Total No. of Questions : 22 Total No. of Pages : 02

Roll No.

B.Tech IV sem (Main/Back) Exam April-May 2026
Civil Engg.
4CE3-04 Basic Electronics for Civil Engineering Applications
Paper Code : 4E1314

Time: 3 Hours **Maximum Marks: 70**

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1._____ 2._____

Part A (Answer should be given up to 25 words only)
All questions are compulsory

Q.1	Discuss Half adder.	
Q.2	The binary number 10101 is equivalent to decimal number.	
Q.3	State Demorgan's theorem.	
Q.4	What are the α and β of a BJT?	
Q.5	Discuss hexadecimal and BCD number system.	
Q.6	What are the selection criteria for the transducer?	
Q.7	Draw a truth table and logic diagrams J-K Flip flop	
Q.8	How many types of resolutions are in remote sensing?	
Q.9	Draw the V-I characteristics of PN diode	
Q.10	Write the applications of strain gauges	10×2=20

Part B (Analytical/Problem solving questions)
Attempt any Five questions

Q.1	Describe the process of Geo-referencing and the role of Resampling in image rectification.	
Q.2	Explain the characteristics of different types of satellite orbits.	
Q.3	Differentiate any two in brief: (i) Gross errors and Systematic errors (ii) absolute and relative errors (iii) Accuracy and Precision.	
Q.4	Write a short note on different types of sensors.	
Q.5	Discuss the following in brief: (i) Control surveys using GNSS (ii) Total station and traversing methods	
Q.6	Discuss the atmospheric errors and removal in data capturing with sensors.	
Q.7	Draw and explain the working of temperature sensors.	5×4=20

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Part C (Descriptive/Analytical/Problem Solving/Design question)
Attempt any three questions

Q.1 What is data acquisition? Explain in detail about ADC & DAC.

Q.2 Explain the construction and working of BJT. Discuss the CC, CB and CE configuration with the help of input and output characteristics.

Q.3 Write a short note on applications of optical and microwave remote sensing techniques for Civil Engineering.

Q.4 Discuss the following steps of Digital Image Processing in detail:

(i) Pre-processing
(ii) Enhancement
(iii) Classification
(iv) Accuracy assessment.

Q.5 Write the short note on any two

(i) Causes of Geometric Distortions in remote sensing data
(ii) Various sources and types of Radiometric Distortions in satellite imagery
(iii) Define and differentiate between FOV (Field of View) and IFOV (Instantaneous Field of View)

3×10=30

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