Total No. of Questions – [05] Total No. of Printed Pages [04]

G.R. No.	

UII7-104A (RE-FSRF)

DECEMBER 2017 / ~~ENDSEM~~ RE-EXAM

F. Y. B. TECH. (COMMON) (SEMESTER - I)

COURSE NAME: Basic Electronics Engineering

(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.**

Q.1	a)	Construct basic gates such as NOT, OR and AND gate using only NOR gate.	[6]
	b)	State and prove Demorgan's theorems, Draw the logical diagrams.	[6]
	c)	Explain working of gated S-R flip flop with block diagram and truth table.	[4]

OR

Q.2	a)	Explain the working of 4:1 MUX and 1:4 De-MUX with block diagram and truth table.	[6]
	b)	Convert binary number 110010.1011 to decimal number and convert decimal number 69.625 to binary number.	[6]
	c)	State and prove Commutative and Associative laws used in Boolean Algebra.	[4]
Q.3	a)	Explain the working of LVDT using circuit diagram. Explain the use of LVDT to measure air pressure.	[6]
	b)	What is transducer? Give its classification based on principle used.	[4]
	c)	Define linearity ,accuracy, sensitivity and repeatability of transducer	[4]

OR

Q.4 **a)** Draw and explain the block diagram of basic instrumentation system. **[6]**

b) List important factors while selecting transducer for particular application. **[4]**

c) Compare active and passive transducers. **[4]**

Q.5 Attempt following multiple choice questions: [1x20=20 marks]

1. When forward biased, the voltage drop across Ge diode is _____. **[1]**
   a) 0.7 V b) 0.6 V c) 0.3 V d) 1 V

2. If the ac supply is 60 Hz, what will be the ripple frequency out of the full-wave rectifier? **[1]**
   a) 50 Hz b) 60 Hz c) 120 Hz d)100 Hz

3. The voltage across Zener diode remains constant when operated **[1]**
   a) Below Iz_{min} b) between Iz_{min} and Iz_{max}
   c) in forward biased d) None of the above

4. The no load output voltage of half wave rectifier is **[1]**
   a) 0.318 V_{peak} b) 2 V_{peak} c) 0.636 V_{peak} d) 0.5 V_{peak}

5. Which of the following, when added as an impurity, into the silicon, produces p-type semi-conductor **[1]**
   a) Aluminium b) Phosphorous c) Antimony d) both 'a' and 'c'

6. A ratio of collector current to base current in BJT is usually denoted as **[1]**
   a) beta
   b) alpha
   c) theta
   d) omega

7. If I_E=5.34mA , I_B= 475 μA, current gain beta of BJT will be **[1]**
   a) 10.24 b) 9.24 c) 10.48 d) 11.24

8. The voltage gain of the common emitter BJT amplifier depends on **[1]**
   a) Current gain
   b) Base and Collector resistance
   c) V_{CE} and V_{BE}
   d) Collector resistance and dynamic ac emitter resistance

9. V_{CE} approximately equals _____ when a transistor is in saturation state. [1]

a) V_B b) V_{CC} c) 0.2 V d) 0.7 V

10. [1]

Three different Q points are shown on a dc load line. The lower Q point represents the:

a) minimum current gain
b) intermediate current gain
c) cutoff point
d) maximum current gain

11. Which of the following devices does not have a cathode terminal? [1]

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

12. The material used to insulate GATE from channel in E MOSFET is ___ [1]

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

13. In an E-MOSFET, there is no drain current until V_{GS} [1]

a) reaches V_{GS}(th)
b) is positive
c) is negative
d) equals 0 V

14. In full controlled rectifier using SCR, output voltage is [1]

a) changed by varying anode current
b) by varying load resistance
c) by varying input voltage
d) by varying firing angle

15. Which of the following applies to MOSFETs? [1]

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

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

a) +Vcc
b) -Vcc
c) 101 V
d) -101 V

17. A 741 OPAMP has [1]

a) 10 pins

b) 8 pins
c) 6 pins
d) 3 pins

18. The use of negative feedback [1]

a) reduces the voltage gain of an op-amp
b) decreases input impedance
c) decreases bandwidth
d) increases output impedance

19. The CMRR of ideal OPAMP is [1]

a) zero

b) 90 dB

c) 70 dB

d) infinite

20. The 7805 regulator IC provides _____ . [1]

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