

**I B.TECH – EXAMINATIONS, JUNE - 2011**  
**BASIC ELECTRICAL AND ELECTRONICS ENGINEERING**  
**(BIOTECHNOLOGY)**

Time: 3hours

Max.Marks:80

**Answer any FIVE questions**  
**All questions carry equal marks**

- - -

- 1.a) Write down the expression for the instantaneous power, and hence derive the equation for the average power.
- b) A series R-L-C circuit consists of 100 ohms resistor and an inductor of 0.318 Henry and a capacitor of unknown value. This circuit is supplied by 230V, 50 HZ supply and draws a current of 2.3 ohms, and the current is in phase with the supply voltage. Find i) the value of the capacitance, and the power supplied by the source. [8+8]
- 2.a) Derive the equation for the voltage generated in a d.c generator.
- b) A 2 pole d.c generator has 200 conductors on its armature. It is driven by a prime mover at a constant speed of 600 r.p.m. If the flux per pole is 0.1 wb, calculate the emf generated. [8+8]
3. With a neat sketch explain in detail moving coil attraction type instrument. [16]
- 4.a) Compare Half wave, Center tapped full wave and Bridge rectifiers.
- b) Explain the following terms:
- |                  |                          |
|------------------|--------------------------|
| i) Ripple factor | ii) Peak Inverse voltage |
| iii) Efficiency  | iv) TUF                  |
| v) Form factor   | v) Peak factor.          |
- [6+10]
- 5.a) Draw and explain UJT characteristics also give their applications.
- b) Draw a family of drain characteristics and mutual characteristics of an n-channel FET and explain the shape of the curves qualitatively. [8+8]
- 6.a) Draw the circuit of a current shunt feedback amplifier and explain.
- b) An amplifier has a gain of 10,000 without feedback. The gain is reduced to 50 with negative feedback. Find the feedback factor.
- c) Explain the principle of operations of Tuned amplifiers. [4+4+8]
- 7.a) With the help of neat circuit diagram, explain the following applications of OP-AMP:
- |               |                    |                  |
|---------------|--------------------|------------------|
| i) Multiplier | ii) Differentiator | iii) Subtractor. |
|---------------|--------------------|------------------|
- b) Design a scaling adder circuit using OP-AMP, to give the output voltage  $V_O = -(3V_1 + 4V_2 + 5V_3)$ , where  $V_1$ ,  $V_2$  and  $V_3$  are the input voltages given to the circuit. [10+6]
- 8.a) With a circuit diagram, explain Counter type A-to-D converter.
- b) Give the Boolean functions:  $F = xy + x'y' + y'z$
- |  |       |
|--|-------|
| i) Implement with only OR and NOT gates.   |       |
| ii) Implement with only AND and NOT gates. | [8+8] |

\* \* \* \* \*

Code.No: R05012302

R05

SET-2

**I B.TECH – EXAMINATIONS, JUNE - 2011**  
**BASIC ELECTRICAL AND ELECTRONICS ENGINEERING**  
**(BIOTECHNOLOGY)**

Time: 3hours

Max.Marks:80

**Answer any FIVE questions**  
**All questions carry equal marks**

- - -

1. With a neat sketch explain in detail moving coil attraction type instrument. [16]
- 2.a) Compare Half wave, Center tapped full wave and Bridge rectifiers.  
b) Explain the following terms:
  - i) Ripple factor
  - ii) Peak Inverse voltage
  - iii) Efficiency
  - iv) TUF
  - v) Form factor
  - v) Peak factor. [6+10]
- 3.a) Draw and explain UJT characteristics also give their applications.  
b) Draw a family of drain characteristics and mutual characteristics of an n-channel FET and explain the shape of the curves qualitatively. [8+8]
- 4.a) Draw the circuit of a current shunt feedback amplifier and explain.  
b) An amplifier has a gain of 10,000 without feedback. The gain is reduced to 50 with negative feedback. Find the feedback factor.  
c) Explain the principle of operations of Tuned amplifiers. [4+4+8]
- 5.a) With the help of neat circuit diagram, explain the following applications of OP-AMP:
  - i) Multiplier
  - ii) Differentiator
  - iii) Subtractor.
b) Design a scaling adder circuit using OP-AMP, to give the output voltage  $V_O = -(3V_1 + 4V_2 + 5V_3)$ , where  $V_1$ ,  $V_2$  and  $V_3$  are the input voltages given to the circuit. [10+6]
- 6.a) With a circuit diagram, explain Counter type A-to-D converter.  
b) Give the Boolean functions:  $F = xy + x'y' + y'z$ 
  - i) Implement with only OR and NOT gates.
  - ii) Implement with only AND and NOT gates. [8+8]
- 7.a) Write down the expression for the instantaneous power, and hence derive the equation for the average power.  
b) A series R-L-C circuit consists of 100 ohms resistor and an inductor of 0.318 Henry and a capacitor of unknown value. This circuit is supplied by 230V, 50 HZ supply and draws a current of 2.3 ohms, and the current is in phase with the supply voltage. Find i) the value of the capacitance, and the power supplied by the source. [8+8]
- 8.a) Derive the equation for the voltage generated in a d.c generator.  
b) A 2 pole d.c generator has 200 conductors on its armature. It is driven by a prime mover at a constant speed of 600 r.p.m. If the flux per pole is 0.1 wb, calculate the emf generated. [8+8]

