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

G.R. No.	

Paper Code :- UM17-104A (RE-FF&F)

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:

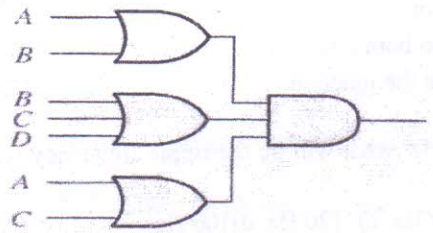
1) **Answer Q.1 OR Q.2, Q.3 OR Q.4 and Q.5**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed.**
4) **Use suitable data wherever required.**

Q.1 **a)** Construct basic gates such as NOT, OR and AND gate using only NAND gate. **[6]**

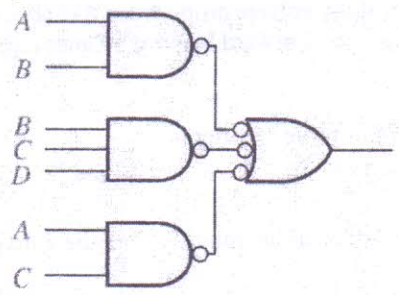
b) Explain working of gated S-R flip flop with block diagram and truth table. **[6]**

c) Find the simplified logical expression for output of the following logic circuit. **[4]**

i)



ii)



OR

Q.2 **a)** Draw the block diagram of full Adder using two half adders. Explain its working with proper expression along with sum and carry. **[6]**

b) Convert binary number 111010.101 to decimal number and convert decimal number 45.32 to binary number. **[6]**

c) Define and draw NAND gate and NOR gate. For both gates develop the truth table for two inputs based on their logical expression. **[4]**

Q.3 **a)** Explain the working of LVDT using circuit diagram. State any two advantages and disadvantages of LVDT. **[6]**

b) Draw the construction diagram of strain gauge and explain working principle of it. **[4]**

c) What are the different types of pressure transducer? Draw construction diagram of any two pressure transducer. **[4]**

OR

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

b) Explain working of ultrasonic flow meter. **[4]**

c) What is transducer? Give its classification based on its output quantity measured. **[4]**

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

1. When voltage applied to a diode is more than PIV, it is likely to result in **[1]**
   a) More distortion on output side
   b) Poor regulation
   c) Conduction in both direction
   d) Breakdown at the junction.

2. If the ac supply is 50 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. In what state is a silicon diode if the voltage drop across it is about 0.7 V? **[1]**
   a) No bias b) Reverse bias c) Forward bias d) Zener region

4. The no load output voltage of full 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 n-type semi-conductor **[1]**
   a) Aluminium b) Phosphorous c) Magnesium d) both 'b' and 'c'

6. A current ratio of I_C/I_E is usually less than one and is called: [1]

a) beta
b) alpha
c) theta
d) omega

7. In which region are both the collector-base and base-emitter junctions forward-biased? [1]

a) Saturation b) Cutoff c) Active d)All of the above

8. In the active region for a CE transistor configuration, the collector-base junction is _____-biased, the base-emitter is _____-biased. [1]

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

9. For what kind of amplifications , the active region of the common-emitter configuration be used? [1]

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

10. [1]

Three different Q points are shown on a dc load line. The upper 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. It is the insulating layer of _____ in the MOSFET construction that accounts for the very desirable high input impedance of the device. [1]

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

13. This symbol is of _____ [1]

a) SCS b) SCR c) GTO d)DIAC

14. The triac is [1]

a) a four-terminal device
b) like a bidirectional SCR
c) not a thyristor
d) answers (a) and (b)

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

a) All of the below
b) Desirable high input impedance
c) Uses metal for the gate, drain, and source connections
d) No direct electrical connection between the gate terminal and the channel

16. When an op-amp is operated in the single-ended differential mode [1]

a) one input is grounded and a signal is applied to the other
b) the output is grounded
c) both inputs are connected together
d) the output is not inverted

17. A differential amplifier [1]

a) is intermediate stage of OPAMP
b) has one input and one output
c) has no outputs
d) is first stage of OPAMP

18. The use of negative feedback [1]

a) reduces the voltage gain of an op-amp
b) makes the op-amp oscillate
c) makes linear operation possible
d) answers (a) and (c)

19. Negative feedback [1]

a) increases the input and output impedances
b) decreases the output impedance and the bandwidth
c) increases the input impedance and the bandwidth
d) does not affect impedances or bandwidth

20. The maximum slew rate of IC 741 is [1]

a) 0.1 V/ns
b) 0.8 V/ns
c) 0.5 V/ns
d) 1 V/ns