Total No. of Questions – [5] Total No. of Printed Pages 02

G.R. No.	

U118-104A (BE-FS)

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F. Y. B. TECH. (COMMON) (SEMESTER – I/II)

COURSE NAME: Basic Electronics Engineering

ET10174A.

(2017 PATTERN)

Time: [**2 Hours**] [Max. Marks: **50**]

(*) Instructions to candidates:

1) **Answer Q.1 OR Q.2, Q.3 OR Q.4 and Q.5**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data wherever required**

Q1 a) State and prove Demorgan's theorems, with the help of logical diagrams. [6]

b) Construct basic gates NOT, OR and AND gate using NAND gate only. [6]

c) Explain working of gated S-R flip flop with block diagram and truth table [4]

OR

Q2 a) Define and draw NAND gate and NOR gate. For both gates develop the truth table for two inputs based on their logical expression [6]

b) Explain the working of 4:1 MUX and 1:4 De-MUX with block diagram and truth table. [6]

c) State and prove Commutative and Associative laws used in Boolean Algebra. [4]

Q3 a) Draw and explain the block diagram of basic instrumentation system. [6]

b) Compare active and passive transducers. [4]

c) Define linearity ,accuracy, sensitivity and repeatability of transducer used in an instrumentation system. [4]

OR

Q4 a) What is RTD? Explain its construction and working principle. Draw the circuit diagram for measurement of temperature using RTD. [6]

b) What is primary and secondary transducer? State two examples of each. [4]

c) What is transducer? Give its classification based on its electrical parameters. [4]

Q.5) Attempt following multiple choice questions: [2x10=20 marks]

a) If the ac supply is 60 Hz, what will be the ripple frequency out of the full-wave rectifier? [2]

a) 50 Hz b) 60 Hz c) 120 Hz d)100 Hz

b) The no load output voltage of half wave rectifier is [2]

a) 0.318 V_{peak} b) 2 V_{peak} c) 0.636 V_{peak} d) 0.5 V_{peak}

c) For what kind of amplifications, the active region of the common-emitter configuration is used? [2]

a) Voltage b) Current c) Power d) All of the above

d) In the active region for a CE transistor configuration, the collector-base junction is _____-biased, the base-emitter is _____-biased. [2]

a) reverse, forward b) forward, reverse
c) forward, forward d) reverse, reverse

e) Which of the following devices does not have a cathode terminal? [2]

a) SCR b) PN Junction Diode c) Triac d) Zener diode

f) If I_E=5.34mA , I_B= 475 μA, current gain beta of BJT will be [2]

a) 10.24 b) 9.24 c) 10.48 d) 11.24

g) Which of the following applies to MOSFETs? [2]

a) Current controlled device
b) Device with low input impedance
c) Voltage controlled device
d) None of the above

h) It is the insulating layer of _____ in the MOSFET construction that accounts for the very desirable high input impedance of the device. [2]

a) SiO b) GaAs c) SiO_2 d) HCl

i) An non inverting operational amplifier with gain of 101 is applied with 1V input voltage, the output voltage will be [2]

a) +Vcc b) –Vcc c) 101 V d) -101 V

j) The 7805 regulator IC provides _____ [2]

a) 5V b)-5V c)12V d)-12V