

- (c) What do you mean by BCD codes ? Explain.
- (d) Define CMRR.
- (e) What is differential amplifier ?
- (f) State advantage and disadvantages of a photodiode.
- (g) Sketch small signal model of an FET at a low frequency.
- (h) Why is common collector amplifier called emitter follower ?
- (i) Draw the symbols of n-channel JFET and MOSFET.
- (j) Why there is a need for bias stabilization ?

**1.5×10=15**

Roll No. ....

Total Pages : 04

**Sep-21-00010**

**B. Tech. EXAMINATION, 2021**

Semester I (CBCS)

FUNDAMENTALS OF ELECTRONICS

ENGINEERING

EC-101

*Time : 2 Hours*

*Maximum Marks : 60*

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*The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.*

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**Note :** Attempt *Four* questions in all, selecting *one* question from any of the Sections A, B, C and D.  
Q. No. 9 is compulsory.

**Section A**

- 1. (a) Draw the circuit diagram of a half wave rectifier circuit and explain its working. **7.5**

(b) Draw the output voltage waveform and circuit diagram of bridge type full wave rectifier, then show the effect of connecting a capacitor across the load resistance on the output waveform. 7.5

2. What is the principle of LED ? Describe various types of LED. 15

### Section B

3. What is the difference between the construction of enhancement type MOSFET and a depletion type MOSFET ? Explain the operation and characteristics of N-channel MOSFET in enhancement mode. 15

4. (a) Compare JFET and MOSFET. 7.5  
 (b) Compare CE, CB and CC configuration of a transistor. 7.5

### Section C

5. (a) Why is it preferred to locate the Q point at the centre of the active region for an amplifier ? 7.5

(b) Explain the principle of working of transistor Hartley oscillator. Draw circuit diagram and briefly function of each component. 7.5

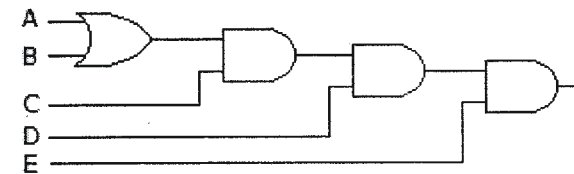
6. (a) Derive an expression for voltage gain of an inverting and non-inverting amplifier using Operational Amplifier. 7.5

(b) Draw circuit of a Wien Bridge Oscillator. 7.5

### Section D

7. (a) How can you measure phase difference using CRO ? 7.5

(b) Derive the Boolean expression for the logic circuit shown below : 7.5



8. (a) Determine X :  $(2020.65625)_{10} = (X)_8$  5

(b) Find the minimized Boolean expression of this function :  $F = XY + X(Y + Z) + Y(Y + Z)$ . 5

(c) What is meant by prime implicant and essential prime implicants ? 5

### Compulsory Question

9. (a) Compare LED with ordinary diode.

(b) Draw the VI characteristics of an ideal diode.