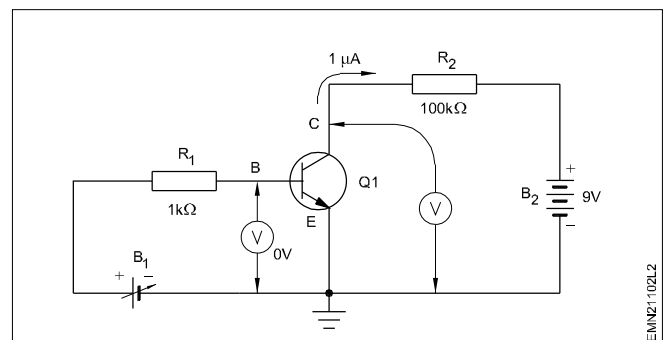
    B 6.0 V

    C 9.0 V

    D Zero volt

Electronic and Hardware   Assignment for Exercise 2.1.102 to 2.1.113
Electronic Mechanic - Transistor amplifier - Transistor biasing

Choose the correct answer

1 Which is the thin layer in transistor construction?

    A Drain layer

    B Base layer

    C Emitter layer

    D Collector layer

2 In a NPN transistor majority carriers are ...

    A holes

    B protons

    C neutrons

    D electrons

3 Which junction generated electrons are moving through?

A Gate junction

B Base emitter junction

C Base collector junction

D Collector emitter junction

4 The ratio of the change in output current to the change in the input current is called the ...

A filtering

B coupling

C rectification

D amplification

5 In general purpose transistor, the value of I_C and I_E will be in the order of...

A Ampere

B milliamps

C nanoamps

D microamps

6 The reverse leakage current in general purpose transistor is in the order of....

A amphere to microamps

B milliamps to nanoamps

C milliamps to microamps

D nanoamps to microamps

7 The base current in general purpose transistors,is.....

A Ampere

B milliamps

C nanoamps

D microamps

8 When the base - collector is reversed biased,in NPN transistor then a more positive voltage appears at the...

A base

B emitter

C collector

D base - emitter

9 The relationship between I_E, I_B and I_C is given by the equation....

A $I_E = I_B + I_C$

B $I_B = I_E + I_C$

C $I_C = I_E + I_B$

D $I_E = I_B = - I_C$

10 In a PNP transistors the minority current carriers are....

A holes

B neutron

C protons

D electrons

11 The point of intersection of DC and AC load lines represents ...

A current gain

B bias voltage

C voltage gain

D operating point

12 Voltage divider biasing of transistor is also known as...

A base bias

B collector bias

C universal bias

D emitter feedback bias

13 Which biasing method is commonly used in digital cirucit?

A Base bias

B Emitter bias

C Collector bias

D Universal bias

14 The purpose of voltage amplifier is used to increase the level of weak input signal into ...

A low output signal

B high output signal

C noisy output signal

D normal output signal

15 Which amplifier is used at output stage?

A Power amplifier

B Current amplifier

C Voltage amplifier

D RC coupled amplifier

16 Which amplifier retains the shape of the input signal at the output?

A Linear amplifier

B Current amplifier

C Voltage amplifier

D RC coupled amplifier

17 The sinusoidal collector current flows through the collector resistor and produce....

A   sine wave output

B   square wave output

C   saw tooth wave output

D   Triangular wave output

18 The most stable biasing technique used in the liear transistor circuit is....

A   base bias

B   emitter bias

C   collector bias

D   voltage divider bias

19 If a transistor is properly biased then,collector current I_c flows in the order of....

A   Ampere

B   milliamps

C   nanoamps

D   microamps

20 Which parameter of the transistor amplifier is the ratio of output to the input?

A   Biasing

B   Impedance

C   Voltage gain

D   Peak to peak

21 In transistor amplifier the coupling capacitor blocks the....

A   AC

B   DC

C   AC & DC

D   Resistance

22 What is the formula used for voltage gain of an amplifier?

B $\dfrac{V_{in}}{i_{in}}$

D $\dfrac{V_{out}}{V_{in}}$

A $\dfrac{i_c}{i_b}$

C $A.V_{in}$

23 The input voltage V_{in} is 80mV (p-p) and the corresponding output voltage V_{out} is 7.2 V(p-p) then the voltage gain Av is..

A   50

B   60

C   70

D   90

24 The base voltage of 1mV given to the amplifier with a gain of 90 produces the output....

A 70 mV

B 80 mV

C 90 mV

D 100 mV

25 The power gain of amplifier is expressed in...

A   watts

B   decibel

C   ampere

D   kiloHertz

Electronic and Hardware   Assignment for Exercise 2.1.102 to 2.1.113
Electronic Mechanic - Transistor amplifier - Common base amplifier

Choose the correct answer

1   What is the current gain of common base transistor amplifier?

A   one

B   two

C   infinity

D   less than one

2   The input impedance of common base transistor amplifier is ...

A   low

B   high

C   Infinity

D   very high

3 The formula used to calculate the current gain of common base amplifier is...

C $\dfrac{I_C}{I_E}$

A $\dfrac{I_E}{I_C}$

B $\dfrac{I_C}{I_{E+1}}$

D $\dfrac{I_E}{1/I_C}$
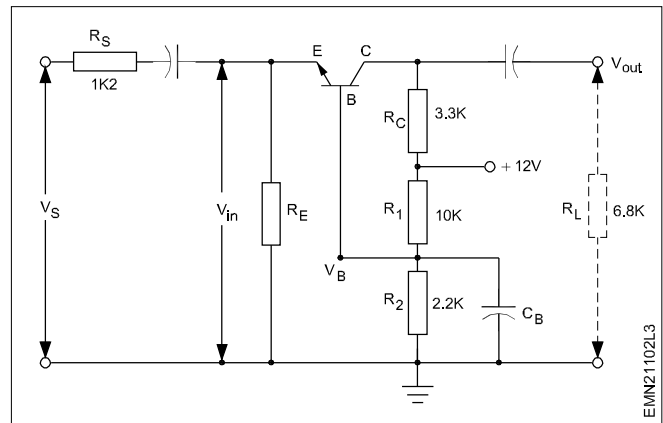
4 The voltage gain of common base transistor amplifier is...

  A low

  B high

  C very low

  D very high

5 The power gain of the common base transistor amplifer is...

  A Low

  B high

  C Infinity

  D very high

6 What is the base voltage V_B as shown in the fig?

  A 1.16V

  B 2.16V

  C 3.16V

  D 4.16V

7 For which application, common base amplifier is used?

  A Low frequency applications

  B High frequency applications

  C Audio frequency applications

  D For impedance matching purpose

Electronic and Hardware   Assignment for Exercise 2.1.102 to 2.1.113
Electronic Mechanic - Transistor amplifier - Transistor CE amplifier

Choose the correct answer

1 The function of bypass capacitor in CE amplifier is....

  A decreased the gain of the amplifier

  B increase the high input impedance

  C to behave as short circuit for DC signal

  D to provide a low resistance path for the AC signals

2 The effects of bypass capacitor is....

  A increase input impedance

  B increased gain of the amplifier

  C decreased gain of the amplifier

  D changing voltage gain of signal

3 If the emitter resistor R_E is bypassed,then the collector current....

  A increases

  B decreases
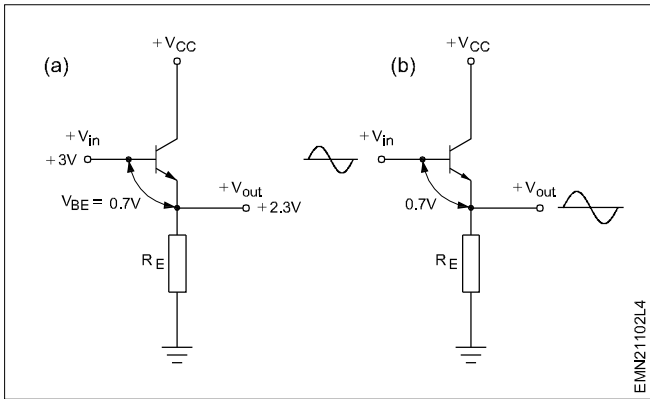
  C remains same

  D diverted through capacitor

4 The disadvantage of bypassed emitter resistor in the CE amplifier circuit is ...

  A decreased input impedance

  B gain of the amplifier increase

  C increase in the base current

  D the changing voltage gain may results in a distorted output signal

Choose the correct answer

1 Refer figure, RE =4.7k and re=25w then find Av value ?

A 0.05

B 0.88

C 0.995

D 0.998

2 The application of common emitter configuration is...

A voltage regulator

B impedance matching

C audio frequency application

D video frequency application

3 An emitter follower is also called as

A gate collector amplifier

B base collector amplifier

C emitter collector amplifier

D common collector amplifier

4 Emitter follower can be used to match....

A low impedance

B constant impedance

C high to low impedance

D low to high impedance

5 The common collector transistor configuration is also known as....

A emitter follower

B common gate amplifier

C common drain amplifier

D common source amplifier

Choose the correct answer

1 A method for obtaining a very high level of current gain, using two transistors is known as ...

A current pair

B twisted pair

C darlington pair

D transistors pair

2 How to calculate gain in darlington transistors pair?

A $\beta = \beta_1 + \beta_2$

B $\beta = \beta_{Q2} - \beta_{Q2}$

C $\beta = \beta_{Q1} + \beta_{Q2}$

D $\beta = \beta_{Q1} \times \beta_{Q2}$

3 Darlington pair contains two transistors but treated like one transistor because ...

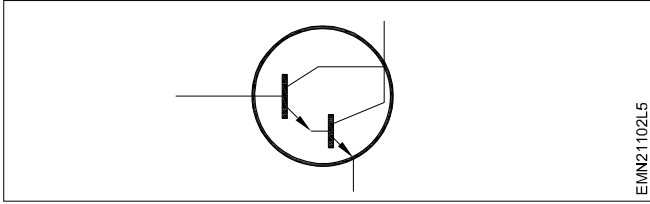A low gain

B high gain

C very low gain

D very high gain

4 What is the required base emitter voltage of darlington pair to turn ON?

A 1.3V

B 1.4V

C 1.5V

D 1.6V

5 What is the name of the electronic symbol?

EMN2 1102L5

A Twisted pair

B Darlington pair

C Current controlled pair

D Voltage controlled pair

6 What is the disadvantage of darlington pair transistor?

A Negative feedback

B Fast switching speed

C Slow switching speed

D Higher saturation voltage

7 One of the disadvantage of darlington pair is ...

A negative feedback

B fast switching speed

C low saturation voltage

D slow switching speed

Electronic and Hardware   Assignment for Exercise 2.1.102 to 2.1.113
Electronic Mechanic - Transistor amplifier - Transistor cascaded amplifier

Choose the correct answer

1 Amplifiers designed to amplify audio frequency signals are called as ...

A AF amplifier

B RF amplifier

C AM amplifier

D video amplifier

2 Example of output transducers is ...

A speaker

B Thermistor

C Microphone

D potentiometer

3 In common emitter amplifier, the current / voltage gain is...

A low

B high

C very low

D very high

4 How to calculate gain in cascade amplifier ?

A $GA_2 + GA_3$

B $GA_3 + GA_4$

C $GA_1 + GA_2 + GA_3$

D $GA_1 \times GA_2 \times GA_3$

5 The output of one amplifier stage to the input of the next enabling maximum transfer of signal from one to other is known as...

A coupling

B transducers

C amplification

D audio frequency

6 Which type of amplifier is used to operate the loudspeaker?

A IF amplifier

B RF amplifier

C Power amplifier

D Voltage amplifier

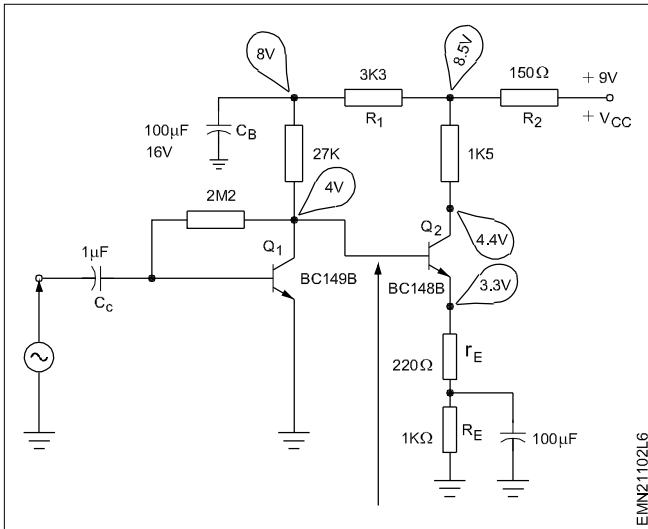7 Cascaded amplifiers are also known as ...

A AF amplifier

B RF amplifier

C multi stage amplifier

D single stage amplifier

8 A.F amplifiers also used in ...

A modem

B PA system

C motherboard

D Converter stage

9 What type of coupling is used between two stages in this circuit?

A RC coupling

B Direct coupling

C Indirect coupling

D Impedance coupling

10 Why the complementary symmetry amplifier is used?

A To minimize the gain

B To get less distortion

C To get more voltage gain

D To eliminate the transformer

Electronics and Hardware   Assignment for Exercise 2.1.102 to 2.1.113
Electronic Mechanic - Transistor amplifier - Classes of amplifier

Choose the correct answer

1 Voltage amplifiers are intended to amplify very weak signals in the range of ..

A μV to V

B μV to mV

C mV to hertz

D μV to hertz

2 The main disadvantage of class A amplifier is ...

A low efficiency

B high efficiency

C very low efficiency

D very high efficiency

3 The percentage of low efficiency in class A amplifier is...

A 5%

B 10%

C 15%

D 30%

4 In class B amplifier,transistor biasing is provided at ...

A near saturation

B top of load line

C near cut off point

D middle of load line

5 In class B push pull amplifier,current in one transistor increases and in other transistor

A increases

B decreases

C remains at zero

D remains constant

6 One of the advantage of push pull amplifier is ...

A low efficiency

B high efficiency

C linear amplitude

D non linear amplitude

7 The distortion caused in the class B push pull amplifier output is known as...

A non-liner distortion

B crossover distortion

C first harmonic distortion

D second harmonic distortion

8 In class B push pull amplifier, when the transistors cross over to conduction is known as...

A non- linear distortion

B cross over distortion

C first harmonic distortion

D second harmonic distortion

9 Example of single ended amplifiers is...

A class A

B class B

C class C

D class AB

10 Which voltage is used for DC biasing method for class B amplifier to avoid cross over distortion?

A 0.5 to 0.6V

B 0.6 to 0.7V

C 0.7 to 0.8V

D 0.8 to 0.9V

11 The angle of input signal of the class A amplifier is...

A 175°

B 180°

C 260°

D 360°

12 The efficiency of class B amplifier is ...

A 50%

B 60%

C 80%

D 100%

13 The disadvantage of class C amplifier is ...

A no noise

B less noise

C more noise

D very less noise

Electronic and Hardware   Assignment for Exercise 2.1.102 to 2.1.113
Electronic Mechanic - Transistor amplifier - Tuned amplifier

Choose the correct answer

1 The radio frequency amplifiers are working

A above 10 kHz

B above 15 kHz

C above 20 kHz

D above 50 kHz

2 Amplifiers which amplify a specific frequency or narrow band of frequencies are called ...

A RF amplifier

B video amplifier

C audio amplifier

D tuned amplifier

3 One of the advantage of tuned amplifier is...

A low selectivity

B high selectivity

C low power loss

D high power loss

4 The ratio of change in output current to the change in the input current is called....

A regulation

B oscillation

C attenuation

D amplification

Choose the correct answer

1 What is the trouble shooting symptom marked 'x' in the cascaded amplifier?
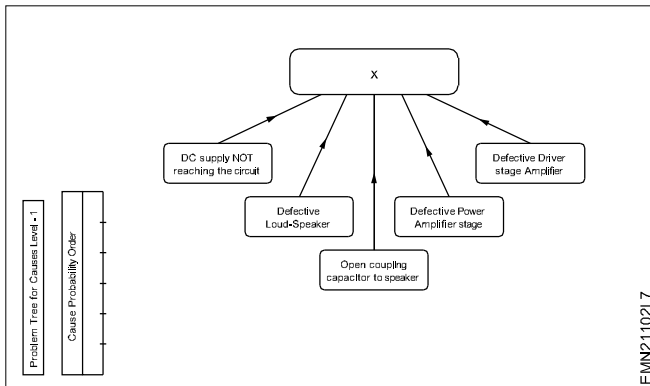
A noise

B amplifier dead

C low audio output

D high audio output

2 To troubleshoot an amplifier circuit,there are two main types of test carried out are dynamic test and...

A signal test

B static test

C component test

D trial and error test

3 Dynamic trobleshooting requires an output amplitude adjustable type...

A CRO

B power supply

C signal source

D digital multimeter

4 Electrolytic capacitors are checked by opening one of its leads and tested by using...

A ammeter

B Voltmeter

C ohm meter

D power supply

5 Signal injection test carried out in troubleshooting amplifier stage is also known as...

A static test

B dynamic test

C transistor test

D trial and error test

Choose the correct answer

1. Which formula is used to calculate the impedance of series/ parallel LC resonance circuit?

   D $Z = \sqrt{R^2 + (x_c - x_L)^2}$

   C $Z = \sqrt{R^2 + (x_c - x_L)}$

   A $Z = \sqrt{R + C^2}$

   B $Z = \sqrt{(X_C - X_L)}^{2}$

2. At resonanance, the impedance of parallel LC circuit is...

   A   infinity

   B   constant

   C   minimum

   D   maximum

3. parallel resonance circuit is also called as ...

