KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Food Technology)
II Semester Final Re - Examination – August 2025
2023 & Previous admission

Beas.1206 **Basic Electronics Engineering (2+1)** **Marks: 50**
Time: 2 hours

I **Choose the correct answer** **(10x1=10)**

1. The temperature coefficient can be ..... for different Zener levels.
   a) positive
   b) negative
   c) zero
   d) All of the above
2. In a P-N Junction, the depletion region is reduced when .....
   a) P side is connected to the negative side of the terminal
   b) P side is connected to the positive side of the terminal
   c) N side is connected to the positive side of the terminal
   d) Never reduced
3. Ripple factor of half wave rectifier is .....
   a) 1.414
   b) 1.21
   c) 1.3
   d) 0.48
4. Which of the following is true about the temperature coefficient or TC of the Zener diode?
   a) For Zener voltage less than 5V, TC is negative
   b) For Zener voltage around 5V, TC can be made zero
   c) For higher values of Zener voltage, TC is positive
   d) All of the mentioned
5. Which circuit is used for obtaining desired output waveform in operational amplifier?
   a) Clipper
   b) Clamper
   c) Peak amplifier
   d) Sample and hold
6. A bipolar junction transistor has beta=250 and base current=10micro ampere. What is the collector current?
   a) 25 micro ampere
   b) 10 micro ampere
   c) 2.5 milli ampere
   d) 10 milli ampere
7. An ideal op-amp requires infinite bandwidth because
   a) Signals can be amplified without attenuation
   b) Output common-mode noise voltage is zero
   c) Output voltage occurs simultaneously with input voltage changes
   d) Output can drive infinite number of device
8. If A and B are the inputs of a half adder, the sum is given by .....
   a) A AND B
   b) A OR B
   c) A XOR B
   d) A EX-NOR B

9. Output of a bimetallic element will be .....
   a) Strain
   b) Pressure
   c) Displacement
   d) Voltage

State True or False

10. The strain gauge is not bonded to the specimen.

II **Write short notes on ANY FIVE of the following** **(5x2=10)**

1. Draw the Energy band diagram of conductors, semiconductors and Insulators.
2. What are the applications of PN diode?
3. Draw the symbol for PNP and NPN transistor.
4. Write down the general applications of oscillators.
5. Mention some of the non – linear applications of op-amp.
6. What is a comparator?
7. What is an electrical transducer? Give examples.

III **Answer ANY FIVE of the following** **(5x4=20)**

1. Draw the circuit diagram and explain the working of full wave bridge rectifier.
2. Explain the construction & working principle of Zener diode.
3. Compare the input resistance, output resistance and voltage gain of CB, CC and CE configuration.
4. Explain the working of Hartley Oscillator. Derive the expression for frequency of oscillation and condition for maintenance of oscillation.
5. When negative voltage feedback is applied to an amplifier of gain 100, the overall gain falls to 50. Calculate the fraction of the output voltage fedback. If this fraction is maintained, calculate the value of the amplifier gain required if the overall stage gain is to be 75.
6. Explain full adder. Design its truth table.
7. Explain working of semiconductor strain gauge and what are its specific advantages?

IV **Write an essay on ANY ONE of the following** **(1x10=10)**

1. With a neat diagram explain the working of a PN junction diode in forward bias And reverse bias and show the effects of temperature on its VI characteristics
2. Explain the construction and working of the following oscillators and derive the expression for frequency of oscillation. Also, write about advantages and disadvantages.
   A) Phase-Shift Oscillator (RC type Oscillator)
   B) Colpitts Oscillator (LC type Oscillator)

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