\* \* \* \* \*

Code.No: R05012302

R05

SET-3

**I B.TECH – EXAMINATIONS, JUNE - 2011**  
**BASIC ELECTRICAL AND ELECTRONICS ENGINEERING**  
**(BIOTECHNOLOGY)**

**Time: 3hours****Max.Marks:80**

**Answer any FIVE questions**  
**All questions carry equal marks**

- - -

- 1.a) Draw and explain UJT characteristics also give their applications.
- b) Draw a family of drain characteristics and mutual characteristics of an n-channel FET and explain the shape of the curves qualitatively. [8+8]
  
- 2.a) Draw the circuit of a current shunt feedback amplifier and explain.
- b) An amplifier has a gain of 10,000 without feedback. The gain is reduced to 50 with negative feedback. Find the feedback factor.
- c) Explain the principle of operations of Tuned amplifiers. [4+4+8]
  
- 3.a) With the help of neat circuit diagram, explain the following applications of OP-AMP:  
 i) Multiplier      ii) Differentiator      iii) Subtractor.
- b) Design a scaling adder circuit using OP-AMP, to give the output voltage  $V_O = -(3V_1 + 4V_2 + 5V_3)$ , where  $V_1$ ,  $V_2$  and  $V_3$  are the input voltages given to the circuit. [10+6]
  
- 4.a) With a circuit diagram, explain Counter type A-to-D converter.
- b) Give the Boolean functions:  $F = xy + x'y' + y'z$   
 i) Implement with only OR and NOT gates.  
 ii) Implement with only AND and NOT gates. [8+8]
  
- 5.a) Write down the expression for the instantaneous power, and hence derive the equation for the average power.
- b) A series R-L-C circuit consists of 100 ohms resistor and an inductor of 0.318 Henry and a capacitor of unknown value. This circuit is supplied by 230V, 50 HZ supply and draws a current of 2.3 ohms, and the current is in phase with the supply voltage. Find i) the value of the capacitance, and the power supplied by the source. [8+8]
  
- 6.a) Derive the equation for the voltage generated in a d.c generator.
- b) A 2 pole d.c generator has 200 conductors on its armature. It is driven by a prime mover at a constant speed of 600 r.p.m. If the flux per pole is 0.1 wb, calculate the emf generated. [8+8]
  
7. With a neat sketch explain in detail moving coil attraction type instrument. [16]
  
- 8.a) Compare Half wave, Center tapped full wave and Bridge rectifiers.
- b) Explain the following terms:  
 i) Ripple factor      ii) Peak Inverse voltage  
 iii) Efficiency      iv) TUF  
 v) Form factor      v) Peak factor. [6+10]

\* \* \* \* \*

Code.No: R05012302

R05

SET-4

**I B.TECH – EXAMINATIONS, JUNE - 2011**  
**BASIC ELECTRICAL AND ELECTRONICS ENGINEERING**  
**(BIOTECHNOLOGY)**

**Time: 3hours****Max.Marks:80**

**Answer any FIVE questions**  
**All questions carry equal marks**

- - -

- 1.a) With the help of neat circuit diagram, explain the following applications of OP-AMP:  
 i) Multiplier            ii) Differentiator            iii) Subtractor.
- b) Design a scaling adder circuit using OP-AMP, to give the output voltage  $V_O = -(3V_1 + 4V_2 + 5V_3)$ , where  $V_1$ ,  $V_2$  and  $V_3$  are the input voltages given to the circuit. [10+6]
- 2.a) With a circuit diagram, explain Counter type A-to-D converter.
- b) Give the Boolean functions:  $F = xy + x'y' + y'z$   
 i) Implement with only OR and NOT gates.  
 ii) Implement with only AND and NOT gates. [8+8]
- 3.a) Write down the expression for the instantaneous power, and hence derive the equation for the average power.
- b) A series R-L-C circuit consists of 100 ohms resistor and an inductor of 0.318 Henry and a capacitor of unknown value. This circuit is supplied by 230V, 50 HZ supply and draws a current of 2.3 ohms, and the current is in phase with the supply voltage. Find i) the value of the capacitance, and the power supplied by the source. [8+8]
- 4.a) Derive the equation for the voltage generated in a d.c generator.
- b) A 2 pole d.c generator has 200 conductors on its armature. It is driven by a prime mover at a constant speed of 600 r.p.m. If the flux per pole is 0.1 wb, calculate the emf generated. [8+8]
5. With a neat sketch explain in detail moving coil attraction type instrument. [16]
- 6.a) Compare Half wave, Center tapped full wave and Bridge rectifiers.
- b) Explain the following terms:  
 i) Ripple factor            ii) Peak Inverse voltage  
 iii) Efficiency            iv) TUF  
 v) Form factor            v) Peak factor. [6+10]
- 7.a) Draw and explain UJT characteristics also give their applications.
- b) Draw a family of drain characteristics and mutual characteristics of an n-channel FET and explain the shape of the curves qualitatively. [8+8]
- 8.a) Draw the circuit of a current shunt feedback amplifier and explain.
- b) An amplifier has a gain of 10,000 without feedback. The gain is reduced to 50 with negative feedback. Find the feedback factor.
- c) Explain the principle of operations of Tuned amplifiers. [4+4+8]

\* \* \* \* \*