   A   power magnification circuit

   B   voltage magnification circuit

   C   current magnification circuit

   D   resistance magnification circuit

4. In parallel resonance, phase difference between the circuit current and applied voltage is ...

   A   one

   B   zero

   C   less than one

   D   more than one

5. The quality factor of series resonance circuit?

   A X_L/R

   B X_L/C

   C X_L/P

   D X_L/Q

6. In series resonance, the resonant frequency is ...

   A $\dfrac{1}{2 \ \sqrt{Lc}}$

   B $\dfrac{1}{2 \ \sqrt{Rc}}$

   C $\dfrac{1}{2 \ Rc}$

   D $\dfrac{1}{2 \ cR}$

7. In series resonant frequency, the impedance will be ...

   A   zero

   B   infinity

   C   minimum

   D   maximum

8. Which transistor is used to operate the colpitt's oscillator?

   A   AC 127

   B   AC 188

   C   AC 148

   D   BF 194B

9. Which type of oscillator is the simplest circuit to generate sinusoidal waves?

   A   Crystal oscillator

   B   Colpitt's oscillator

   C   RC phase shift oscillator

   D   Parallel - fed hartley oscillator

10. How much is the frequency drift in crystal controlled oscillators?

   A   10 Hz per 1 MHz

   B   100 Hz per 1 MHz

   C   1000 Hz per 1 MHz

   D   Less than 1 Hz per 1 MHz

Choose the correct answer

1 The ouput waveform of an oscillator may be sinusoidal such oscillators are known as a ...

   A multivibrators

   B harmonic oscillators

   C relaxation oscillators

   D non sinusodial oscillator

2 The frequency of oscillation produced by the resonant frequency is given by ...

   A $F = \dfrac{1}{2\ \sqrt{Lc}}$

   B $AF = \dfrac{A}{1 - A\beta}$

   C $F = \dfrac{1}{2\ Rc}\ Hz$

   D $C = \dfrac{C_{1A}.C_{1B}}{C_{1A} + C_{1B}}$

3 One of the basic requirement for an oscillator is ...

   A must be negative feed back

   B stable AC power supply source

   C unstable DC power supply source

   D generate positive feedback from output into input

4 Which type of oscillators are used to generate very high frequency (VHF) oscillation?

   A LC oscillator

   B Crystal oscillator

   C Wein bridge oscillator

   D RC phase shift oscillator

5 Which circuit is determined by the frequency of LC tank circuit?

   A Amplifier

   B Oscillator

   C Multiplexer

   D Demodulator

6 What is the reason for frequency instability problem in LC oscillator circuit?

   A Changes in temperature

   B Mismatched quartz crystal

   C Deviation in inductance valve

   D Deviation in capacitance valve

7 How does the crystal oscillator generates frequency?

   A By the LC tank circuit

   B By the RC time constant

   C By the piezoelectric effect

   D By the negative feed back loop

8 How many constant period is required to fully charge a capacitor?

   A 3 time constants

   B 5 time constants

   C 7 time constants

   D 10 time constants

Choose the correct answer

1 Which is a wave shaping circuit used to remove portion on the applied wave?

   A Tripler

   B Clipper

   C Doubler

   D Clamper

2 What is the use of unbiased clipper circuit?

   A Clip both half cycle

   B Clip any one of the half cycle

   C Clip one part of the one cycle

   D Clip both part of the half cycle

3 Which electronic component is used in clipper circuit?

   A Diode

   B Zener diode

   C Varactor diode

   D Light emitting diode

4 Which type of clipper circuit is working according to biasing?

   A Negative clipper

   B Unbiased clipper

   C Shunt diode clipper

   D Series diode clipper

5 Clipper circuit is a ...

   A Wave shaping circuit

   B Allow both half cycle with control

   C Remove the part of the cycle signal

   D Allow both half cycle without control

6 Classification of the clipper circuit with respect to configuration technique is....

   A Positive clipper

   B Biased clipper

   C Negative clipper

   D Series diode clipper

7 Positive clipper circuit allows the....

   A positive

   B negative

   C partial positive half

   D partial negative half

8 Which circuit allows part of both half cycle by biasing diodes?

   A Biased clipper

   B Positive clipper

   C Negative clipper

   D Combination clipper

9 Which diode is used for clipper circuit?

   A 0A34

   B 1N34

   C 127V

   D 1N4001

10 When does the diode allows the signal?

   A unbiased

   B reverse bias

   C forward bias

   D conditional bias

11 Diode is used as conditional clipper added the DC source mode in....

   A star

   B series

   C shunt

   D combined

12 What is the cut-in voltage of silicon diode?

   A 0.3V DC

   B 0.7V DC

   C 1.1V DC

   D 1.2V DC

13 What is the cut-in voltage of germanium diode?

   A 0.3V DC

   B 0.7V DC

   C 1.1V DC

   D 1.2V DC

14 Which is the output waveform of the positive clipper circuit?

   A

   B

   C

   D

15 Which is the output waveform of the negative clipper circuit?

   A

   B

   C

   D

16 The circuit removes a small portion of the negative half cycle is known as.....

   A unbiased clipper

   B biased negative clipper

   C biased positive clipper

   D biased combined clipper

17 The circuit removes a small portion of the positive half cycle is known as....

   A unbiased clipper

   B biased positive clipper

   C biased negative clipper

   D biased combined clipper

18 The basic components required for a clipper circuit are....

   A diode and resistor

   B diode and transistor

   C resistor and capacitor

   D transistor and resistor

19 Which portion of the input voltage is clipped by the combination clipper?

   A Positive portion

   B Negative portion

   C Both peaks of the input

   D Part of the positive portion

20 What is the other name of the combination clipper?

   A Dual clipper

   B Biased clipper

   C Divided clipper

   D Unbiased clipper

21 In combination clipper circuit for both half cycles how many sources needed to take output signal?

   A DC current

   B AC voltage

   C Dual source DC

   D Single source DC

22 Application of the combination clipper circuit is used in ...

   A IF amplifier

   B Radar circuit

   C Audio amplifier

   D Stereo amplifier

23 Which circuit is referred as voltage limiter?

   A Tuning

   B Clipping

   C Clamping

   D Wave shaping

24 Output of clipper circuit is....

   A clipper timing

   B clipped amplitude

   C clipped frequency

   D clipped width signal

25 Which circuit is used to place either +ve or -ve peak of a signal at a desired level?

A Tripler

B Clipper

C Doubler

D Clamper

26 The clamper circuit is also known as....

A DC signal level shifter

B AC signal level shifter

C AC voltage level shifter

D DC voltage level shifter

27 Which circuit pushes the signal downwards?

A Positive clipper

B Negative clipper

C Positive clamper

D Negative clamper

28 In clamping circuit signal moves negative peak of the signal level coincide with ...

A One

B Two

C Zero

D Negative

29 How many minimum components needed to build clamper circuit?

A 1

B 2

C 3

D 4

30 Which is require to cause additional shift done by clamping circuit?

A AC supply

B DC supply

C AC current

D DC current

31 In clamper circuit level is shifted either upward or downward but the shape of waveform remains ...

A low

B high

C zero

D same

32 In clamper circuit the peak to peak value is...

A low

B zero

C same

D change

33 In clamper circuit input AC signal and output AC signal frequency measured is....

A low

B zero

C same

D change

34 Which value affect the waveform in clamper circuit?

A Coil

B Diode

C Capacitor

D Transistor

35 In clamper circuit time is calculated by the forumla ...

A $T = R/C$

B $T = R - C$

C $T = R \times C$

D $T = R + C$

36 To modify the positive clamper circuit by reconnecting the diode in ...

A self bias

B base bias

C forward polarity

D reverse polarity

37 Which type of circuit shift orginal signal in a vertical downward direction when the diode is forward connected?

A Peak clipper

B Positive clamper

C Negative clamper

D Combined clipper

38 The basic components required for a clipping circuit are...

A Diode and resistor

B Diode and capacitor

C Transistor and diode

D Capacitor and resistor

39 What is the function of clipper circuit?

A Regulation

B Rectification

C Amplification

D Waveshaping

40 One of the application of clamper circuit is in...

A radars

B radio receivers

C power supplies

D storage counters

41 Why clamper circuits are used?

A For positive peak clipping

B For slicing both the peaks

C For negative peak clipping

D For DC component restoration

42 What is the name of the circuit shifts the waveform without disturbing shape?

Fig 1
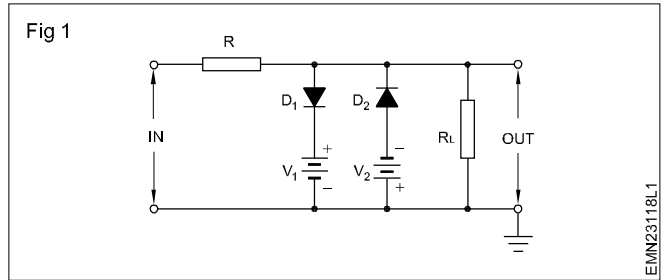
A Clipper circuit

B Clamper circuit

C Biased clipper circuit

D Combination clipper circuit

43 What is the name of the circuit?

A Positive clamper

B Combination clipper

C Biased positive clipper

D Biased negative clipper

Choose the correct answer

1 FET stands for ...

  A Field Effect Transistor

  B Field Emitter Transistor

  C Field Effect Transformer

  D Field Efficiency Transistor

2 Bipolar transistor is a ...

  A diode controlled device

  B power controlled device

  C current controlled device

  D voltage controlled device

3 FET is a ...

  A power controlled device

  B current controlled device

  C voltage controlled device

  D resistance controlled device

4 In FET, the main current is controlled by the....

  A gate terminal

  B drain terminal

  C source terminal

  D collector terminal

5 FETs are also known as ...

  A unipolar diode

  B unipolar device

  C unipolar resistor

  D unipolar receiver

6 JFET stands for ...

  A Joint Field Effect Transistor

  B Joules Field Effect Transistor

  C Java Field Effect Transistor

  D Junction Field Effect Transistor

7 How many PN junctions are available in a JFET?

  A 2

  B 3

  C 4

  D 5

8 What is the input impedance of FET amplifier in common gate configuration?

  A Low

  B High

  C Very Low

  D Very High

9 In depletion type MOSFET, the drain current flows with zero bias at....

  A gate

  B drain

  C shield

  D source

10 How does electrons flow through a P channel JFET?

  A From drain to source

  B From gate to source

  C From source to drain

  D From source to gate

11 JFET is considered as a voltage controlled device because ...

  A I_d is controlled by gate voltage

  B I_g is controlled by drain voltage

  C I_g is controlled by source voltage

  D I_d is controlled by source voltage

12 I_{DSS} can be defined as ...

  A The minimum possible current

  B The maximum possible current

  C The maximum possible drain current

  D The maximum possible current with V_{GS} held at OV

13 The drain current through FET channel is decreased due to the increased width of....

  A Depletion region

  B temperature change

  C doping concentration

  D Substrate connecting

14 The N type semiconductor area between the drain and source is called...

A gate

B device

C junction

D channel

15 The important characteristics of JFET is its ...

A low input impedance

B high input impedance

C very low input impedance

D very high input impedance

16 Which is the package type for N-channel JFET BF245B?

A T0 - 72

B T0 - 82

C T0 - 92

D T0- 102

17 What is the maximum drain - source voltage (VDs) for BFW 10?

A 20 V

B 30 V

C 40 V

D 50 V

18 Which device is an unipolar transistor?

A UJT

B BJT

C FET

D IGBT

19 What is the use of FET?

A Current controlled device

B Voltage controlled device

C Frequency controlled device

D Resistance controlled device

Electronic and Hardware   Assignment for Exercise 2.4.122 to 2.4.129
Electronic Mechanic - Power Electronic Components - SCR

Choose the correct answer

1 SCR stands for...

A Silicon Convey Rectifier

B Silicon Controlled Rectifier

C Silicon Controlled Resistor

D Silicon Connected Resistor

2 Which type of family SCR belongs to?

A Diode

B Resistor

C Thyristor

D Transistor

3 In SCR, the gate controls ...

A filtration

B rectification

C amplification

D presentation

4 The application of SCR is to control the delivery of....

A power

B energy

C voltage

D current

5 The current through the SCR can be turned off by reducing below a critical value is called holding ...

A power

B current

C voltage

D frequency

6 If the current of SCR increases, the forward breakover voltage will ...

A increase

B decrease

C less then zero

D more then zero

7 Pulse gate triggering is achieved by means of ...

   A UJT circuit

   B DIAC circuit

   C an LC circuit

   D TRIAC circuit

8 The duration of time required for the gate current to turn ON the SCR is....

   A 1 to 2μS

   B 5 to 10μS

   C 10 to 25μS

   D 25 to 30μS

9 An SCR is a solid state equivalent of ...

   A triode

   B pentode

   C normal diode

   D gas filled triode

10 How many layers of PN junctions available in the SCR?

   A Six

   B Two

   C Four

   D Three

11 SCR is a ...

   A electrical device

   B mechanical device

   C unidirectional device

   D Bidirectional device

12 Combination of SCR is ...

   A rectifier and resistor

   B rectifier and inductor

   C rectifier and capacitor

   D NPN and PNP transistor

13 The control element of SCR is ...

   A gate

   B anode

   C source

   D cathode

14 When the SCR is turned ON, the voltage across it is about ...

   A 1V

   B 10V

   C 11V

   D Zero

15 The current through the SCR is turned OFF only by reducing the critical current called....

   A load current

   B forward current

   C holding current

   D reversing current

16 In SCR, duration of gate current pulse required to turn ON is....

   A 10 mS

   B 20 mS

   C 50 mS

   D 100 mS

17 In SCR, reverse bias voltage is increase slowly from zero to higher value is called as ...

   A minimum forward blocking voltage

   B minimum reverse blocking voltage

   C maximum forward blocking voltage

   D maximum reverse blocking voltage

18 What is adjusting range of SCR?

   A 80° to 100°

   B 90° to 180°

   C 90° to 360°

   D 100° to 120°

19 In low power SCR the minimum forward Gate current required to turn ON is....

   A 10μA to 50 μA

   B 50μA to 100 μA

   C 100μA to 300 μA

   D 300μA to 500 μA

20 How many layers of PN junctions are used in SCR fabrication?

A Two layer two junctions

B Three layer four junctions

C Four layer three junctions

D Three layer Three junctions

21 In SCR with forward biased condition, when a gate current is applied to the gate terminal....

A reverse current turned off

B forward current conduction stops

C reverse current conduction commences

D forward current conduction commences

22 The ressitance valve between the anode cathode terminals of a good SCR is....

A 10Ω to 50Ω

B 50Ω to 100Ω

C 100Ω to 500Ω

D Indefinite resistance

23 What is the resistance valve between anode and cathode terminals of SCR?

A 10Ω to 50Ω

B 50Ω to 100Ω

C 100Ω to 1KΩ

D Infinity value

Electronic and Hardware   Assignment for Exercise 2.4.122 to 2.4.129
Electronic Mechanic - Power Electronic Components - Solid state relay

Choose the correct answer

1 SSR stands for ...

A Solid State Relay

B Solid Stable Relay

C Solid Stress Relay

D Solid Service Relay

2 The advantage of SSR compare to electromachanical relay is....

A sparking

B decreased resistance

C increased resistance

D Totally silent operation

3 Solid state relays are composed of semiconductor materials including thyristors and....

A Diodes

B resistors

C capacitors

D transistors

4 Which heat sink material is mostly used to remove the heat in industrial applications?

A Gold

B Silver

C Copper

D Aluminium

5 A solid state relay (SSR) is an electronic switching device that switches to conduction state when...

A magnetic field is linked

B a high voltage is applied

C a small voltage is applied

D the room temperature increased

Choose the correct answer

1 Which is the code number of TRIAC ?

A BT 136

B BX127

C 1Y4007

D TYN2002

2 DIAC is a ...

A multi device

B trigger device

C amplifier device

D three terminal device

3 A DIAC acts in a similar manner to two diodes that are connected in....

A Reverse series

B Forward series

C Reverse parallel

D Forward parallel

4 What type of meter is used to carried out the quick test of TRIAC?

A Voltmeter

B Ammeter

C Wattmeter

D Ohmmeter

5 The RC circuit connected across the TRIAC circuit is called.....

A inverter circuit

B rectifier circuit

C snubber circuit

D converter circuit

6 The DIAC has.....

A six termianls

B two terminals

C four terminals

D three terminals

7 TRIAC is a ... terminal gated device.

A two

B four

C five

D three

8 TRIAC is very similar to that of two SCR connected in..

A Foward series

B Reverse series

C Reverse parallel

D Forward parallel

9 DIAC also resembles an NPN or PNP bipolar transistor with no....

A gate connection

B base connection

C shield connection

D collector connection

10 Which of the device is optocoupled TRIACS?

A BT 136

B B 3202

C 2 N 2648

D MOC 3020

11 What is the function of the semiconductor device DIAC?

A Triggering device

B Rectifying device

C Amplifying device

D Demodulating device

12 What is the use of TRIAC in electrical and electronic circuits?

A To control AC in one direction

B To control DC in one direction

C To control AC in both direction

D To control DC in either direction

Choose the correct answer

1 Which is the advantage of thyristor dimmer?

   A Difficulty

   B Unreliable

   C Expensive

   D Easy to control remotely

2 Which technique is used to control the conduction angle of the TRIAC?

   A Load control

   B Zener control

   C Filter control

   D Phase control

3 Light dimmer controls the power upto....

   A 50W

   B 100W

   C 150W

   D 1000W

4 The conduction angle of light dimmer circuit is ...

   A 0° to 160°

   B 0° to 170°

   C 0° to 180°

   D 0° to 280°

5 The RC circuit connected acrosss the TRIAC circuit to slows down the rate of raise of voltage applied across is....

   A snubber circuit

   B Forward circuit

   C Reverse circuit

   D Operation circuit

6 The dimmer circuit is used in ...

   A Radio

   B AC motor

   C DC motor

   D Fan regulator

7 In snubber circuit , the inductance L and capacitance C forms a ...

   A low pass filter

   B high pass filter

   C very low pass filter

   D very high pass filter

8 What is the maximum specified voltage for the TRIAC TIC 201D?

   A 1.5 V

   B 1.7 V

   C 2.1 V

   D 2.5 V

9 What is the value of resistance in either direction for a DIAC, when tested with Ohmmeter?

   A Zero resistance

   B Low resistance

   C Unity resistance

   D Infinity resistance

10 Which voltage level is reached to increase the current through DIAC rapidly?

   A Zero voltage

   B Cut in voltage

   C Breakover voltage

   D Breakdown voltage

11 Which instrument is used to make quick test on a TRIAC?

   A Voltmeter

   B Ammeter

   C Ohmmeter

   D Energymeter

Choose the correct answer

1   UJT is a special type of semi conductor device because it exhibits ...

   A   1/p characteristics

   B   6/p characteristics

   C   positive resistance characteristics

   D   negative resistance characteristics

2   The equivalant circuit of UJT, the inter base resistance R_{BB} value is ...

   A   4 to 5 kΩ

   B   5 to 6 kΩ

   C   6 to 8 kΩ

   D   4 to 10 kΩ

3   The greek letter called the intrinsic standoff ratio is...

   A   eta(η)

