University of Dhaka
Affiliated Engineering Colleges
B. Sc. in Computer Science & Engineering
2nd Year 1st Semester Final Examination-2021
CSE 2103 (Digital Electronics & Pulse Technique)

Time: 3.00 Hours | Marks: 70

[Answer any **Five** questions]

1. a) What is Switch? Draw a two-input NAND and NOR gate circuit using diode. 6
   b) Define Transistor. "Diode can be used as a switch"- show graphically with characteristic curve. 4
   c) Explain RTL basic circuits. 4

2. a) Explain classification of logic family. 3
   b) Draw the Transistor Transistor Logic (TTL) circuit and explain working procedure. 5
   c) What is pulse transformer? Write the functions of pulse transformer. 6

3. a) What do mean by LED and LCD? 4
   b) Explain Sample and Hold (S/H) circuit by using Operational Amplifier. 5
   c) Describe Analog to digital Converter circuit. 5

4. a) Write short Note on- i) Propagation delay ii) Noise margin 4
   b) Define filtering. Why filtering needed in linear wave shaping? 4
   c) Explain high pass filter circuit with proper diagrams. 4
   d) Sketch the frequency response of low pass filter. 2

5. a) Define clipper and clamper circuits. Write down the applications of clipping circuit. 5
   b) Define free running multivibrator. Describe the working principles of positive clipping circuit with proper diagrams. 5
   c) Differentiate between negative diode clipping and negative biased diode clipping circuits with figures. 4

6. a) Draw the block diagram of a D/A converter and explain its operation. 6
   b) Mention the process of triggering of a bistable multivibrator with proper diagram. 4
   c) Define PLA's working principles. Write down the applications of S/H circuits. 4

7. a) What is Cache Memory? Differentiate between primary and secondary memory. 4
   b) Explain pulse generator block diagram with equivalent circuit. 5
   c) What is OP-AMP. Why OP-AMP is a differential, voltage amplifier with high gain? 5

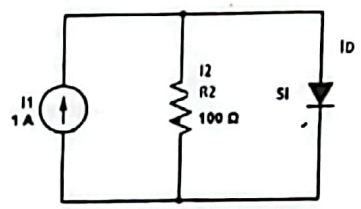
University of Dhaka
Affiliated Engineering Colleges
B. Sc. in Computer Science & Engineering
2nd Year 1st Semester Final Examination-2021
EEE 2104 (Electronic Devices and Circuits)

Time: 3.00 Hours | Marks: 70

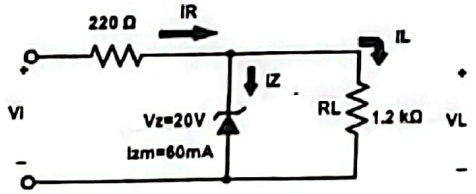
[Answer any Five questions]

1. a) What is semiconductor? Write down properties of semiconductor. 3
   b) Why we use semiconductor? Discuss about intrinsic semiconductor. 5
   c) What is LED? Explain working principle of LED. 4
   d) What do you mean by extrinsic semiconductor? 2

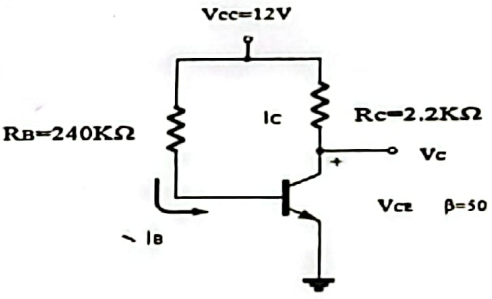
2. a) What is diode? Explain operating principle of bridge full wave rectifier. 5
   b) Discuss V-I characteristics of PN junction. 6
   c) Determine the currents I2, and ID for the network of Figure. 3



3. a) How Zener diode works as voltage regulator. Write down application of diode. 4
   b) What do you mean by clippers & clampers circuit? 2
   c) Write down advantage and disadvantage of full wave rectifier. 4
   d) For the Zener diode network of Figure. Determine VL, VR, IZ, and PZ. Where Vi= 30 V. 4



4. a) What do you mean by leakage current? 1
   b) Explain CE characteristics of transistor. 5
   c) Discuss about Transistor Circuit as an amplifier. 3
   d) Determine the following for the fixed-bias configuration of Figure. 5
   (i) IB and IC.
   (ii) VCE.
   (iii) VB and VC.
   (iv) VBC.



5. a) Write down the advantages of FET over BJT. 2
   b) Discuss working principle of JFET with necessary diagram. 7
   c) Explain the circuit operation of E-MOSFET according to *Threshold voltage.* 5

6. a) What is Operational Amplifier? Write the properties of it. 1+2
   b) For inverting Amplifier derive the equation given below, 7

$$A_{CL} = \frac{V_{out}}{V_{in}} = -\frac{R_f}{R_1}$$

   c) Find the output voltage for the circuit shown in Fig. 4

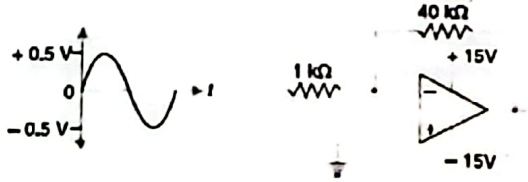


Fig.

7. a) For the input wave to the clipping circuit shown in Fig., find the output waveform. 7

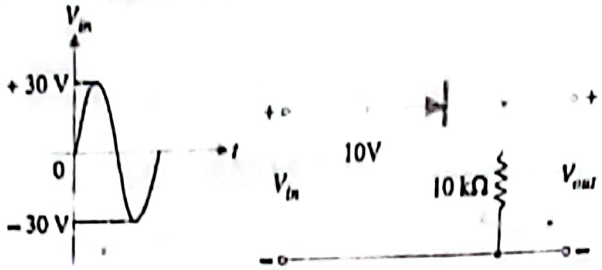


Fig.

b) For the input waveform to the clipping circuit in Fig., find the output voltage waveform. 7

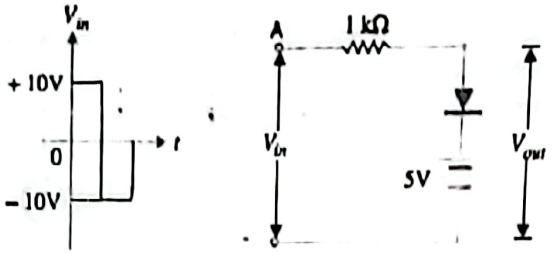


Fig.