Code No: RR211003 | RR | SET-1

**B.Tech II Year - I Semester Examinations, May-June, 2012**
**INSTRUMENTATION COMPONENTS**
**(ELECTRONICS AND INSTRUMENTATION ENGINEERING)**

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

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

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1.a) Draw the sketches for V-jewel bearing and spring-back jewel bearing and explain their constructional features and operation.
b) With the help of a neat sketch explain about the Taut-band suspension mechanism and explain the advantages of this system compared to conventional pivot and jewel suspension. [8+8]

2.a) Draw a neat sketch and explain about Rack and Pinian suspension mechanism. What are its applications?
b) Explain about different types of indicating mechanisms. [8+8]

3.a) Explain the principle of pneumatic relays and flip-flops. Give their applications.
b) Draw the sketch and explain about Flapper nozzle and bellows. [8+8]

4.a) How are pulse transformers different from conventional transformers? Explain. Give the specifications with typical values of parameters.
b) Explain the principle of magnetic amplifiers. Draw the necessary sketches and describe the operation of these amplifiers. What are their advantages, compared to conventional electronic amplifiers? [8+8]

5.a) Derive the expression for $\frac{e_o}{e_{ex}}$ in the case of a potentiometer considering loading effect.
b) A potentiometer output is to be connected to a recorder of $12\text{k}\Omega$ input resistance. Non-linearity is to be held within 1.1%. Choose a potentiometer to give greatest sensitivity considering loading effect, given potentiometers with 5 W rating and resistance values ranging from $10\,\Omega$ to $10\text{k}\Omega$ in steps of $50\,\Omega$. [8+8]

6.a) Give the construction and specifications of different types of resistors and inductors.
b) Give the salient features and applications of 555 and 723 ICs. [8+8]

7.a) Draw the structure of a PIN diode and explain about its characteristics. What are its applications? Compare a PIN photo diode with normal photo diode.
b) Explain about optical filters and resonators. [8+8]

8. Write notes on any Two
a) LEDs and LDRs
b) Optical prisms and gratings
c) UJT and SCR. [8+8]

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Code No: RR211003 | RR | SET-2

**B.Tech II Year - I Semester Examinations, May-June, 2012**
**INSTRUMENTATION COMPONENTS**
**(ELECTRONICS AND INSTRUMENTATION ENGINEERING)**

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

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

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1.a) Explain the principle of pneumatic relays and flip-flops. Give their applications.
b) Draw the sketch and explain about Flapper nozzle and bellows. [8+8]

2.a) How are pulse transformers different from conventional transformers? Explain. Give the specifications with typical values of parameters.
b) Explain the principle of magnetic amplifiers. Draw the necessary sketches and describe the operation of these amplifiers. What are their advantages, compared to conventional electronic amplifiers? [8+8]

3.a) Derive the expression for $\frac{e_o}{e_{ex}}$ in the case of a potentiometer considering loading effect.
b) A potentiometer output is to be connected to a recorder of $12k\Omega$ input resistance. Non-linearity is to be held within 1.1%. Choose a potentiometer to give greatest sensitivity considering loading effect, given potentiometers with 5 W rating and resistance values ranging from $10\Omega$ to $10k\Omega$ in steps of $50\Omega$. [8+8]

4.a) Give the construction and specifications of different types of resistors and inductors.
b) Give the salient features and applications of 555 and 723 ICs. [8+8]

5.a) Draw the structure of a PIN diode and explain about its characteristics. What are its applications? Compare a PIN photo diode with normal photo diode.
b) Explain about optical filters and resonators. [8+8]

6. Write notes on any Two
a) LEDs and LDRs
b) Optical prisms and gratings
c) UJT and SCR. [8+8]

7.a) Draw the sketches for V-jewel bearing and spring-back jewel bearing and explain their constructional features and operation.
b) With the help of a neat sketch explain about the Taut-band suspension mechanism and explain the advantages of this system compared to conventional pivot and jewel suspension. [8+8]

8.a) Draw a neat sketch and explain about Rack and Pinian suspension mechanism. What are its applications?
b) Explain about different types of indicating mechanisms. [8+8]