   B   beta (β)

   C   alpha (α)

   D   gamma (γ)

4   In UJT circuit the maximum allowable emitter current (I_E) within the negative region is called....

   A   valley point

   B   valley region

   C   valley voltage

   D   valley current

5   The minimum voltage that can maintain the UJT in its negative resistance region is called....

   A   valley region

   B   valley point

   C   valley current

   D   valley voltage

6   The most common application of UJT is ...

   A   photo sensing

   B   Astable circuit

   C   Amplifier circuit

   D   Relaxation oscillator

7   The frequency of oscillation of UJT depends on ...

   A   Time is low

   B   Frequency is low

   C   Time constant tau (τ)

   D   Frequency is constant

8   In UJT the resistance between B_1 and B_2 terminal is ...

   A V_{BB}

   B R_{BB}

   C E_{BB}

   D R_{B1}

9   Name the region marked 'X' on the UJT characteristics curve shown?
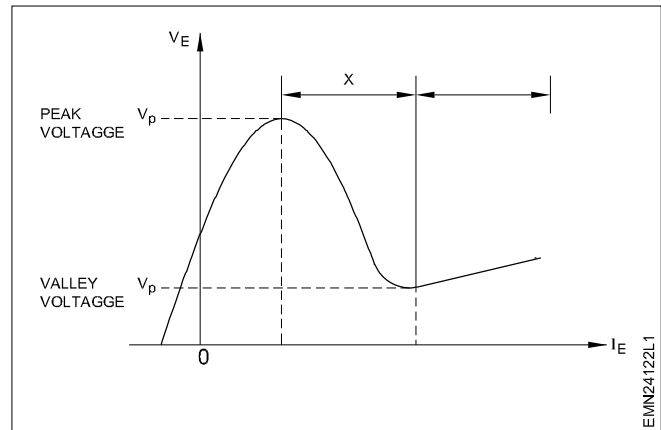
   A   Saturation region

   B   Peak current region

   C   Valley current region

   D   Negative resistance region

10   What is the application of UJT?

   A   Multivibrator

   B   Voltage regulator

   C   Relaxation oscillator

   D   Motor speed controller

Choose the correct answer

1 In MOSFET the insulating layer is generally made of ...

   A O_2

   B Si_2

   C SiO_2

   D H_2O

2 Enhancement type MOSFETs are widly used in.....

   A   Internal switching circuit

   B   Information switching circuit

   C   International switching circuit

   D   Intergrated MOS switching circuit

3 What is the name of the N channel MOSFET terminal marked 'x' in the symbol?

   A   Gate

   B   Base

   C   Drain

   D   Source

4 One of the advantage of MOSFET is ...

   A   No speed

   B   Low switching speed

   C   Fast switching speed

   D   Medium switching speed

5 Pulse transformers are used to isolate the logic circuitary from MOSFETs operating at....

   A   low current

   B   low voltage

   C   high voltage

   D   high frequency

6 Why the electronic device IGBT is preferred over the power MOSFET?

   A   low switching speed

   B   Higher switching repetition rates

   C   Higher driving power requirement

   D   Suitable for medium power applications

7 In N channel JFET, when the gate to source voltage V_{GS} is zero, maximum current flow through the channel from...

   A   gate to source

   B   source to gate

   C   drain to source

   D   source to drain

8 Which power device is used for switching purpose in computer SMPS?

   A   SCR

   B   IGBT

   C   MOSFET

   D   Transistor

9 What is the input impedance of IGBT?

   A   Low input impedance

   B   High input impedance

   C   Infinity input impedance

   D   Medium input impedance

10 Which electrical quantity controls the operation of the bipolar transistor device?

   A   Energy

   B   Current

   C   Voltage

   D   Frequency

Choose the correct answer

1 What is the full form of the abbreviation IGBT?

   A Insulated Gate Bias Transistor

   B Insulated Gate Bias Transmitter

   C Insulated Gate Bipolar Transistor

   D Insulated Gate Bipolar Transmitter

2 IGBT is a ...

   A low efficiency

   B high efficiency

   C low input impedance

   D high input impedance

3 What is the maximum blocking voltage of IGBT?

   A 5000 V

   B 6000 V

   C 7000 V

   D 8000 V

4 IGBT is used in ...

   A SMPS circuit

   B amplifier circuit

   C rectifier circuit

   D oscillator circuit

5 What are the terminals in IGBT?

   A Emitter, Collector and Gate

   B Emitter, Collector and Base

   C Emitter, Collector and Drain

   D Emitter, Collector and Source

6 How IGBTs are better than BJT?

   A No sparking

   B Power handling

   C Increase life time

   D Output resistance

7 In which circuits the enhancement type MOSFETs are used?

   A Low power oscillator circuits

   B High power amplifier circuits

   C High frequency switching circuits

   D Integrated MOS switching circuits

8 What is the maximum blocking voltage of very high current handling of IGBT modules?

   A 440 V

   B 1000 V

   C 5000 V

   D 6000 V

9 When does the complementary metal oxide type MOSFET configuration consumes power?

   A During switching

   B While holding its state

   C Never consumes power

   D Always consumes power

Choose the correct answer

1 LED stands for ...

   A Light Enable Diode

   B Light Emitting Diode

   C Light Enclosed Diode

   D Light Eleminate Diode

2 Almost all electrical and electronic circuits the LEDs are used as ...

   A remote

   B rectifier

   C indicator

   D heating element

3 LED is a type of ...

   A diode

   B resistor

   C amplifier

   D transistor

4 LEDs are typically doped with ...

   A steel

   B silicon

   C aluminium

   D gallium arsenic

5 The forward voltage of orange LED is....

   A 1.8V

   B 2.0V

   C 2.1V

   D 2.2V

6 Which meter is used to test the LED?

   A Ammeter

   B Voltmeter

   C Multimeter

   D Energy meter

7 What is the full form of LASER?

   A Light Assembly by Simulated Emitter of Radiation

   B Light Amplification by Simulated Emission of Radiation

   C Light Amplification by Simulated Emission of Rectification

   D Light Amplification by Simulated Emission of Reflection

8 Which is the important application of "LASER diode"?

   A Radio

   B Television

   C Telephone

   D hologram scanner

9 What is the maximum forward current (I_f) for Red LED?

   A 50mA

   B 100mA

   C 200mA

   D 300mA

10 What is the typical reverse voltage V_R for Red LED?

   A 4 V

   B 8 V

   C 12 V

   D 16 V

11 What is the forward voltage drop of single colour red LED?

   A 1.8 V

   B 2.0 V

   C 2.1 V

   D 2.2 V

12 What is the minimum forward current, I_f for single colour LEDs?

A 5mA

B 10mA

C 20mA

D 30mA

13 What is the maximum reverse voltage that can be applied across the general purpose LED?

A 8 V

B 12 V

C 15 V

D 32 V

Electronic and Hardware   Assignment for Exercise 2.6.135 to 2.6.139
Electronic Mechanic - Opto Electronics - LDR

Choose the correct answer

1 What is the full form of the abbreviation LDR?

A Light Delay Resistor

B Light Design Resistor

C Light Dependent Relay

D Light Dependent Resistor

2 Photo resistors also known as ...

A LDR

B LED

C VDR

D DVD

3 LDR made up of ...

A aluminium

B silicon arsenic

C cadmium sulphide

D gallium phosphate

4 An optocoupler is also known as ...

A Thyristor

B Tunnel diode

C photocoupler

D Schottky diode

5 Which is the application of optocoupler?

A UPS

B SMPS

C Inverter

D AC and DC power control

7 What is the maximum voltage rating of optocoupled TRIAC MOC 3020?

A 200 V

B 300 V

C 400 V

D 500 V

8 Which electronic device inversely changes its resistance with the amount of light falling one it?

A Photodiodes

B Photoresistors

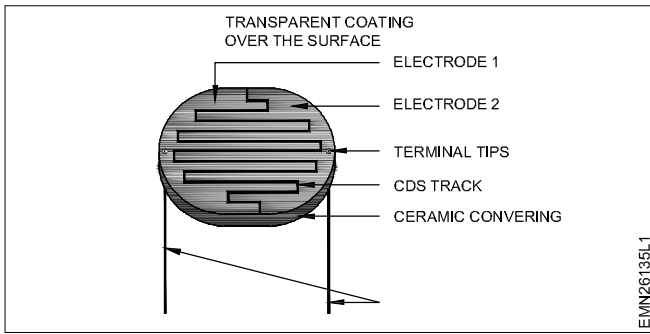C Phototransistors

D Photovoltaic cells

9 LDR is also called as...

A photoresistor

B light emitting diode

C Unijunction transistor

D Silicon controlled rectifier

10 What will happen if the photoresistor (LDR) is exposed to low level light condition?

A Resistance will decrease to 10Ω

B Resistance will decrease to 1kΩ

C Resistance will increase to 100Ω

D Resistance will increase to 1MΩ

11 What is the name of the transducer?

A Pin photodiode

B Phototransistor

C Photovoltaic cell

D Light dependent resistor

12 How light sensitive photo transistor enclosed inside a tight package is activated?

A By the light sensitive receiver inside

B By the external signal to the transistor

C By IR light produced inside the package

D By the bias voltage to the photo transistor

13 Which measuring instrument is used to check the working condition of a photoresistor?

A Ammeter

B Voltmeter

C Ohmmeter

D Oscilloscope

Electronic and Hardware   Assignment for Exercise 2.6.135 to 2.6.139
Electronic Mechanic - Opto Electronics - Photovoltaic cell

Choose the correct answer

1 A solar cell is also called as ...

A phototriac

B photodiode

C phototransistor

D photovoltaic cell

2 Some Photovoltaic cell can also convert ...

A ultraviolet radiation to light

B ultraviolet radiation to AC electricity

C ultraviolet radiation to DC electricity

D ultraviolet radiation to sound energy

3 Solar panel converts the...

A sunlight energy into electricity

B sunlight energy into coal energy

C sunlight energy into light energy

D sunlight energy into sound energy

4 Solar panel is made up of many ...

A inverter

B batteries

C small cells

D cadmium sulphide cells

Electronics and Hardware   Assignment for Exercise 2.6.135 to 2.6.139
Electronic Mechanic - Opto Electronics - Photodiodes & transistors

Choose the correct answer

1 Photodiodes are produced by ...

A copper techniques

B silicon techniques

C electrical techniques

D aluminium techniques

2 The photodiodes are operated in the ...

A bidirection

B forward direction

C reverse direction

D constant method

3 In photodiodes usually referred to as the IRO means...

A dark current

B valley current

C holding current

D maximum current

4 The calculating formula for photodiodes ...

A $I\ photo = I_{RO} + I'\ photo$

B $I\ photo = I_{OR} + I'\ photo$

C $I\ photo = I_{RS} + I'\ photo$

D $I\ photo = I_{SR} + I'\ photo$

5 In PIN photodiode, the letter PIN indicates ...

A zone point

B zone place

C zone method

D zone sequence

6 The advantages of PIN photodiodes are ...

A low sensitivity

B Infinity sensitivity

C very low sensitivity

D high sensitivity in the infrared range

7 The Combination of phototransistor is...

A photodiode and SCR

B photodiode and DIAC

C photodiode and bipolar transistor

D photoresistor and bipolar transistor

8 What is the advantage of phototransistor over photo diode?

A Lower sensitivity

B Infinity sensitivity

C Greater sensitivity

D Medium sensitivity

9 Which is the phototransistor in this group?

A BFW10

B BPX 81

C FLV 117

D 2N 2646

10 What is the type of Opto isolator?
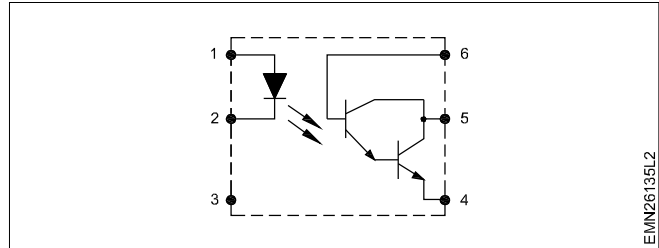
A Photo - SCR

B Photo - TRIAC

C Photo - Transistor

D Photo - Darlington

11 What is the type of Opto - coupler?
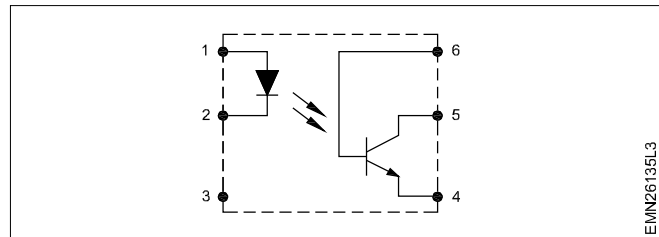
A Photo - SCR

B Photo - TRIAC

C Photo - Transistor

D Photo - Darlington

Choose the correct answer

1 The world's largest digital system is ...

   A computer

   B calculator

   C digital telephone system

   D audio and video equipment

2 In electronic circuits,signals are represented by...

   A energy

   B voltage

   C frequency

   D amplitude

3 Which state the digital signals are functioning?

   A Infinity state

   B Forward state

   C Reverse state

   D ON (or) OFFstate

4 Logic level in digital signal is technically referred to ON state is ...

   A below zero

   B logic 0 state

   C logic 1 state

   D between1 and zero

5 The expansion of IC is ...

   A Internal Circuit

   B Integrated Circuit

   C Intermediate Circuit

   D Internal Construction

6 Most digital Integrated circuits are made in the form of...

   A LSI

   B SSI

   C VVSI

   D VLSI

7 Analog signal can be converted into ...

   A digital signal

   B electric signal

   C microwave signal

   D alpha numeric signal

8 The basic functional logic gates are ...

   A OR,AND,NOT

   B NAND,NOR,EX-OR

   C EX-OR,NOT,UNIVERSAL

   D NAND,EX-OR,UNIVERSAL

9 Expansion of TTL is ...

   A TransistorTerminal Logic

   B TransistorTransistor Line

   C Terminal Temperature Link

   D Transistor Transistor Logic

10 Expansion of RTL is ...

   A Rheostat Terminal Logic

   B Resistor Terminal Logic

   C Resistor Transistor Logic

   D Resistive Temperature Logic

11 Expansion of DTL is ...

   A Diode Testing Logic

   B Diode Timing Logic

   C Diode Testing Logic

   D Diode Transistor Logic

12 Difference between the two output voltages (V_{OH} - V_{OL}) is known as ...

   A logic swing

   B operating voltages

   C low logic switching

   D coupled logic switching

13 Depending on the internal circuitry,the DIP IC pins varies from....

  A 4 to 60

  B 4 to 64

  C 5 to 64

  D 6 to 64

14 Which type of IC packages are used in military equipments?

  A DIP packages

  B Ceramic flat packages

  C Surface mount packages

  D Ceramic chip carrier packages

15 Which type of IC package is used in microprocessor circuit?

  A Dual in line package

  B Ceramic flat package

  C Pin grid array package

  D Surface mount package

16 The most standard TTL ICs are operated properly in between the voltage range of....

  A 4.3V to 5.0V

  B 5.25V & 3.1V

  C +4.7V & 7.2V

  D +4.75V & 5.25V

17 Abbreviation of ECL is....

  A Emit Control Logic

  B End Collector Logic

  C Emitter Collector Link

  D Emitter Coupled Logic

18 Emitter Coupled Logic circuit type used in super computer is...

  A low speed

  B high speed

  C medium speed

  D very high speed

19 Abbreviation of MOS is ...

  A   Metal Orient Semiconductor

  B   Metal Oxide Semiconductor

  C   Metal Oxygen Semiconductor

  D   Metallic Oxide Semiconductor

20 Metal oxide semiconductor is a …

  A Photo Transistor

  B Bipolar Transistor

  C Unipolar Transistor

  D Field Effect Transistor

Electronic and Hardware   Assignment for Exercise 2.7.140 to 2.7.154
Electronic Mechanic - Basic Gates - Number system

Choose the correct answer
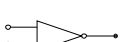
1 The modern computers does not process the ...

