170643

DCPH602

# VI Semester B.Sc. Degree Examination, June/July - 2026

## (NEP Scheme - Freshers)

## PHYSICS

## Electronic Instrumentation and Sensors

## Paper : DSCT - VIII

**Time : 2½ Hours** **Maximum Marks : 60**

### PART - A

**Answer any Four questions. Each question carries Two marks.** **(4×2=8)**

1. Define ripple factor and explain its significance.
2. What are the advantages of a Pi filter?
3. A band pass filter allows selected frequencies to pass through. Justify
4. What is an active filter? Explain.
5. What is data transmission system? Explain
6. Mention any two applications of a Thermistor

### PART - B

**Answer any Four questions. Each question carries Five marks.** **(4×5=20)**

7. A moving coil instrument with resistance 100 Ω gives a full-scale deflection when a current of 10 mA is passed through it What is the value of the resistance which can convert this moving coil instrument into a voltmeter giving full scale deflection for a potential difference of 10 V?
8. A Zener diode with $V_z$=12V is used in a regulator circuit with an unregulated power supply of 24V. If the series resistance Rs=160 Ω and the load resistance $R_L$ is varied from 200 Ω to infinity. Calculate the current through the series resistance and hence find minimum & maximum Zener currents.
9. An AC bridge with terminals ABCD has in the arm AB a resistance of 800 Ω in parallel with a capacitor of 0.5μF. Arm BC a resistance of 400 Ω in series with a capacitor of 1μF. Arm CD has a resistance of 1000 Ω ,arm DA has a pure resistance R.
   (a) Determine the value of frequency for which the bridge is balanced and
   (b) Calculate the value of R require to produce balance.

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10. What is the value of the capacitor for a high pass filter having a unity gain whose cutoff frequency is at 2kHz. Assume the resistor R is 10kΩ. What should be the value of resistance in order to have a cutoff frequency of 5kHz.

11. A 4-bit D/A convertor has a reference voltage of 5V. Determine the output voltage for the digital input of 1101.

12. A platinum resistance thermometer has a resistance of 100Ω at 25°C. Find its resistance at 50°C. The resistance temperature coefficient of platinum is 0. 00392 Ω/°C. If thermometer has a resistance of 200Ω, calculate the value of temperature

## PART - C

**Answer any Four questions. Each question carries Eight marks.** **(4×8=32)**

13. With a block diagram explain the working of CRO and mention its applications.

14. With a neat diagram Explain the frequency response of passive low pass filter.

15. Explain the D/A convertor by using ladder type (R-2R) network.

16. a) Mention the techniques used in digital transmission.

    b) Explain PAM and PWM. **(4+4)**

17. Explain the construction and working of Resistance Thermometer or RTD (Resistance Temperature Detector).

18. Explain the construction, working and characteristics of a Photodiode.

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