BT SH-III(R)-11.21-1021 Reg. No. | | | | | | | | |

B

B.Tech. Degree III Semester Regular Examination in Naval Architecture and Ship Building November 2021

20-215-0304 INSTRUMENTATION
(2020 Scheme)

Time: 3 Hours Maximum Marks: 100

PART A
(Answer ***ALL*** questions)

(5 × 4 = 20)

I. (a) What do you mean by drift error in measuring instruments?
(b) What are the applications of piezo-electric transducers?
(c) Explain the temperature-resistance characteristics of a thermistor.
(d) What do you mean by relative humidity?
(e) What are the features of LCDs?

PART B

(5 × 16 = 80)

II. (a) Explain Gross errors in measuring instruments with suitable examples and how can you reduce such errors. (8)
(b) Explain the terms accuracy, precision and resolution with respect to measuring instruments. (8)

OR

III. Explain the classification of instruments giving suitable examples. (16)

IV. With the help of a neat diagram explain a digital optical shaft encoder enumerating its construction, coding and resolution. (16)

OR

V. With respect to a strain gauge explain the terms gauge factor, signal enhancement factor and temperature compensation. (16)

VI. What is the principle of operation of a thermocouple? Explain the laws of intermediate temperature and intermediate metals with respect to a thermocouple and how are they useful while making measurements. (16)

OR

VII. What is Pyrometry and when will you prefer it? With the help of necessary sketches describe the construction, working and features of the total radiation pyrometer. (16)

VIII. (a) Draw a neat sketch of a bourdon gauge and explain the various parts and the possible errors for pressure measurement. (8)
(b) Explain the use of electromagnetic log in flow measurement. (8)

OR

IX. (a) Explain how Gamma rays can be used for liquid level measurement. (8)
(b) Explain the principle and working of a wet and dry bulb hygrometer. How will you determine RH from dew-point temperature? (8)

X. Draw and explain the functional block diagram of a digital instrument. (16)

OR

XI. (a) How will you compare a microprocessor with a microcontroller? (8)
(b) Explain the working of a binary ramp ADC. (8)

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