  A Octal number

  B Binary number

  C Decimal number

  D Hexadecimal number

2 The modern computers work with ...

  A octal number

  B binary number

  C decimal number

  D hexadecimal number

3 Which is the binary number?

  A 0,1

  B 4,2

  C 5,9

  D 10,20

4 The number system uses 10 different characters is ...

  A base2

  B base8

  C base10

  D base16

5 The mathematical term for the base of a number system is ...

A octal

B radix

C binary

D decimal

6 Which meter is used to measure the speed in a car?

A Odometer

B Voltmeter

C Multimeter

D Ohmmeter

7 A new car starts with odometer reading of 0000,after travelling 1KM,the reading becomes....

A 0000

B 0001

C 0002

D 0010

8 Convert the following binary number to decimal 0110.

A 2

B 4

C 6

D 7

9 The decimal number of 14 and its equivalent binary number is ...

A 0001

B 0010

C 1101

D 1110

10 How many characters are there in hexadecimal?

A 6

B 7

C 8

D 16

11 Which number system is used to develop program for computer?

A Hexadecimal

B Octal number

C Binary number

D Decimal number

12 Convert the following Decimal to Hexadecimal of $(432)_{10}=$

A $(1AO)_{16}$

B $(1BO)_{16}$

C $(1CO)_{16}$

D $(1DO)_{16}$

13 Convert the following Hexadecimal to Decimal number 2234_{16} is ...

A 8812_{10}

B 8367_{10}

C 8762_{10}

D 8276_{10}

14 Convert the following Octal to Decimal number $(2374)_8$ is ...

A $(1116)_{10}$

B $(1126)_{10}$

C $(1276)_{10}$

D $(1376)_{10}$

15 Convert the following Decimal to Octal number $(359)_{10}$ is ...

A $(547)_8$

B $(574)_8$

C $(757)_8$

D $(775)_8$

16 Convert the following Octal to Binary number $(35_8)$is ...

A $(011101)_2$

B $(001101)_2$

C $(110101)_2$

D $(111001)_2$

17 Expansion of BCD is ...

A Basic Coded Digital

B Binary Coded Digital

C Binary Count Digital

D Binary Coded Decimal

18 Convert the following Binary to Octal $(010111)_2$ number is ...

A $(22)_8$

B $(25)_8$

C $(27)_8$

D $(29)_8$

19 Decimal system is used for ...

   A read only

   B write only

   C read and draw

   D read and write

20 Which is the logic symbol of OR gate?

   A

   B

   C

   D

21 Which amplifier circuit is called transistor inverter?

   A Common drain

   B Common base

   C Common emitter

   D Common collector

22 In inverter circuits,the output state is always the opposite of the ...

   A input state

   B cut of state

   C output state

   D saturation state

Electronic and Hardware   Assignment for Exercise 2.7.140 to 2.7.154
Electronic Mechanic - Basic Gates - Logic Gates

Choose the correct answer

1 Which is used for troubleshooting purpose of digital system?

   A Logic probe

   B Hydrometer

   C Thermometer

   D Multimeter probe

2 Which tool has one or more indicator LED to indicate the condition of the logical signal?

   A Logic probe

   B Hydrometer

   C Thermometer

   D Multimeter probe

3 The logic probe indicators indicate the condition of ...

   A logic device

   B logic circuit

   C logic switch

   D logical signal

4 The logic probe indication may be related to logic ...

   A set and rest

   B high and low

   C open and close

   D input and output

5 How many inverters are there in the CD4011 CMOS IC?

   A 7

   B 6

   C 4

   D 5

6 What is the name of the symbol shown in figure?

   A OR gate

   B AND gate

   C NAND gate

   D EX-OR gate

7 The output of the OR gate will be in 1state,if one or more of the input is ...
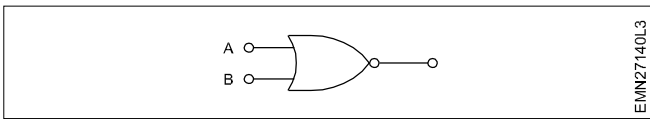
   A 0 state

   B 1 state

   C X,Y state

   D 0,0 states

8 The boolean expression for OR gate is ...

A Y = A - B

B Y = A + C

C Y = A + B

D Y = B - A

9 The combination of OR and NOT gate is called...

A NOR gate

B NAND gate

C EX-OR gate

D EX-NOR gate

10 What is the name of symbol shown in figure?

A OR gate

B NOR gate

C NAND gate

D EX-NOR gate

11 The Logic gate inputs are labeled as A and B while the ouput is ...

A Y

B xy

C xyz

D ABXY

12 In a logic OR gate input A is high and B is low,the condition of output Y is ...

A low

B high

C very high

D minimum

13 Which gates are available in the IC 7432 ?

A OR gate

B AND gate

C NOR gate

D NAND gate

14 Which gates are available in the IC 7402 ?

A OR gate

B NOR gate

C NAND gate

D EX-OR gate

15 Name the following symbol shown in figure.
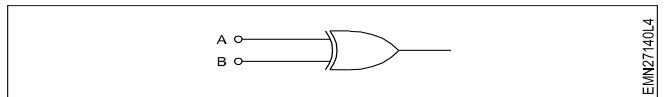
A OR gate

B AND gate

C NAND gate

D EX-OR gate

16 How many inputs are available in AND gate?

A Only two

B One or two

C Two to three

D Two or more

17 In logic AND gate, all inputs are high, the output is ...

A low

B high

C very low

D very high

18 In Logic AND gate, any one of the input is Low, the output is...

A low

B high

C very low

D very high

19 Which gates are available in the IC 7408?

A OR gate

B AND gate

C NOT gate

D EX-OR gate

20 What is the main application of a AND gate?

A Merge the signal

B Closing the signal

C Passage of signal

D Modulate the signal

21 Which type of waveform is passage through the AND gate?

A Sine wave

B Pulse wave

C Triangular wave

D Sawtooth wave

22 AND gate controls the passage of a signal to a ...

A multiplexers

B digital counter

C analog counter

D demultiplexers

23 The digital counter circuit is used to measure the ...

A amplitude

B frequency

C peak to peak

D average value

24 In digital counters signal pulses pass through the gate is 1000 in 1 second, the frequeny is ...

A 200 Hz

B 800 Hz

C 1000 Hz

D 1200 Hz

25 Name the following symbol shown in figure.
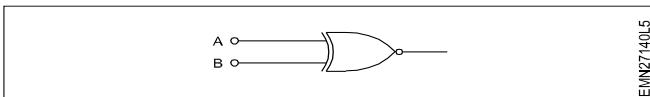
A OR gate

B NOT gate

C AND gate

D EX-NOR gate

26 When the two inputs of the NAND gate is low, the output is ...

A low

B high

C very low

D very high

27 The two input of the NAND gate is high the output is ...

A low

B high

C very low

D very high

28 In logic EX-OR gate, if two inputs are low the output is....

A low

B high

C very low

D very high

29 Name the following symbol shown in figure.
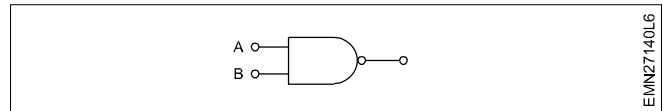
A OR gate

B NOT gate

C NAND gate

D EX-NOR gate

30 Four input EX-OR gate shown in fig then the output Y =?
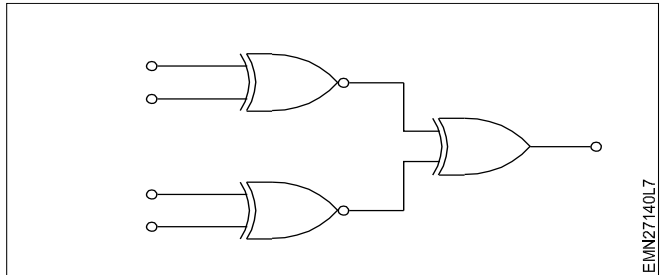
A Y = A+B

B Y = A+B+C

C Y = A+B-C-D

D Y = A+B+C+D

31 Which type of IC is used to quad 2 inputs EX-OR gate?

A 7400

B 7408

C 7450

D 7486

32 Quad 2 input EX-OR gate IC is available both in ...

A DTL and TTL

B TTL and RTL

C RTL and DTL

D TTL and CMOS

33 Which gate is described by the expression Y = A+B?

A OR gate

B AND gate

C NOR gate

D NAND gate

34 What is the function of pin number 14 of IC 7400?

A Positive supply

B Trigger voltage

C Negative supply

D Logic gate output

35 Which law is mathematically expressed as A + B = B + A under boolean algebra?

   A Kirchhoff's law

   B Distributive law

   C Associative law

   D Commutative law

36 What is the IC number marked 'X' in the diagram?
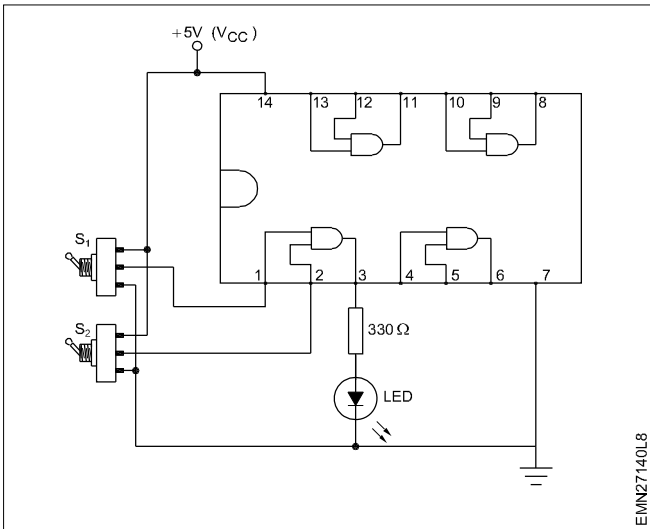
   A IC 7404

   B IC 7408

   C IC 7432

   D IC 7486

37 Which diode is used to reduce the prophagation delay of TTL chips?

   A Photo diode

   B Signal diode

   C Rectifier diode

   D Schottky diode

Electronic and Hardware   Assignment for Exercise 2.7.140 to 2.7.154
Electronic Mechanic - Basic Gates - Binary Arithmatic

Choose the correct answer

1 Digital computers does not process ...

   A octal number

   B binary number

   C decimal number

   D hexadecimal number

2 Digital computers process the ...

   A octal number

   B binary number

   C decimal number

   D hexadecinal number

3   In digital compouters, the arithmetic process key is...

   A division

   B addition

   C subtraction

   D multiplication

4 +25 is expressed as an 8 bit signed binary number using the sign magnitude system is ...

    A 11000001

   B 00111100

   C 11111100

   D 00011001

5   Find the 1's complement binary number of 00011001 is ...

A   10101010

B   11001100

C   11100110

D   00110011

6   Find the 2's complement binary number of 11011001 is ...

A   10010011

B   11011010

C   00110111

D   11100101

7   What type of circuit is used for processing numerical data in digital system?

A   Adder

B   Analog

C   Multiplexer

D   Demultiplexer

8   How many binary numbers are used in computers and calculator operation at a time?

A   One

B   Two

C   Four

D   Three

9   How many basic categories are in adder circuit?

A   One

B   Two

C   Four

D   Three

10 Name the following logic symbol shown in figure.
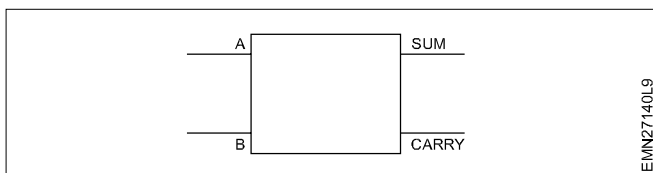
A   Inverter

B   Rectifier

C   Full adder

D   Half adder

11 How many binary digits are accepted in half adder inputs?

A   1

B   2

C   3

D   4

12 How many binary digits are available in half adder outputs?

A   1

B   2

C   3

D   4

13 Logic operation of the half-adder expression can be derived for the ...

A   sum only

B   carry only

C   multiply only

D   sum and carry

14 How many inputs are accpeted in Full adder ?

A   One

B   Two

C   Four

D   Three

15 Name the following logic symbol shown in figure.
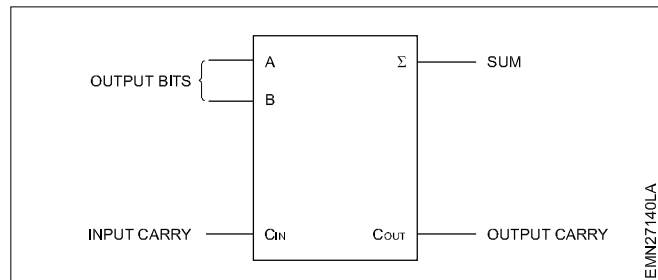
A   Rectifier

B   Full adder

C   Feed back

D   Multiplexer

16 How many EX-OR gates are used in full adder?

A   One

B   Two

C   Four

D   Three

17 MSI stands for ...

A Micro Scale Integration

B Most Scale Integration

C Middle Scale Integration

D Medium Scale Integration

18 Examples of low power schottky TTL devices are ...

A 74LS73A and 74LS128

B 74LS83A and 74LS283

C 74SL81 and 74LS287A

D 74LS848 and 74LS273B

19 The 4 bit parallel adder can be expanded to handle the addition of higher bit numbers by the process called ...

A cascading

B conduction

C calculation

D complement

20 Find 2's complement of number 0110 ?

A 1010

B 1111

C 1011

D 1100

21 Subtract 6 from 9 using 2's complement method in binary form ...

A 0101

B 0111

C 1101

D 0011

22 Find the S value?

A   B   S

01010010 -00010001 = ?

A 101000001

B 110111001

C 101000001

D 100111010

23 What is the binary conversion for the decimal number $(4)_{10}$?

A 0010

B 0100

C 1011

D 1010

24 What is the use of the circuit diagram?
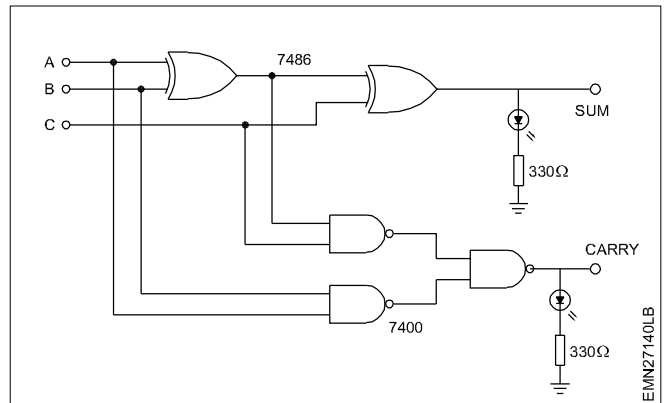
A Full adder

B Half adder

C Multiplexer

D Demodulator

Electronic and Hardware   Assignment for Exercise 2.7.140 to 2.7.154
Electronic Mechanic - Multiplexers & Demultiplexers

Choose the correct answer

1 In computer data transmission circuit with one or more input lines that gives one or more output is called.....

A decoders

B multiplexer

C demultiplexer

D combinational circuits

2 How many inputs are available in multiplexer circuit?

A 2^n data lines

B One data line

C Two data lines

D Four data lines

3 The inverse of a multiplexer is called...

A controls

B decoders

C demultiplexer

D combinational circuit

4 The only one transmission line used for communicating all the eight parameters at different intervals of time is known as ...

A multiplexing

B demultiplexing

C combinational circuits

D time division multiplexing

5 Higher load current requirements for digital instruments, can be reduced using a technique called...

A counter

B multiplexing

C demultiplexing

D combinational circuit

6 The 8 line DEMUX IC used in data transmission is...

A IC 7483

B IC 7486

C IC 74 LS 138

D IC 74 LS 151

7 Which is the eight line multiplexer IC?

A IC 7483

B IC 7486

C IC 74 LS 138

D IC 74 LS 151

8 Which circuit have one or more input lines and give one or more outputs?

A Multiplexer

B Demultiplexer

C Binary adder circuits

D Combinational circuits

9 What is the function of the digital IC 74 LS 138?

A Multiplexers

B Shift registers

C Demultiplexers

D Decode counters

10 What is the functions of the digital IC 74LS151?...

A Multiplexer

B Shift register

C Demultiplexer

D Decade counter

Electronic and Hardware   Assignment for Exercise 2.7.140 to 2.7.154
Electronic Mechanic - Basic Gates - Latch circuits

Choose the correct answer

1 The flip flop is a digital circuit that has ...

A one stable state

B two stable states

C four stable states

D three stable states

2 Flip flops are used to store information in the...

A octal form

B digital form

C analog form

D decimal form

3 Which is the basic type of flip flop?

A D flip flop

B JK flip flop

C RS flip flop

D Master slave flip flop

4 Two NOR gates or two NAND gates can be used to construct...

A D flip flop

B JK flip flop

C RS flip flop

D Master slave flip flop

5 Name the circuit symbol shown in figure.
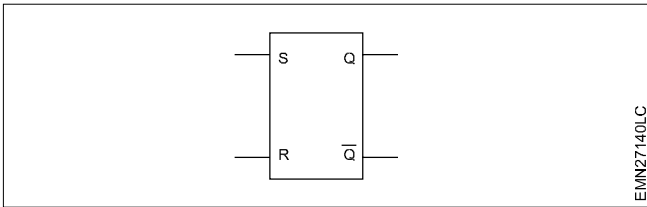
A Nand gate

B RS flip flop

C RS flip flop low input

D RS flip flop high input

6 Name the circuits shown in figure.
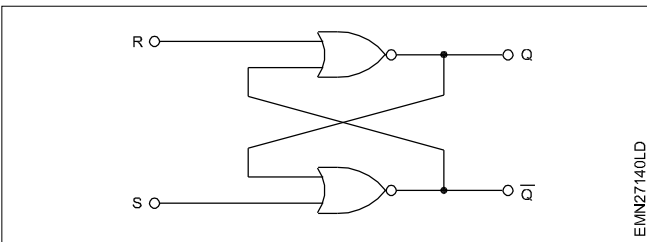
A RS flip flop

B NOR latch

C NAND latch

D Clocked RS flip flop

7 Name the figure shown.
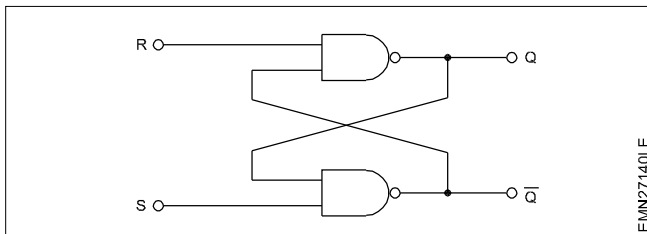
A RS flip flop

B NOR latch

C NAND latch

D Clocked RS flip flop

8 The truth table for NOR latch R =0 ,S = 0 what is Q = ?

A 1

B 0

C α Race

D No change

9 The truth table for NAND latch, R = 0,S = 1 than Q = 1 this comment is ...

A set

B race

C reset

D No change

10 The NOR latch output condition produce the inactive state is ...

A R = 0, S = 1

B R = 0, S = 0

C R = 1, S = 0

D R = 1, S = 1

11 In the NOR latch circuit R=0,S=1, this condition cause the Q=1 state where it remain after R return is ...

A Low

B High

C Very low

D Very high

12 Which flip flop is used to store information at any time and then hold the stored information for any desired period of time ?

