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DHANALAKSHMI SRINIVASAN COLLEGE OF ARTS & SCIENCE FOR WOMEN (AUTONOMOUS)
(For Candidates admitted from 2020-2021 onwards)
PG DEGREE EXAMINATIONS APRIL - 2021
M.Sc., - PHYSICS
ELECTRONICS

Time: 3 Hrs   Max.Marks: 75

PART - A

CHOOSE THE CORRECT ANSWER   (10X1=10)

1. A JFET has three terminals, namely.........

   a) Cathode, anode, grid   b) emitter, base, collector

   c) Source, gate, drain   d) none of the above

2. Tunnel diode exhibits special characteristics known as.....

   a) Positive reactance   b) positive resistance

   c) Negative reactance   d) negative resistance

3. In the common mode ....

   a) Both inputs are grounded   b) the outputs are connected together

   c) an identical signal appears on both the inputs   d) the output signal are in-phase

4. The Op-amp can amplify

   a) a.c. signals only   b) d.c. signals only

   c) Both a.c. and d.c. signals   d) neither d.c. nor a.c. signals

5. In S-R flip-flop, if $Q = 0$ the output is said to be.........

   a) Set   b) Reset   c) Previous state   d) Current state

6. A register that is used to store binary information is called..........

   a) Data register   b) Binary register   c) Shift register   d) D – Register

7. The practical use of binary-weighted digital-to-analog converters is limited to:

   a) R/2R ladder D/A converters   b) 4-bit D/A converters

   c) 8-bit D/A converters   d) op-amp comparators

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8. Non-linearity in the output of converter is expressed in

   a) None of the mentioned

   b) Percentage of reference voltage

   c) Percentage of resolution

   d) Percentage of full scale voltage

9. A light emitting diode is.........

   a) Heavily doped   b) Lightly doped   c) Intrinsic semiconductor   d) Zener diode

10. Which of the following is an example of optical pumping?

   a) Ruby laser   b) Helium-Neon laser   c) Semiconductor laser   d) Dye laser

PART- B

ANSWER ALL THE QUESTIONS   (5X7=35)

11. a) Compare BJT with FET in their construction and working.

   (OR)

   b) Sketch and explain the V-I characteristics of tunnel diode.

12. a) Draw the circuit diagram of adder and subtractor using Op-amp.

   (OR)

   b) What are the characteristics of an ideal and practical Op amp?

13. a) Discuss the working of Multiplexer in detail.

   (OR)

   b) What is racing in JK flip flop? How it is solved in JK master slave flip flop?

14. a) Explain with circuit, the working of a 4 bit binary weighted D/A converter. Give the necessary theory.

   (OR)

   b) How logic gates are applied in Timing circuits.

15. a) With neat diagram, Explain about the construction and working of LED.

   (OR)

   b) Write a short note on photodiodes.

PART-C

ANSWER ANY THREE QUESTIONS   (3X10=30)

16. Describe the construction, working and characteristics of FET.

17. Draw the circuit diagram of an op-amp based Wein bridge oscillator.

18. What are shift registers? Discuss their working in detail.

19. Explain with circuit, the working of a 4 bit R-2R ladder D/A converter. Give the necessary theory.

20. With neat sketch, explain the construction and working of Helium laser.