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Code No: RR211003 | RR | SET-3

**B.Tech II Year - I Semester Examinations, May-June, 2012**
**INSTRUMENTATION COMPONENTS**
**(ELECTRONICS AND INSTRUMENTATION ENGINEERING)**

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

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

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1.a) Derive the expression for $\frac{e_o}{e_{ex}}$ in the case of a potentiometer considering loading effect.

b) A potentiometer output is to be connected to a recorder of $12k\Omega$ input resistance. Non-linearity is to be held within 1.1%. Choose a potentiometer to give greatest sensitivity considering loading effect, given potentiometers with 5 W rating and resistance values ranging from $10\Omega$ to $10k\Omega$ in steps of $50\Omega$. [8+8]

2.a) Give the construction and specifications of different types of resistors and inductors.

b) Give the salient features and applications of 555 and 723 ICs. [8+8]

3.a) Draw the structure of a PIN diode and explain about its characteristics. What are its applications? Compare a PIN photo diode with normal photo diode.

b) Explain about optical filters and resonators. [8+8]

4. Write notes on any Two
a) LEDs and LDRs
b) Optical prisms and gratings
c) UJT and SCR. [8+8]

5.a) Draw the sketches for V-jewel bearing and spring-back jewel bearing and explain their constructional features and operation.

b) With the help of a neat sketch explain about the Taut-band suspension mechanism and explain the advantages of this system compared to conventional pivot and jewel suspension. [8+8]

6.a) Draw a neat sketch and explain about Rack and Pinian suspension mechanism. What are its applications?

b) Explain about different types of indicating mechanisms. [8+8]

7.a) Explain the principle of pneumatic relays and flip-flops. Give their applications.

b) Draw the sketch and explain about Flapper nozzle and bellows. [8+8]

8.a) How are pulse transformers different from conventional transformers? Explain. Give the specifications with typical values of parameters.

b) Explain the principle of magnetic amplifiers. Draw the necessary sketches and describe the operation of these amplifiers. What are their advantages, compared to conventional electronic amplifiers? [8+8]

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Code No: RR211003 | RR | SET-4

**B.Tech II Year - I Semester Examinations, May-June, 2012**
**INSTRUMENTATION COMPONENTS**
**(ELECTRONICS AND INSTRUMENTATION ENGINEERING)**

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

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

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1.a) Give the construction and specifications of different types of resistors and inductors.
b) Give the salient features and applications of 555 and 723 ICs. [8+8]

2.a) Draw the structure of a PIN diode and explain about its characteristics. What are its applications? Compare a PIN photo diode with normal photo diode.
b) Explain about optical filters and resonators. [8+8]

3. Write notes on any Two
a) LEDs and LDRs
b) Optical prisms and gratings
c) UJT and SCR. [8+8]

4.a) Draw the sketches for V-jewel bearing and spring-back jewel bearing and explain their constructional features and operation.
b) With the help of a neat sketch explain about the Taut-band suspension mechanism and explain the advantages of this system compared to conventional pivot and jewel suspension. [8+8]

5.a) Draw a neat sketch and explain about Rack and Pinian suspension mechanism. What are its applications?
b) Explain about different types of indicating mechanisms. [8+8]

6.a) Explain the principle of pneumatic relays and flip-flops. Give their applications.
b) Draw the sketch and explain about Flapper nozzle and bellows. [8+8]

7.a) How are pulse transformers different from conventional transformers? Explain. Give the specifications with typical values of parameters.
b) Explain the principle of magnetic amplifiers. Draw the necessary sketches and describe the operation of these amplifiers. What are their advantages, compared to conventional electronic amplifiers? [8+8]

8.a) Derive the expression for $\frac{e_o}{e_{ex}}$ in the case of a potentiometer considering loading effect.
b) A potentiometer output is to be connected to a recorder of $12\text{k}\Omega$ input resistance. Non-linearity is to be held within 1.1%. Choose a potentiometer to give greatest sensitivity considering loading effect, given potentiometers with 5 W rating and resistance values ranging from $10\,\Omega$ to $10\text{k}\,\Omega$ in steps of $50\,\Omega$. [8+8]

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