A JK slave

B D flip flop

C JK flip flop

D Clocked RS flip flop

13 what type of flip flop is shown in fig?
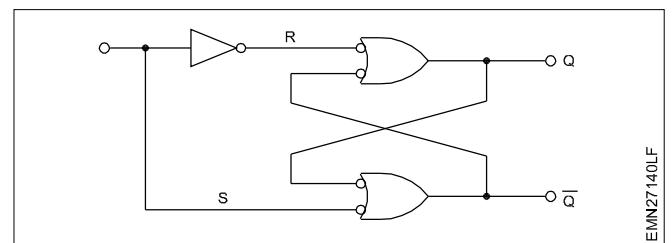
A JK slave

B JK flip flop

C R flip flop

D D flip flop

14 The complement of A is called ...

A $\overline{A}$

B A1

C AA

D A2

15 Flip flops are used to store...

A voltage

B energy

C current

D binary information

16 The logic gate with only one input signal and one output signal is...

A AND gate

B NOT gate

C NOR gate

D NAND gate

17 Name the truth table

A	B	$Y = \overline{A+B}$
0	0	1
0	1	0
1	0	0
1	1	0

A OR gate

B NOR gate

C AND gate

D EX-OR gate

18 What is the function of astable multivibrator?

A To generate square waveform

B To generate sawtooth waveform

C To generate sinewave waveform

D To generate triangular waveform

Electronic and Hardware   Assignment for Exercise 2.7.140 to 2.7.154
Electronic Mechanic - Basic Gates, Combinational Circuits, Flip Flops

Choose the correct answer

1 Which is the dual JK Master Slave flip flop IC?

A IC53LS76

B IC54LS76

C IC51LS76

D IC50LS76

2 JK flip flop is a ...

A voltage device

B current device

C counting device

D calculating device

3 The combination of two clocked flip flops are connected in cascade arrangement called...

A slave flip flop

B master flip flop

C clocked flip flop

D master slave flip flop

4 A master slave flip flap is a combination of..

A two clocked flip flops connected in series

B two clocked flip flops connected in parallel

C two clocked flip flops connected in cascade

D two clocked flip flops connected in cascode

5 What is the name of flip flop?
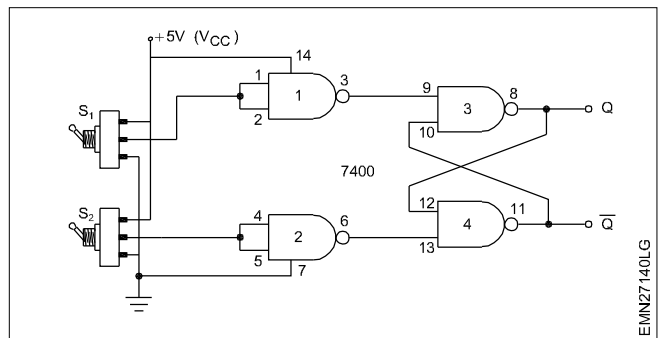
A D flip flop

B T flip flop

C JK flip flop

D RS flip flop

6 Which flip flop is developed to overcome the RACING problem?

A Astable

B D flip flop

C Monostable

D JKMS flip flop

Choose the correct answer

1 Name the electronic simulation software.

   A Tina

   B Heap

   C Bamini

   D Photoshop

2 Tina software is used to create ...

   A circuit drawing

   B electrical circuits

   C electronic circuits

   D mechanical design

3 In schematic editor top row menu help commands associated with ...

   A file

   B file operation

   C select components type

   D select components group

4 In schematic editor second row icon helps to ...

   A file

   B file operation

   C select components type

   D select components group

5 Which row menu are used to scale it components type in simulation schematic editor?

   A Top row

   B Third row

   C Fourth row

   D Second row

6 Which row menu are used to select components group in simulation schematic editor?

   A Top row

   B Third row

   C Fourth row

   D Second row

7 Tina software components groups are contains ...

   A active components

   B passive components

   C measuring instruments only

   D active, passive components & measuring instrument

8 Which place is used to design circuit in schematic editor of the Tina software?

   A Circuit workspace

   B File operation space

   C Components type space

   D Components groups space

9 What are the steps in value arranging and wiring components, ending steps of the simulation software?

   A Positioned

   B Wired together

   C Error rule check

   D Connected with source

10 What in the expansion of ERC in analysing capabilities?

   A Error Read Check

   B Error Ratio Check

   C Easy Read Check

   D Error Rules Check

11 The errors are listed while selected ERC, errors are indicated in pop up menu ...

   A lined

   B blinking

   C coloured

   D highlighted

12 Which analysis helps to see the result voltage and current?

   A ERC

   B Mode

   C AC analysis

   D DC analysis

13 Which analyse helps to slow the result of oscillator circuit output as graphical grid form?

A ERC

B Mode

C Transient

D AC (or) DC

14 What is the use of DC analysis in Tina simulation software?

A Power energy

B Voltage and current

C DC voltage and DC current

D AC voltage and DC current

15 What is the use of transient analysis in Tina simulation software ?

A Virtual circuit

B Virtual meters

C Virtual recorder

D Virtual oscilloscope

16 Which option is used to select virtual AC/DC multimeter, function generator and x-y recorder?

A ERC

B Mode

C Transient

D Test and measurement

17 How to select the value of diode in Tina software ?

A Click on diode

B Click on insert menu

C Double click on diode

D Click on semi conductor

18 How to select the p channel MOSFET in tina software?

A Select components << MOSFET

B Select devices << FET << MOSFET

C Select components << FET << MOSFET

D Select semi conductor << select MOSFET

19 Which menu selected in fourth icon components group to select DC source or battery?

A Mode

B BASIC

C Sources

D Switches

20 Which menu selected in fourth icon of the component group to select of operational amplifier (Op-Amp)?

A Basic

B Switches

C Spice macron

D Semi conductor

21 Which icon selected in second icon in file operation text writing in Tina software as in figure?

A

B

C

D

22 When plotting the characteristics curve of semi conductor diode 'x' axis represents...

A Current in mA

B Voltage in volts

C Voltage in millivolt

D Current in ampere

23 Which meter has a polarity to measure its unit?

A AC ammeter

B DC voltmeter

C AC voltmeter

D DC/AC voltmeter

24 Which is the electronic simulation software?

A Autocad

B Macspice

C MS office

D Photoshop

25 What is the use of simulation software?

A Design a circuit

B Design and test a circuit

C Replace defective component

D Solder and desolder component

Choose the correct answer

1 The counter is one of the most useful sub system in the....

   A digital system

   B binary system

   C analog system

   D decimal system

2   Counter is used to count the....

   A time

   B frequency

   C clock cycles

   D clock pulses

3 What are the two types of counter?

   A Synchronous & Asynchronous counter

   B Ripple counter & Synchronous counter

   C Decade counter & Asynchronous counter

   D Up/down counter & Synchronous counter

4   In Synchronous counter the flip - flop is triggered by the clock....

   A serially

   B parallely

   C cumulatively

   D serial & parallely

5 Asynchronous counter is also called...

   A serial counter

   B parallel counter

   C decade counter

   D up/down counter

6 The other name of serial counter is ...

   A ripple counter

   B serial counters

   C parallel counters

   D decade counters

7 When the CLR goes from low to high the Q output of all flip flop is ...

   A Q = 0100

   B Q = 0000

   C Q = 0101

   D Q = 0110

8 How many flip flop gives 8 bit ripple counter ?

   A 8 flip flops

   B 12 flip flops

   C 16 flip flops

   D   32 flip flops

9 The up counter, counts from ...

   A 0 to 15

   B 0 to 20

   C 0 to 25

   D 0 to 30

10 The counter counts from 1111 to 0000 then it is called …

   A up counter

   B down counter

   C synchronous counter

   D asynchronous counter

11 How many states in the sequence of decade counter?

   A Ten states

   B Five states

   C Nine states

   D Seven states

12 What is the up/down counter progressing sequence ?

   A No direction

   B One direction

   C Multidirection

   D Either direction

13 A good example of an up/down counter is ...

A IC 7490

B IC 7447

C IC 74LS47

D IC 74LS190

14 The last stage output of one counter drives the input of the next counter, the counter name is ...

A decade counters

B cascaded counters

C synchronous counters

D asynchronous counters

15 Name the counter shown in figure.

A Decade counter

B Cascaded counter

C Synchronous counter

D Asynchronous counter

16 For all possible combinations of four bits,the number of gates required is ...
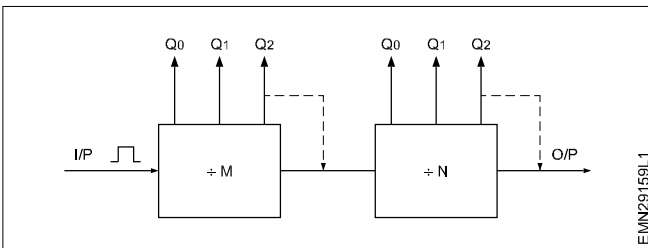
A $2^4 = 16$

B $2^4 = 18$

C $2^4 = 20$

D $2^4 = 22$

17 Seven segment displays are used with ...

A logic circuits

B digital circuits

C analog circuits

D integrator circuits

18 How many digits to be displayed in seven segment display?

A 07 decimal digits

B 10 decimal digits

C 20 decimal digits

D 30 decimal digits

19 How many pin connections are available in a seven segment display device?
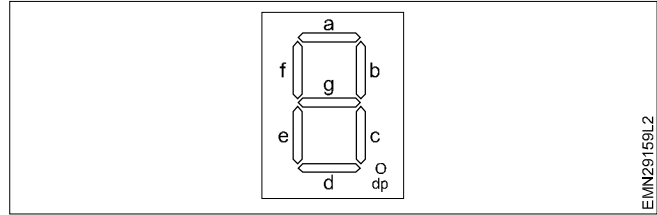
A 7 Pins

B 8 Pins

C 9 Pins

D 10 Pins

20 The seven segment LED display consists of ...

A HD

B LCD

C LED

D Plasma

21 The current through LED emits ...

A light

B power

C sound

D voltage

22 The expansion of LCD is...

A Light Crystal Display

B Large Crystal Display

C Liquid Crystal Display

D Laminated Crystal Display

23 The power consumed by LCD compared to LED is...

A less

B more

C equal

D infinity

Choose the correct answer

1 The very important digital building block is ...

   A counter

   B shift register

   C 4 bit decoder

   D decimal decoder

2 What is the information stored in registers?

   A Analog values

   B Binary values

   C Decimal values

   D Alphanumeric values

3 Shift registers are often used to momentarily store binary data of the output of a ...

   A counter

   B decoder

   C encoder

   D display driver

4 Which is the important operations of a binary register?

   A Logic operation

   B Control operation

   C Arithmetic operation

   D Data transfer operation

5 How many flip flop used to store 8 bit binary number?

   A 4 flip flops

   B 6 flip flops

   C 8 flip flops

   D 12 flip flops

6 The bit in a binary number can be moved form one place to another in two ways, the technique is refered to....

   A input and output

   B serial IN and serial OUT

   C multiplication and division

   D serial shifting and parallel shifting

7 What type of counter is shown in figure?
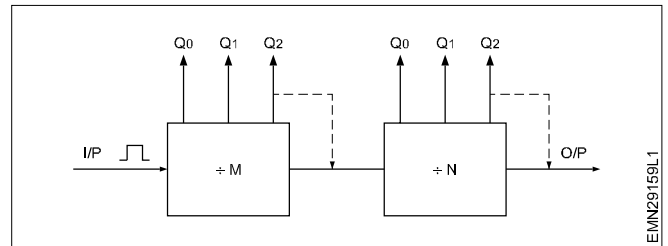
   A BCD counter

   B Decade counter

   C Cascaded counter

   D Cascoded counter

8 The condition of the input in JK flip flop to shift a into the flip - flop J =0 and k = ...

   A 0

   B 1

   C 11

   D 00

9 What is the sequence of JK flip flop in a shifted 4 data bits?

   A Time

   B Data

   C Pulse

   D Clock

10 Serial IN parallel OUT (SIPO) type register enterd data is ...

   A serially

   B parallely

   C serial IN serial OUT

   D parallel IN parallel OUT

11 Which IC is used in 4 bit right shift left shift register?

   A IC 7494

   B IC 7495

   C IC 7465

   D IC 7464

12 Which IC is used as the BCD to 7 segment decoder in the display circuits?

   A IC 7404

   B IC 7448

   C IC 7106

   D IC 7107

Electronic and Hardware   Assignment for Exercise 2.10.170 to 2.10.179
Electronic Mechanic - Op Amp & Timer 555 applications

Choose the correct answer

1 Which conversion is the analog signal converted to an equivalent digital signal?

   A Digital converted

   B Analog converted

   C Digital to analog converted

   D Analog to digital converted

2 Computer processed signal is stored in the form of....

   A digital

   B analog

   C alphanumeric

   D analog and digital

3 Which device produces analog output signal for the pressure variations?

   A Rectifier

   B Processor

   C Thermistor

   D Transducer

4 The speed of A/D converter is determined by the time taken to perform the....

   A logical process

   B conversion process

   C rectification process

   D amplification process

5 What is the output produced in the ADC circuit?

   A Analog output

   B Digital output

   C Eight bit output

   D Parallel binary output

6 In the basic block diagram of a 4 bit successive approximaton analog to digital converter shown in the parameter marked 'X' is.....

   A DAC

   B SAR

   C analog input

   D parallel binary output

7 Which major factor determines the quality performance of A/D converter?

   A Speed and linearity

   B Degree of accuracy

   C Number of bits used

   D Proportional to the binary weight

8 What is the successive approximation (SAR)?

   A Method of SMT

   B Method of IC fabrication

   C Method of A/D conversion

   D Method of D/A conversion

Electronic and Hardware   Assignment for Exercise 2.10.170 to 2.10.179
Electronic Mechanic - Op Amp & Timer 555 applications - DAC

Choose the correct answer

1 The ADC converts the specific room temperature into corresponding binary number of.....

   A 6 bit

   B 8 bit

   C 16 bit

   D 32 bit

2 The compact disk (CD) player is an example of a system that uses a ...

   A analog converted

   B digital converted

   C analog to digital converter

   D digital to analog converter

3 The common amplifier used in the digital to analog converter is...

   A Op Amplifier

   B power Amplifier

   C class A Amplifier

   D class B Amplifier

4 R/2R ladder digital-to-analog converter in equation from the output voltage is given by ...

   A $V_{out} = \dfrac{D_0 2^0 + D_1 2^1 + D_2 2^2 + D_3 2^3 + ... D_{n-1} 2^{2n+1}}{2^n}$

   B $V_{out} = \dfrac{D_0 2^0 + D_1 2^1 + D_2 2^2 + D_3 2^3 + ... + D_n + 2^{n-1}}{2^n}$

   C $V_{out} = \dfrac{D_0 2^0 + D_1 2^1 + D_2 2^2 + D_3 2^3 + ... + D_{n-1} 2^{n-2}}{2^n}$

   D $V_{out} = \dfrac{D_0 2^0 + D_1 2^1 + D_2 2^2 + D_3 2^3 + ... + D_{n-1} 2^{n+2}}{2^n}$

5 Which characteristics of a DAC is the reciprocal of the number of discrete steps in the output?

   A Condition

   B Resolution

   C Stabilization

   D Holding current

6 What is the function of diagram shown?
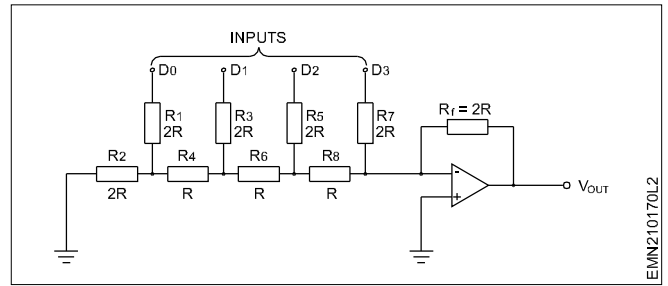
   A Demultiplexer

   B Analog to digital converter

   C Four bit digital to analog converter

   D R/2R ladder digital to analog converter

7 What is the name of the circuit diagram?
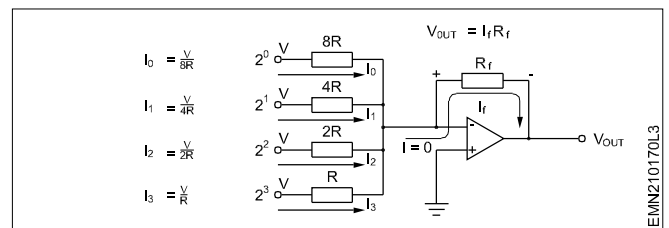
   A Parallel binary output

   B 8 bit analog converter

   C Four bit digital to analog converter

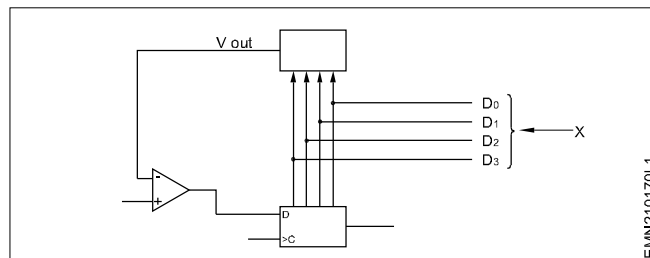   D Four bit analog to digital converter

Electronic and Hardware   Assignment for Exercise 2.10.170 to 2.10.179
Electronic Mechanic - Op Amp & Timer 555 applications

Choose the correct answer

1 An integrated form of several components fabricated on a single chip   is called....

   A IC

   B diode

   C resistor

   D transistor

2 Aluminium or gold wires of about one third thickness of a human hair are bonded between the contacts is called as ...

   A chip

   B pads

   C leads

   D solder

3 Which process is used to fabricate the ICs?

   A Fixing process

   B Doping process

   C Mini photolithographic process

   D Micro photolithographic process

4 How many Op Amps are available in IC741?

   A One

   B Two

   C Four

   D Three

5 How many Op Amps are available in IC LM324?

   A One

   B Two

   C Four

   D Three

6 Op Amp is also known as....

   A differential amplifier

   B relaxation oscillator

   C operational coupled amplifier

   D direct coupled differential amplifier

7 In early days Op Amps were used to perform mathematical operation in....

   A laptops

   B machines

   C networking

   D analog computers

8 Which amplifier has the voltage across both the collectors are the difference of the two input voltages?

   A Push pull amplifier

   B Differential amplifier

   C Operational amplifier

   D Direct coupled amplifier

9 Which signal is rejected by the differential amplifier in common mode operation?

   A Input signals

   B Output signals

   C Common mode signals

   D Differential mode signals

10 What is the expansion of CMRR?

   A Common Mode Reflect Ratio

   B Common Mode Refract Ratio

   C Common Mode Rejection Ratio

   D Common Mode Registered Ratio

11 The ratio of the powers of the differential gain over the common mode gain measured in positive decibel is called as ...

   A CMRR

   B DC effect

   C slew rate

   D gain bandwidth product

12 The value of the CMRR depends on the...

   A input impedance

   B signal frequency

   C output impedance

   D gain bandwidth product

13 Which is the characteristic of Op Amp?

   A Input resistance = 0

   B Input resistance = $\propto$

   C Input resistance = 0.5

   D Input resistance (R_{in}) = 1

14 What is the bandwidth of Op Amp?

   A 1Hz

   B 1kHz

   C 1MHz

   D 1.5GHz

15 In Op Amp, the rate of change of output voltage is called as ...

   A slew rate

   B pulse rate

   C current gain

   D voltage gain

16 What is the power rating of Op Amp ?

   A 100 mW

   B 500 mW

   C 600 mW

   D 700 mW

17 What is the slews rate refers in operational amplifiers?

   A Rate of change of input voltage

   B Rate of change of output voltage

   C Rate of change of input frequency

   D Rate of change of output frequency

18 What is the characteristics of OP Amp?

   A Indefinite input impedance

   B Maximum output impedance

   C Definite open loop voltage gain

   D Infinite closed loop current gain

19 What is the name of the block marked 'X' in the operational amplifier diagram?

A Emitter follower

B Power amplifier

C Decode counter

D Voltage amplifier
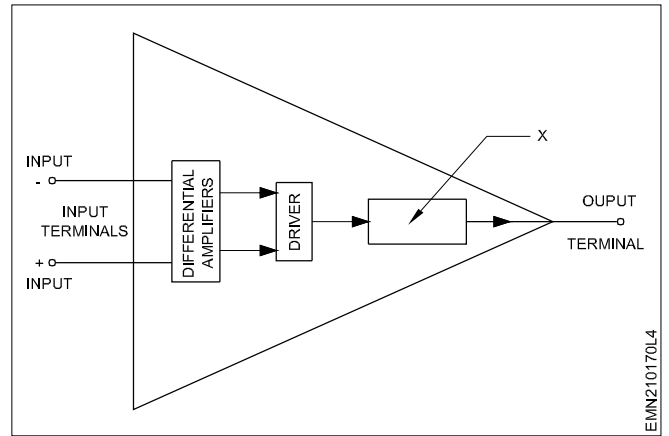
Electronic and Hardware — Assignment for Exercise 2.10.170 to 2.10.179
Electronic Mechanic - Op Amp - Comparator, differentiator

Choose the correct answer

1 What is the name of electronic symbol?
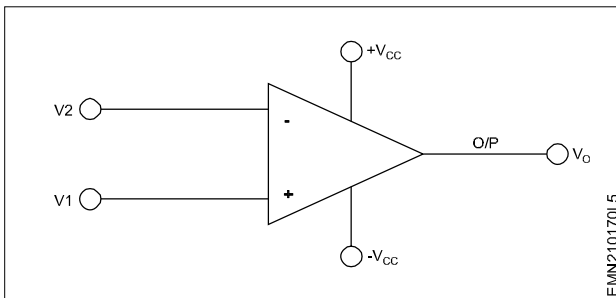
A FET

B UJT

C LDR

D Op Amp

2 What is the maximum power supply used for Op Amp IC ?

A +10V and -10V

B +15V and -15V

C +20V and -20V

D +25V and -25V

3 Which circuit is having a reference voltage at one of the input of Op Amp ?

A Adder

B Subtractor

C Active filter

D Comparator

4 If the fixed reference voltage is applied to the (-ve) input and the signal voltage is applied to the (+) input is called as ...

A comparator

B inverting amplifier

C differential amplifier

D non inverting amplifier

5 Which circuit performs the mathematical operation of integration?

A Integrator

B Differentiator

C Schmitt trigger

D TTL Logic gate

6 An integrator circuit built with Op Amp changes the rectangular input signal into...

A Sine wave output

B Square wave output

C Negative clipped output

D Well defined ramp output

7 In the integrater circuit,the constant current flowing into the capacitor the voltage increases....

A linearly

B suddenly

C non linearly

D logarithmically

8 By inserting a resistor in parallel with capacitor in the integrator circuit reduce the effect of...

    A input offset

    B output gain

    C Voltage gain

    D output offset

Electronic and Hardware   Assignment for Exercise 2.10.170 to 2.10.179
Electronic Mechanic -Differential amplifier, Instrumentation amplifier

Choose the correct answer

1 An instrumentation system is used to measure the output signal produced by a ...

    A sensor

    B actuator

    C transistor

    D transducer

2 How many OP Amps are used in differential amplifier?

    A Two

    B Five

    C Four

    D Three

3 The important features of instrumentation amplifier are...

    A low CMRR

    B high noise

    C high DC offset

    D high gain accuracy

4 The input impedance of instrumentation amplifier built using Op Amp is...

    A Low

    B zero

    C High

    D Infinity

5 To reduce the effect of input offsets in the integrator circuit using Op Amps,the resistor connected in parallel with the capacitor should be 10 times larger than the...

    A bias resistor

    B load resistor

    C input resistor

    D output resistor

6 Which mode is used in differential amplifier?

    A Common base mode

    B Common emitter mode

    C Common collector mode

    D Common mode operation

7 Which is the important feature of instrumentation amplifier?

    A High DC offset

    B Low input impedance

    C High input impedance

    D Output impedance infinity

Electronic and Hardware   Assignment for Exercise 2.10.170 to 2.10.179
Electronic Mechanic - Voltage to current and current to voltage converter

Choose the correct answer

1 A voltage to current converter has a...

    A infinity impedance

    B low input impedance

    C high input impedance

    D high output impedance

2 The output current of voltage-to-current converter circuit using Op Amp depends on the value of resistance R and...

    A input voltage

    B output voltage

    C supply voltage

    D positive feedback

3 The output impedance of voltage-to-current converter circuit using Op Amp is...

  A Low

  B zero

  C high

  D infinity

4 One of the applicaton of voltage-to-current converter circuit using Op Amp is...

  A shift register

  B decade counter

  C electronic voltmeter

  D astable multivibrator

5 The output impedance of current-to-voltage converter circuit using Op Amp is...

  A low

  B high

  C zero

  D infinity

6 One of the application of current-to-voltage converter circuit using Op Amp is...

  A multiplexer circuit

  B electonic voltmeter

  C electonic ammeter

  D bistable multivibrator

7 In which place the voltage to current converter is used?

  A In oscillator circuits

  B In FM detector circuits

  C In building electronic voltmeter

  D In amplitude modulator circuits

Electronic and Hardware   Assignment for Exercise 2.10.170 to 2.10.179
Electronic Mechanic - Active filters using Op Amp

Choose the correct answer

1 In OP Amp, the signal loss is known as....

  A filtering

  B attenuation

  C amplification

  D load impedence

2 Which parameter prevents the excessive loading on the filters of Op Amp active low pass filter?

  A Low input impedance

  B High input impedance

  C Normal input impedance

  D Medium input impedance

3 What is the difference between active and passive low pass filter ?

  A Time

  B Method

  C Frequency

  D Amplitude

4 The first order highpass filter using Op Amp consists of a passive fitter followed by....

  A inverting amplifier

  B differential amplifier

  C Non inverting amplifier

  D instrumentation amplifier

5 The maximum gain bandwidth product of Op Amp is...

  A 1GHz

  B 1MHz

  C 10kHz

  D 100kHz

6 What type of filters are used in speaker system of audio amplifier?

  A Active low pass filter

  B Active high pass filter

  C Passive low pass filter

  D Passive high pass filter

7   What is the name of the filter circuit used in the diagram?
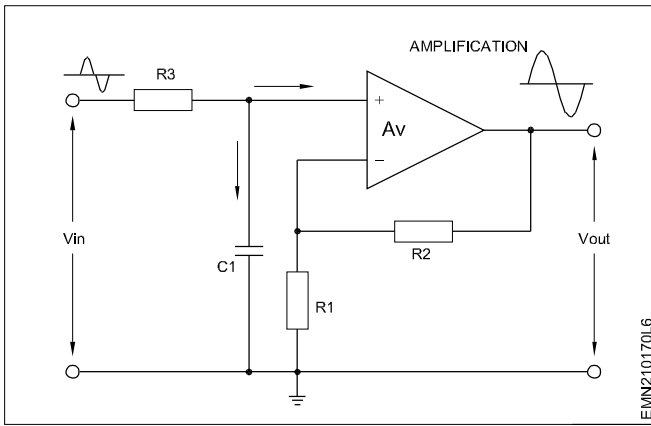
A   Active low pass filter

B   Active high pass filter

C   Passive low pass filter

D   Passive high pass filter

8   In audio applications, the active low pass filter is also known as....

A   pass band filter

B   band pass filter

C   boost pass filter

D   bass boost filter

9   The Gain Bandwidth Product of Op Amp starts from....

A   10kHz

B   20kHz

C   50kHz

D   100kHz

Electronic and Hardware   Assignment for Exercise 2.10.170 to 2.10.179
Electronic Mechanic - Op Amp using Opto - Electronic Devices

Choose the correct answer

1   When no light is incident on the photo diode, a reverse current flows through the PN junction is known as...

A   dark current

B   signal current

C   forward current

D   quiscent current

2   When light strikes the P N junction,crystal bonds are broken as a result of the...

A   holes

B   electrons

C   leakage current

D   supply of energy

3   Which device is suitable for the accurate measurement of illuminance?

A   LDR

B   Photo diode

C   Photo transistor

D   Light emitting diode

4   PIN photodiodes can operate at higher frequencies,typicaly...

A   1 MHz

B   100kHz

C   500 kHz

D   1GHz or more

5   The responsivity of PIN photodiode is quoted in...

A   Amps per watt

B   Ohms per watt

C   Lumens per watt

D   Intensity per watt

6   The device used for card reading application is...

A   LDR

B   IR LED

C   Thermistor

D   photodiode

7   Photo transistors produced without external base terminal is used as...

A   light amplifier

B   light activated oscillator

C   light sensitive switches

D   voltage controlled oscillators

8   The device used for sensing both visible and infrared light is...

A   BY 127

B   BD 139

C   BPX 81

D   BFW 11

9 Which is the light sensing component ?

   A Resistor

   B Transistor

   C Photoresistor

   D Schottky diode

10 A resistance range of photo resistor at dark condition is....

   A 10 to 20MΩ

   B 20 to 30MΩ

   C 30 to 50MΩ

   D 50 to 60MΩ

11 Which material is used for making photo resistor?

   A Silver

   B Aluminium

   C Gallium arsenic

   D Silicon selenium

12 In PN junction diode if photo voltaic cell the P material is doped using....

   A iron

   B gallium

   C selenium

   D aluminium

13 In PN junction diode of photo voltaic cell the N material is doped using....

   A gallium

   B selenium

   C cadmium

   D aluminium

14 The isolation resistance of the optocouplers in the order of....

   A $1 \times 10^{10}\Omega$

   B $1 \times 10^{11}\Omega$

   C $1 \times 10^{12}\Omega$

   D $1 \times 10^{13}\Omega$

15 The important consideration in the use of optocoupler is ...

   A CMRR

   B current voltage ratio

   C current transfer ratio

   D current combined ratio

16 In optocoupler the ratio of I_C to I_B is called as ...

   A MTR

   B MTS

   C CTR

   D CTS

17 Which device converts light signal into resistance variations?

   A LED

   B LDR

   C Solar cell

   D Photo diode

18 Which device converts the optical signal into corresponding electrical signal?

   A LED

   B LDR

   C Op Amp

   D Photodiode

Choose the correct answer

1   Which is sinusoidal oscillator ?

   A   Audio generator

   B   Pulse generator

   C   Frequency generator

   D   Square wave generator

2   Which OP Amp IC is used in pulse generator?

   A   IC741

   B   IC555

   C   IC748

   D   LM324

3   Regulated power supplies also called as ...

   A   fixed voltage regulator

   B   direct voltage regulator

   C   variable voltage regulator

   D   standard voltage regulator

5   How many Op Amps are available in the IC LM324?

   A   One

   B   Two

   C   Four

   D   Three

4   Which formula is used for pulse generator to produce output waveform?

   A $F = \dfrac{1}{2.2\, R_1 C_1}$

   B $F = \dfrac{1}{1.1\, R_1 C_1}$

   C $F = \dfrac{1}{1.0\, R_1 C_1}$

   D $F = \dfrac{1}{R_1 C_1}$

Choose the correct answer

1   The timer IC can operate from a wide range of supply voltages of 5VDC to...

   A   9 VDC

   B   12 VDC

   C   15 VDC

   D   18 VDC

2   Which type of flip flop is available inside the timer IC 555?

   A   D flip flop

   B   RS flip flop

   C   JK flip flop

   D   JKMS flip flop

3   The output source current or sink current of the timer IC 555 is...

   A   50 mA

   B   100 mA

   C   200 mA

   D   500 mA

4   The maximum power dissipation capacity of timer IC 555 is...

   A   150 milliWatt

   B   300 milliWatt

   C   450 milliWatt

   D   600 milliWatt

5 The threshold comparator of the timer IC 555 is referenced at...

A 1/2 Vcc

B 1/3 Vcc

C 1/4 Vcc

D 2/3 Vcc

6 The trigger comparator of the timer IC 555 is referenced at...

A 1/2 Vcc

B 1/3 Vcc

C 1/4 Vcc

D 2/3 Vcc

7 The function of the capacitor connected at pin No 5 of timer IC 555 is...

A bias voltage

B timing control

C noise filtering

D Trigger control

8 The ratio of the ON-time of the pulse to the OFF-time of the pulse is known as...

A duty cycle

B pulse width

C timing control

D pulse repetiton frequency

9 The circuit time constant of astable multivibrator using timer IC 555 is given by...

A $t = R \times C$

B $t = (R_A + R_B)C$

C $t = (R_A \times R_B) + C$

D $t = (R_A - R_B)C$

Electronic and Hardware   Assignment for Exercise 2.10.170 to 2.10.179
Electronic Mechanic - Op Amp & Timer 555 applications - Multivibrators

Choose the correct answer

1 What is the application of frequency to voltage converter using timer IC 555?

A Tachometers

B Clamper circuits

C Astable multivibrators

D Voltage controlled oscillators

2 In order to function as frequency to voltage converter the timer IC 555 is wired in...

A astable multivibrator

B bistable multivibrator

C pluse width modulator

D monostable multivibrator

3 What is the function of resistor and capacitor connected at pin No 6 of timer IC 555?

A Auto cut-off

B Current feedback

C Fixed bias voltage

D Timing for the circuit

4 Which type of waveform is produced by the frequency to voltage converter cirucit using timer IC 555?

A Pulse waveform

B Peak clipped waveform

C Ripple voltage waveform

D Pulse width modulated waveform

5 What is the function of astable multivibrator in timer IC 555?

A Acting as trasducer

B Serving as comparator

C Serving as an oscillator

D Serving as voltage divider

Choose the correct answer

1   Schmitt triggers are fundamental circuits used in...

   A   Power supply circuits

   B   AM FM receiver circuits

   C   Signal processing circuits

   D   Audio frequency amplifiers

2   Signal processing circuits using schmitt trigger can pull out the digital data from extremely...

   A   noisy signal

   B   weak signal

   C   high voltage signal

   D   demodulated signal

3   The built in comparators C_1 and C_2 of the timer IC 555 compares the input voltage and trip the built in...

   A   flip flop

   B   oscillator

   C   over load relay

   D   voltage regulator

4   Which pin number of the timer IC 555 resets the operation of the IC?

   A   Pin No.1

   B   Pin No. 2

   C   Pin No. 3

   D   Pin No. 4

5   The maximum output current that the timer IC 555 can source or sink is...

   A   50 mA

   B   100 mA

   C   200 mA

   D   500 mA

Choose the correct answer

1   The security alarm circuit using mono shot and astable multivibrator gives an audible sound when on intruder touch the plate,the circuit gets...

   A   shock

   B   triggered

   C   shutdown

   D   sleep signal

2   The security alarm circuit designed with a mono shot coupled with astable multivibrator uses the IC...

   A   IC 555

   B   μA 741

   C   LM 386

   D   LM 301

3   When the touch plate is touched by the hand the mono shot IC makes its output become...

   A   Low

   B   Zero

   C   high

   D   No change

4   As long as the reset pin of astable multivibrator is held high,it gives the output as...

   A   No pulse

   B   Signal pulse

   C   repetitive pulses

   D   surge voltage pulse

5 The security alarm circuit using timer IC 555 can be modified as...

   A AM modulator

   B FM modulator

   C biased peak clipper

   D water level indicator

6 In JK flip flop the variables J and K are called...

   A clear inputs

   B preset inputs

   C control inputs

   D trigger inputs

7 The JK master slave flip flop is a combination of two flip flops connected in...

   A parallel

   B cascode

   C cascade

   D independently

8 In a voltage controlled oscillator,the timer IC 555 is configured as...

   A astable multivibrator

   B bistable multivibrator

   C monostable multivibrator

   D constant current generator

9 Voltage controlled oscillator circuit is just a timing circuit continuously generates a...

   A beep sound

   B flash of light

   C trip the relay

   D train of pulses

10 Which pin number serves as the input terminal in a voltage controlled oscillator using timer IC 555?

   A Pin No. 2

   B Pin No. 5

   C Pin No. 6

   D Pin No. 7

11 What is the effect of increasing the input voltage of Pin No. 5 of timer IC 555 used as voltage controlled oscillator?

   A Output frequency increases

   B Output amplitude increases

   C Output frequency decreases

   D Output amplitude decreases

12 The internal comparators of the timer IC 555 controls the internal flip flop that...

   A Switches ON

   B Switches OFF

   C toggles the output

   D controls the temperature

Instruction for answering in the Response Sheet

1 Read the question in the Assignment/Test, choose the correct answer and mark appropriate option in the Response Sheet.

2 Use black ball point pen only.

3 There is one correct answer for each question.

4 Mark should be dark and completely fill the circle.

5 Rough work must not be done in the response sheet.

6 Make the marks only in the circle space provided.

CORRECT METHOD	WRONG METHOD
(A) (B) ● (D)	(A) (B) (C) (D)
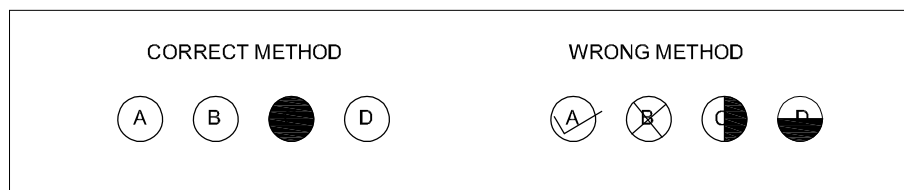
ELECTRONIC MECHANIC 2nd SEMESTER NSQF-LEVEL 5

MODULE - 1 TRANSISTOR AMPLIFIER

RESPONSE SHEET FOR EXERCISE 2.1.102-113

1	Ⓐ Ⓑ Ⓒ Ⓓ	7	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ	8	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ	9	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ	10	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ	11	Ⓐ Ⓑ Ⓒ Ⓓ
6	Ⓐ Ⓑ Ⓒ Ⓓ		

MODULE - 1 TRANSISTOR AMPLIFIER-TRANSISTOR CHARACTERISTICS

RESPONSE SHEET FOR EXERCISE 2.1.102-113

1	Ⓐ Ⓑ Ⓒ Ⓓ	11	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ	12	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ	13	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ	14	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ	15	Ⓐ Ⓑ Ⓒ Ⓓ
6	Ⓐ Ⓑ Ⓒ Ⓓ	16	Ⓐ Ⓑ Ⓒ Ⓓ
7	Ⓐ Ⓑ Ⓒ Ⓓ	17	Ⓐ Ⓑ Ⓒ Ⓓ
8	Ⓐ Ⓑ Ⓒ Ⓓ	18	Ⓐ Ⓑ Ⓒ Ⓓ
9	Ⓐ Ⓑ Ⓒ Ⓓ	19	Ⓐ Ⓑ Ⓒ Ⓓ
10	Ⓐ Ⓑ Ⓒ Ⓓ	20	Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 1 TRANSISTOR AMPLIFIER-TRANSISTOR BIASING

RESPONSE SHEET FOR EXERCISE 2.1.102-113

1	Ⓐ Ⓑ Ⓒ Ⓓ	9	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ	10	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ	11	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ	12	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ	13	Ⓐ Ⓑ Ⓒ Ⓓ
6	Ⓐ Ⓑ Ⓒ Ⓓ	14	Ⓐ Ⓑ Ⓒ Ⓓ
7	Ⓐ Ⓑ Ⓒ Ⓓ	15	Ⓐ Ⓑ Ⓒ Ⓓ
8	Ⓐ Ⓑ Ⓒ Ⓓ	16	Ⓐ Ⓑ Ⓒ Ⓓ

17	(A)	(B)	(C)	(D)	22	(A)	(B)	(C)	(D)
18	(A)	(B)	(C)	(D)	23	(A)	(B)	(C)	(D)
19	(A)	(B)	(C)	(D)	24	(A)	(B)	(C)	(D)
20	(A)	(B)	(C)	(D)	25	(A)	(B)	(C)	(D)
21	(A)	(B)	(C)	(D)					

MODULE - 1 TRANSISTOR AMPLIFIER-COMMON BASE AMPLIFIER

RESPONSE SHEET FOR EXERCISE 2.1.102-113

1	(A)	(B)	(C)	(D)	5	(A)	(B)	(C)	(D)
2	(A)	(B)	(C)	(D)	6	(A)	(B)	(C)	(D)
3	(A)	(B)	(C)	(D)	7	(A)	(B)	(C)	(D)
4	(A)	(B)	(C)	(D)					

MODULE - 1 TRANSISTOR AMPLIFIER-TRANSISTOR CE AMPLIFIER

RESPONSE SHEET FOR EXERCISE 2.1.102-113

1	(A)	(B)	(C)	(D)	3	(A)	(B)	(C)	(D)
2	(A)	(B)	(C)	(D)	4	(A)	(B)	(C)	(D)

MODULE - 1 TRANSISTOR AMPLIFIER-EMITTER FOLLOWER

RESPONSE SHEET FOR EXERCISE 2.1.102-113

1	(A)	(B)	(C)	(D)	4	(A)	(B)	(C)	(D)
2	(A)	(B)	(C)	(D)	5	(A)	(B)	(C)	(D)
3	(A)	(B)	(C)	(D)					

MODULE - 1 TRANSISTOR AMPLIFIER-DARLINGTON PAIR

RESPONSE SHEET FOR EXERCISE 2.1.102-113

1	(A)	(B)	(C)	(D)	5	(A)	(B)	(C)	(D)
2	(A)	(B)	(C)	(D)	6	(A)	(B)	(C)	(D)
3	(A)	(B)	(C)	(D)	7	(A)	(B)	(C)	(D)
4	(A)	(B)	(C)	(D)					

MODULE - 1 TRANSISTOR AMPLIFIER-TRANSISTOR CASCADED AMPLIFIER

RESPONSE SHEET FOR EXERCISE 2.1.102-113

1	(A) (B) (C) (D)	6	(A) (B) (C) (D)
2	(A) (B) (C) (D)	7	(A) (B) (C) (D)
3	(A) (B) (C) (D)	8	(A) (B) (C) (D)
4	(A) (B) (C) (D)	9	(A) (B) (C) (D)
5	(A) (B) (C) (D)	10	(A) (B) (C) (D)

MODULE - 1 TRANSISTOR AMPLIFIER-CLASSES OF AMPLIFIER

RESPONSE SHEET FOR EXERCISE 2.1.102-113

1	(A) (B) (C) (D)	8	(A) (B) (C) (D)
2	(A) (B) (C) (D)	9	(A) (B) (C) (D)
3	(A) (B) (C) (D)	10	(A) (B) (C) (D)
4	(A) (B) (C) (D)	11	(A) (B) (C) (D)
5	(A) (B) (C) (D)	12	(A) (B) (C) (D)
6	(A) (B) (C) (D)	13	(A) (B) (C) (D)
7	(A) (B) (C) (D)		

MODULE - 1 TRANSISTOR AMPLIFIER-TUNED AMPLIFIER

RESPONSE SHEET FOR EXERCISE 2.1.102-113

1	(A) (B) (C) (D)	3	(A) (B) (C) (D)
2	(A) (B) (C) (D)	4	(A) (B) (C) (D)

MODULE - 1 TRANSISTOR AMPLIFIER-TROUBLESHOOTING

RESPONSE SHEET FOR EXERCISE 2.1.102-113

1	(A) (B) (C) (D)	4	(A) (B) (C) (D)
2	(A) (B) (C) (D)	5	(A) (B) (C) (D)
3	(A) (B) (C) (D)		

MODULE - 2 OSCILLATORS

RESPONSE SHEET FOR EXERCISE 2.2.114-117

1	(A) (B) (C) (D)	4	(A) (B) (C) (D)
2	(A) (B) (C) (D)	5	(A) (B) (C) (D)
3	(A) (B) (C) (D)	6	(A) (B) (C) (D)

63

7	Ⓐ Ⓑ Ⓒ Ⓓ				9	Ⓐ Ⓑ Ⓒ Ⓓ		
8	Ⓐ Ⓑ Ⓒ Ⓓ				10	Ⓐ Ⓑ Ⓒ Ⓓ		

MODULE - 2 OSCILLATORS

RESPONSE SHEET FOR EXERCISE 2.2.114-117

1	Ⓐ Ⓑ Ⓒ Ⓓ	5	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ	6	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ	7	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ	8	Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 3 WAVE SHAPING CIRCUITS

RESPONSE SHEET FOR EXERCISE 2.3.118-121

1	Ⓐ Ⓑ Ⓒ Ⓓ	23	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ	24	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ	25	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ	26	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ	27	Ⓐ Ⓑ Ⓒ Ⓓ
6	Ⓐ Ⓑ Ⓒ Ⓓ	28	Ⓐ Ⓑ Ⓒ Ⓓ
7	Ⓐ Ⓑ Ⓒ Ⓓ	29	Ⓐ Ⓑ Ⓒ Ⓓ
8	Ⓐ Ⓑ Ⓒ Ⓓ	30	Ⓐ Ⓑ Ⓒ Ⓓ
9	Ⓐ Ⓑ Ⓒ Ⓓ	31	Ⓐ Ⓑ Ⓒ Ⓓ
10	Ⓐ Ⓑ Ⓒ Ⓓ	32	Ⓐ Ⓑ Ⓒ Ⓓ
11	Ⓐ Ⓑ Ⓒ Ⓓ	33	Ⓐ Ⓑ Ⓒ Ⓓ
12	Ⓐ Ⓑ Ⓒ Ⓓ	34	Ⓐ Ⓑ Ⓒ Ⓓ
13	Ⓐ Ⓑ Ⓒ Ⓓ	35	Ⓐ Ⓑ Ⓒ Ⓓ
14	Ⓐ Ⓑ Ⓒ Ⓓ	36	Ⓐ Ⓑ Ⓒ Ⓓ
15	Ⓐ Ⓑ Ⓒ Ⓓ	37	Ⓐ Ⓑ Ⓒ Ⓓ
16	Ⓐ Ⓑ Ⓒ Ⓓ	38	Ⓐ Ⓑ Ⓒ Ⓓ
17	Ⓐ Ⓑ Ⓒ Ⓓ	39	Ⓐ Ⓑ Ⓒ Ⓓ
18	Ⓐ Ⓑ Ⓒ Ⓓ	40	Ⓐ Ⓑ Ⓒ Ⓓ
19	Ⓐ Ⓑ Ⓒ Ⓓ	41	Ⓐ Ⓑ Ⓒ Ⓓ
20	Ⓐ Ⓑ Ⓒ Ⓓ	42	Ⓐ Ⓑ Ⓒ Ⓓ
21	Ⓐ Ⓑ Ⓒ Ⓓ	43	Ⓐ Ⓑ Ⓒ Ⓓ
22	Ⓐ Ⓑ Ⓒ Ⓓ		

MODULE - 4 POWER ELECTRONIC COMPONENTS-FET

RESPONSE SHEET FOR EXERCISE 2.4.122-129

1	Ⓐ Ⓑ Ⓒ Ⓓ	11	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ	12	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ	13	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ	14	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ	15	Ⓐ Ⓑ Ⓒ Ⓓ
6	Ⓐ Ⓑ Ⓒ Ⓓ	16	Ⓐ Ⓑ Ⓒ Ⓓ
7	Ⓐ Ⓑ Ⓒ Ⓓ	17	Ⓐ Ⓑ Ⓒ Ⓓ
8	Ⓐ Ⓑ Ⓒ Ⓓ	18	Ⓐ Ⓑ Ⓒ Ⓓ
9	Ⓐ Ⓑ Ⓒ Ⓓ	19	Ⓐ Ⓑ Ⓒ Ⓓ
10	Ⓐ Ⓑ Ⓒ Ⓓ		

MODULE - 4 POWER ELECTRONIC COMPONENTS-SCR

RESPONSE SHEET FOR EXERCISE 2.4.122-129

1	Ⓐ Ⓑ Ⓒ Ⓓ	13	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ	14	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ	15	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ	16	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ	17	Ⓐ Ⓑ Ⓒ Ⓓ
6	Ⓐ Ⓑ Ⓒ Ⓓ	18	Ⓐ Ⓑ Ⓒ Ⓓ
7	Ⓐ Ⓑ Ⓒ Ⓓ	19	Ⓐ Ⓑ Ⓒ Ⓓ
8	Ⓐ Ⓑ Ⓒ Ⓓ	20	Ⓐ Ⓑ Ⓒ Ⓓ
9	Ⓐ Ⓑ Ⓒ Ⓓ	21	Ⓐ Ⓑ Ⓒ Ⓓ
10	Ⓐ Ⓑ Ⓒ Ⓓ	22	Ⓐ Ⓑ Ⓒ Ⓓ
11	Ⓐ Ⓑ Ⓒ Ⓓ	23	Ⓐ Ⓑ Ⓒ Ⓓ
12	Ⓐ Ⓑ Ⓒ Ⓓ		

MODULE - 4 POWER ELECTRONIC COMPONENTS-SOLID STATE RELAY

RESPONSE SHEET FOR EXERCISE 2.4.122-129

1	Ⓐ Ⓑ Ⓒ Ⓓ	4	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ	5	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ		

MODULE - 4 POWER ELECTRONIC COMPONENTS-TRIAC & DIAC

RESPONSE SHEET FOR EXERCISE 2.4.122-129

1	Ⓐ	Ⓑ	Ⓒ	Ⓓ		7	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2	Ⓐ	Ⓑ	Ⓒ	Ⓓ		8	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ		9	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4	Ⓐ	Ⓑ	Ⓒ	Ⓓ		10	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5	Ⓐ	Ⓑ	Ⓒ	Ⓓ		11	Ⓐ	Ⓑ	Ⓒ	Ⓓ
6	Ⓐ	Ⓑ	Ⓒ	Ⓓ		12	Ⓐ	Ⓑ	Ⓒ	Ⓓ

MODULE - 4 POWER ELECTRONIC COMPONENTS-TRIAC & DIAC

RESPONSE SHEET FOR EXERCISE 2.4.122-129

1	Ⓐ	Ⓑ	Ⓒ	Ⓓ		7	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2	Ⓐ	Ⓑ	Ⓒ	Ⓓ		8	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ		9	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4	Ⓐ	Ⓑ	Ⓒ	Ⓓ		10	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5	Ⓐ	Ⓑ	Ⓒ	Ⓓ		11	Ⓐ	Ⓑ	Ⓒ	Ⓓ
6	Ⓐ	Ⓑ	Ⓒ	Ⓓ						

MODULE - 4 POWER ELECTRONIC COMPONENTS-UJT APPLICATIONS

RESPONSE SHEET FOR EXERCISE 2.4.122-129

1	Ⓐ	Ⓑ	Ⓒ	Ⓓ		6	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2	Ⓐ	Ⓑ	Ⓒ	Ⓓ		7	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ		8	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4	Ⓐ	Ⓑ	Ⓒ	Ⓓ		9	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5	Ⓐ	Ⓑ	Ⓒ	Ⓓ		10	Ⓐ	Ⓑ	Ⓒ	Ⓓ

MODULE - 5 MOSFET & IGBT

RESPONSE SHEET FOR EXERCISE 2.5.130-134

1	Ⓐ	Ⓑ	Ⓒ	Ⓓ		6	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2	Ⓐ	Ⓑ	Ⓒ	Ⓓ		7	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ		8	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4	Ⓐ	Ⓑ	Ⓒ	Ⓓ		9	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5	Ⓐ	Ⓑ	Ⓒ	Ⓓ		10	Ⓐ	Ⓑ	Ⓒ	Ⓓ

MODULE - 5 MOSFET & IGBT

RESPONSE SHEET FOR EXERCISE 2.5.130-134

1	Ⓐ	Ⓑ	Ⓒ	Ⓓ		6	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2	Ⓐ	Ⓑ	Ⓒ	Ⓓ		7	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ		8	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4	Ⓐ	Ⓑ	Ⓒ	Ⓓ		9	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5	Ⓐ	Ⓑ	Ⓒ	Ⓓ						

MODULE - 6 OPTO ELECTRONICS-LED$_S$

RESPONSE SHEET FOR EXERCISE 2.6.135-139

1	Ⓐ	Ⓑ	Ⓒ	Ⓓ		8	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2	Ⓐ	Ⓑ	Ⓒ	Ⓓ		9	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ		10	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4	Ⓐ	Ⓑ	Ⓒ	Ⓓ		11	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5	Ⓐ	Ⓑ	Ⓒ	Ⓓ		12	Ⓐ	Ⓑ	Ⓒ	Ⓓ
6	Ⓐ	Ⓑ	Ⓒ	Ⓓ		13	Ⓐ	Ⓑ	Ⓒ	Ⓓ
7	Ⓐ	Ⓑ	Ⓒ	Ⓓ						

MODULE - 6 OPTO ELECTRONICS-LDR

RESPONSE SHEET FOR EXERCISE 2.6.135-139

1	Ⓐ	Ⓑ	Ⓒ	Ⓓ		8	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2	Ⓐ	Ⓑ	Ⓒ	Ⓓ		9	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ		10	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4	Ⓐ	Ⓑ	Ⓒ	Ⓓ		11	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5	Ⓐ	Ⓑ	Ⓒ	Ⓓ		12	Ⓐ	Ⓑ	Ⓒ	Ⓓ
6	Ⓐ	Ⓑ	Ⓒ	Ⓓ		13	Ⓐ	Ⓑ	Ⓒ	Ⓓ
7	Ⓐ	Ⓑ	Ⓒ	Ⓓ						

MODULE - 6 OPTO ELECTRONICS-PHOTOVOLTAIC CELL

RESPONSE SHEET FOR EXERCISE 2.6.135-139

1	Ⓐ	Ⓑ	Ⓒ	Ⓓ		3	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2	Ⓐ	Ⓑ	Ⓒ	Ⓓ		4	Ⓐ	Ⓑ	Ⓒ	Ⓓ

MODULE - 6 OPTO ELECTRONICS-PHOTODIODES & TRANSISTORS

RESPONSE SHEET FOR EXERCISE 2.6.135-139

1 (A) (B) (C) (D)	7 (A) (B) (C) (D)
2 (A) (B) (C) (D)	8 (A) (B) (C) (D)
3 (A) (B) (C) (D)	9 (A) (B) (C) (D)
4 (A) (B) (C) (D)	10 (A) (B) (C) (D)
5 (A) (B) (C) (D)	11 (A) (B) (C) (D)
6 (A) (B) (C) (D)	

MODULE - 7 BASIC GATES-IC FAMILIES

RESPONSE SHEET FOR EXERCISE 2.7.140-154

1 (A) (B) (C) (D)	11 (A) (B) (C) (D)
2 (A) (B) (C) (D)	12 (A) (B) (C) (D)
3 (A) (B) (C) (D)	13 (A) (B) (C) (D)
4 (A) (B) (C) (D)	14 (A) (B) (C) (D)
5 (A) (B) (C) (D)	15 (A) (B) (C) (D)
6 (A) (B) (C) (D)	16 (A) (B) (C) (D)
7 (A) (B) (C) (D)	17 (A) (B) (C) (D)
8 (A) (B) (C) (D)	18 (A) (B) (C) (D)
9 (A) (B) (C) (D)	19 (A) (B) (C) (D)
10 (A) (B) (C) (D)	20 (A) (B) (C) (D)

MODULE - 7 BASIC GATES-NUMBER SYSTEM

RESPONSE SHEET FOR EXERCISE 2.7.140-154

1 (A) (B) (C) (D)	12 (A) (B) (C) (D)
2 (A) (B) (C) (D)	13 (A) (B) (C) (D)
3 (A) (B) (C) (D)	14 (A) (B) (C) (D)
4 (A) (B) (C) (D)	15 (A) (B) (C) (D)
5 (A) (B) (C) (D)	16 (A) (B) (C) (D)
6 (A) (B) (C) (D)	17 (A) (B) (C) (D)
7 (A) (B) (C) (D)	18 (A) (B) (C) (D)

8	Ⓐ Ⓑ Ⓒ Ⓓ		19	Ⓐ Ⓑ Ⓒ Ⓓ
9	Ⓐ Ⓑ Ⓒ Ⓓ		20	Ⓐ Ⓑ Ⓒ Ⓓ
10	Ⓐ Ⓑ Ⓒ Ⓓ		21	Ⓐ Ⓑ Ⓒ Ⓓ
11	Ⓐ Ⓑ Ⓒ Ⓓ		22	Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 7 BASIC GATES-LOGIC GATES

RESPONSE SHEET FOR EXERCISE 2.7.140-154

1	Ⓐ Ⓑ Ⓒ Ⓓ		20	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ		21	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ		22	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ		23	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ		24	Ⓐ Ⓑ Ⓒ Ⓓ
6	Ⓐ Ⓑ Ⓒ Ⓓ		25	Ⓐ Ⓑ Ⓒ Ⓓ
7	Ⓐ Ⓑ Ⓒ Ⓓ		26	Ⓐ Ⓑ Ⓒ Ⓓ
8	Ⓐ Ⓑ Ⓒ Ⓓ		27	Ⓐ Ⓑ Ⓒ Ⓓ
9	Ⓐ Ⓑ Ⓒ Ⓓ		28	Ⓐ Ⓑ Ⓒ Ⓓ
10	Ⓐ Ⓑ Ⓒ Ⓓ		29	Ⓐ Ⓑ Ⓒ Ⓓ
11	Ⓐ Ⓑ Ⓒ Ⓓ		30	Ⓐ Ⓑ Ⓒ Ⓓ
12	Ⓐ Ⓑ Ⓒ Ⓓ		31	Ⓐ Ⓑ Ⓒ Ⓓ
13	Ⓐ Ⓑ Ⓒ Ⓓ		32	Ⓐ Ⓑ Ⓒ Ⓓ
14	Ⓐ Ⓑ Ⓒ Ⓓ		33	Ⓐ Ⓑ Ⓒ Ⓓ
15	Ⓐ Ⓑ Ⓒ Ⓓ		34	Ⓐ Ⓑ Ⓒ Ⓓ
16	Ⓐ Ⓑ Ⓒ Ⓓ		35	Ⓐ Ⓑ Ⓒ Ⓓ
17	Ⓐ Ⓑ Ⓒ Ⓓ		36	Ⓐ Ⓑ Ⓒ Ⓓ
18	Ⓐ Ⓑ Ⓒ Ⓓ		37	Ⓐ Ⓑ Ⓒ Ⓓ
19	Ⓐ Ⓑ Ⓒ Ⓓ			

MODULE - 7 BASIC GATES-BINARY ARITHMETIC

RESPONSE SHEET FOR EXERCISE 2.7.140-154

1	Ⓐ Ⓑ Ⓒ Ⓓ		13	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ		14	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ		15	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ		16	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ		17	Ⓐ Ⓑ Ⓒ Ⓓ

6	Ⓐ Ⓑ Ⓒ Ⓓ		18	Ⓐ Ⓑ Ⓒ Ⓓ
7	Ⓐ Ⓑ Ⓒ Ⓓ		19	Ⓐ Ⓑ Ⓒ Ⓓ
8	Ⓐ Ⓑ Ⓒ Ⓓ		20	Ⓐ Ⓑ Ⓒ Ⓓ
9	Ⓐ Ⓑ Ⓒ Ⓓ		21	Ⓐ Ⓑ Ⓒ Ⓓ
10	Ⓐ Ⓑ Ⓒ Ⓓ		22	Ⓐ Ⓑ Ⓒ Ⓓ
11	Ⓐ Ⓑ Ⓒ Ⓓ		23	Ⓐ Ⓑ Ⓒ Ⓓ
12	Ⓐ Ⓑ Ⓒ Ⓓ		24	Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 7 MULTIPLEXERS & DEMULTIPLEXERS

RESPONSE SHEET FOR EXERCISE 2.7.140-154

1	Ⓐ Ⓑ Ⓒ Ⓓ		6	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ		7	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ		8	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ		9	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ		10	Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 7 BASIC GATES-LATCH CIRCUITS

RESPONSE SHEET FOR EXERCISE 2.7.140-154

1	Ⓐ Ⓑ Ⓒ Ⓓ		10	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ		11	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ		12	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ		13	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ		14	Ⓐ Ⓑ Ⓒ Ⓓ
6	Ⓐ Ⓑ Ⓒ Ⓓ		15	Ⓐ Ⓑ Ⓒ Ⓓ
7	Ⓐ Ⓑ Ⓒ Ⓓ		16	Ⓐ Ⓑ Ⓒ Ⓓ
8	Ⓐ Ⓑ Ⓒ Ⓓ		17	Ⓐ Ⓑ Ⓒ Ⓓ
9	Ⓐ Ⓑ Ⓒ Ⓓ		18	Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 7 BASIC GATES,COMBINATIONAL CIRCUITS,FLIP FLOPS

RESPONSE SHEET FOR EXERCISE 2.7.140-154

1	Ⓐ Ⓑ Ⓒ Ⓓ		4	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ		5	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ		6	Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 8 ELECTRONIC CIRCUIT SIMULATOR

RESPONSE SHEET FOR EXERCISE 2.8.155-158

1	Ⓐ Ⓑ Ⓒ Ⓓ				14	Ⓐ Ⓑ Ⓒ Ⓓ		
2	Ⓐ Ⓑ Ⓒ Ⓓ				15	Ⓐ Ⓑ Ⓒ Ⓓ		
3	Ⓐ Ⓑ Ⓒ Ⓓ				16	Ⓐ Ⓑ Ⓒ Ⓓ		
4	Ⓐ Ⓑ Ⓒ Ⓓ				17	Ⓐ Ⓑ Ⓒ Ⓓ		
5	Ⓐ Ⓑ Ⓒ Ⓓ				18	Ⓐ Ⓑ Ⓒ Ⓓ		
6	Ⓐ Ⓑ Ⓒ Ⓓ				19	Ⓐ Ⓑ Ⓒ Ⓓ		
7	Ⓐ Ⓑ Ⓒ Ⓓ				20	Ⓐ Ⓑ Ⓒ Ⓓ		
8	Ⓐ Ⓑ Ⓒ Ⓓ				21	Ⓐ Ⓑ Ⓒ Ⓓ		
9	Ⓐ Ⓑ Ⓒ Ⓓ				22	Ⓐ Ⓑ Ⓒ Ⓓ		
10	Ⓐ Ⓑ Ⓒ Ⓓ				23	Ⓐ Ⓑ Ⓒ Ⓓ		
11	Ⓐ Ⓑ Ⓒ Ⓓ				24	Ⓐ Ⓑ Ⓒ Ⓓ		
12	Ⓐ Ⓑ Ⓒ Ⓓ				25	Ⓐ Ⓑ Ⓒ Ⓓ		
13	Ⓐ Ⓑ Ⓒ Ⓓ							

MODULE - 9 COUNTER & SHIFT REGISTERS

RESPONSE SHEET FOR EXERCISE 2.9.159-169

1	Ⓐ Ⓑ Ⓒ Ⓓ				13	Ⓐ Ⓑ Ⓒ Ⓓ		
2	Ⓐ Ⓑ Ⓒ Ⓓ				14	Ⓐ Ⓑ Ⓒ Ⓓ		
3	Ⓐ Ⓑ Ⓒ Ⓓ				15	Ⓐ Ⓑ Ⓒ Ⓓ		
4	Ⓐ Ⓑ Ⓒ Ⓓ				16	Ⓐ Ⓑ Ⓒ Ⓓ		
5	Ⓐ Ⓑ Ⓒ Ⓓ				17	Ⓐ Ⓑ Ⓒ Ⓓ		
6	Ⓐ Ⓑ Ⓒ Ⓓ				18	Ⓐ Ⓑ Ⓒ Ⓓ		
7	Ⓐ Ⓑ Ⓒ Ⓓ				19	Ⓐ Ⓑ Ⓒ Ⓓ		
8	Ⓐ Ⓑ Ⓒ Ⓓ				20	Ⓐ Ⓑ Ⓒ Ⓓ		
9	Ⓐ Ⓑ Ⓒ Ⓓ				21	Ⓐ Ⓑ Ⓒ Ⓓ		
10	Ⓐ Ⓑ Ⓒ Ⓓ				22	Ⓐ Ⓑ Ⓒ Ⓓ		
11	Ⓐ Ⓑ Ⓒ Ⓓ				23	Ⓐ Ⓑ Ⓒ Ⓓ		
12	Ⓐ Ⓑ Ⓒ Ⓓ							

MODULE - 9 COUNTER & SHIFT REGISTERS

RESPONSE SHEET FOR EXERCISE 2.9.159-169

1	Ⓐ Ⓑ Ⓒ Ⓓ				2	Ⓐ Ⓑ Ⓒ Ⓓ		

3	Ⓐ Ⓑ Ⓒ Ⓓ		9	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ		10	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ		11	Ⓐ Ⓑ Ⓒ Ⓓ
6	Ⓐ Ⓑ Ⓒ Ⓓ		12	Ⓐ Ⓑ Ⓒ Ⓓ
7	Ⓐ Ⓑ Ⓒ Ⓓ		13	Ⓐ Ⓑ Ⓒ Ⓓ
8	Ⓐ Ⓑ Ⓒ Ⓓ			

MODULE - 10 OP AMP & TIMER 555 APPLICATIONS

RESPONSE SHEET FOR EXERCISE 2.10.170-179

1	Ⓐ Ⓑ Ⓒ Ⓓ		5	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ		6	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ		7	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ		8	Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 10 OP AMP & TIMER 555 APPLICATIONS-DAC

RESPONSE SHEET FOR EXERCISE 2.10.170-179

1	Ⓐ Ⓑ Ⓒ Ⓓ		5	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ		6	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ		7	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ			

MODULE - 10 OP AMP & TIMER 555 APPLICATIONS

RESPONSE SHEET FOR EXERCISE 2.10.170-179

1	Ⓐ Ⓑ Ⓒ Ⓓ		11	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ		12	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ		13	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ		14	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ		15	Ⓐ Ⓑ Ⓒ Ⓓ
6	Ⓐ Ⓑ Ⓒ Ⓓ		16	Ⓐ Ⓑ Ⓒ Ⓓ
7	Ⓐ Ⓑ Ⓒ Ⓓ		17	Ⓐ Ⓑ Ⓒ Ⓓ
8	Ⓐ Ⓑ Ⓒ Ⓓ		18	Ⓐ Ⓑ Ⓒ Ⓓ
9	Ⓐ Ⓑ Ⓒ Ⓓ		19	Ⓐ Ⓑ Ⓒ Ⓓ
10	Ⓐ Ⓑ Ⓒ Ⓓ			

MODULE - 10 OP AMP & TIMER 555 APPLICATIONS-COMPARATOR,DIFFERENTIATOR

RESPONSE SHEET FOR EXERCISE 2.10.170-179

1 Ⓐ Ⓑ Ⓒ Ⓓ   5 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ   6 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ   7 Ⓐ Ⓑ Ⓒ Ⓓ
4 Ⓐ Ⓑ Ⓒ Ⓓ   8 Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 10 DIFFERENTIAL AMPLIFIER,INSTRUMENTATION AMPLIFIER

RESPONSE SHEET FOR EXERCISE 2.10.170-179

1 Ⓐ Ⓑ Ⓒ Ⓓ   5 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ   6 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ   7 Ⓐ Ⓑ Ⓒ Ⓓ
4 Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 10 VOLTAGE TO CURRENT AND CURRENT TO VOLTAGE CONVERTER

RESPONSE SHEET FOR EXERCISE 2.10.170-179

1 Ⓐ Ⓑ Ⓒ Ⓓ   5 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ   6 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ   7 Ⓐ Ⓑ Ⓒ Ⓓ
4 Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 10 ACTIVE FILTERS USING OP AMP

RESPONSE SHEET FOR EXERCISE 2.10.170-179

1 Ⓐ Ⓑ Ⓒ Ⓓ   6 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ   7 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ   8 Ⓐ Ⓑ Ⓒ Ⓓ
4 Ⓐ Ⓑ Ⓒ Ⓓ   9 Ⓐ Ⓑ Ⓒ Ⓓ
5 Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 10 OPTO ELECTRONIC DEVICES USING OP AMPS

RESPONSE SHEET FOR EXERCISE 2.10.170-179

1	Ⓐ Ⓑ Ⓒ Ⓓ		10	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ		11	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ		12	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ		13	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ		14	Ⓐ Ⓑ Ⓒ Ⓓ
6	Ⓐ Ⓑ Ⓒ Ⓓ		15	Ⓐ Ⓑ Ⓒ Ⓓ
7	Ⓐ Ⓑ Ⓒ Ⓓ		16	Ⓐ Ⓑ Ⓒ Ⓓ
8	Ⓐ Ⓑ Ⓒ Ⓓ		17	Ⓐ Ⓑ Ⓒ Ⓓ
9	Ⓐ Ⓑ Ⓒ Ⓓ		18	Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 10 OP AMP & TIMER 555 APPLICATIONS-PULSE GENERATOR

RESPONSE SHEET FOR EXERCISE 2.10.170-179

1	Ⓐ Ⓑ Ⓒ Ⓓ		4	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ		5	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ			

MODULE - 10 SCHMITT TRIGGER USING TIMER IC555

RESPONSE SHEET FOR EXERCISE 2.10.170-179

1	Ⓐ Ⓑ Ⓒ Ⓓ		6	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ		7	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ		8	Ⓐ Ⓑ Ⓒ Ⓓ
4	Ⓐ Ⓑ Ⓒ Ⓓ		9	Ⓐ Ⓑ Ⓒ Ⓓ
5	Ⓐ Ⓑ Ⓒ Ⓓ			

MODULE - 10 OP-AMP & TIMER 555 APPLICATIONS-MULTIVIBRATORS

RESPONSE SHEET FOR EXERCISE 2.10.170-179

1	Ⓐ Ⓑ Ⓒ Ⓓ		4	Ⓐ Ⓑ Ⓒ Ⓓ
2	Ⓐ Ⓑ Ⓒ Ⓓ		5	Ⓐ Ⓑ Ⓒ Ⓓ
3	Ⓐ Ⓑ Ⓒ Ⓓ			

74

MODULE - 10 F TO V CONVERTER USING IC 555
RESPONSE SHEET FOR EXERCISE 2.10.170-179

1 Ⓐ Ⓑ Ⓒ Ⓓ   4 Ⓐ Ⓑ Ⓒ Ⓓ

2 Ⓐ Ⓑ Ⓒ Ⓓ   5 Ⓐ Ⓑ Ⓒ Ⓓ

3 Ⓐ Ⓑ Ⓒ Ⓓ

MODULE - 10 VCO USING OP AMP
RESPONSE SHEET FOR EXERCISE 2.10.170-179

1 Ⓐ Ⓑ Ⓒ Ⓓ   7 Ⓐ Ⓑ Ⓒ Ⓓ

2 Ⓐ Ⓑ Ⓒ Ⓓ   8 Ⓐ Ⓑ Ⓒ Ⓓ

3 Ⓐ Ⓑ Ⓒ Ⓓ   9 Ⓐ Ⓑ Ⓒ Ⓓ

4 Ⓐ Ⓑ Ⓒ Ⓓ   10 Ⓐ Ⓑ Ⓒ Ⓓ

5 Ⓐ Ⓑ Ⓒ Ⓓ   11 Ⓐ Ⓑ Ⓒ Ⓓ

6 Ⓐ Ⓑ Ⓒ Ⓓ   12 Ⓐ Ⓑ Ⓒ Ⓓ