

(6 pages)

Reg. No. :

Code No. : 8831

Sub. Code : KPHM 13/
PPHM 13

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2017.

First Semester

Physics

INTEGRATED ELECTRONICS

(For those who joined in July 2016 and afterwards)

Time : Three hours

Maximum : 75 marks

PART A — ($10 \times 1 = 10$ marks)

Answer ALL questions.

Choose the correct answer :

1. The gate of a JFET is _____ biased.

- (a) Reverse as well as forward
- (b) Reverse
- (c) Forward
- (d) Null

2. ICs are generally made of _____.

- (a) Silicon
- (b) Germanium
- (c) Copper
- (d) Iron

3. Which of the following logic families has the highest noise margin?

- (a) TTL
- (b) LSTTL
- (c) CMOS
- (d) HCMOS

4. A flip-flop is a _____ electronic circuit.

- (a) Astable
- (b) Bistable
- (c) Multistable
- (d) Metastable

5. A _____ filter rejects all frequencies within a specified band and passes all those outside this band.

- (a) Low-pass
- (b) High-pass
- (c) Band-pass
- (d) Band-stop

6. The common mode gain of an op-amp is _____.

- (a) very high
- (b) very low
- (c) always unity
- (d) unpredictable

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7. Voltage controlled oscillator is a type of _____.

- (a) Oscillator
- (b) Modulator
- (c) Counter
- (d) Register

8. Astable multivibrator is also called _____.

- (a) TTL triggering multivibrator
- (b) External triggering multivibrator
- (c) Free running multivibrator
- (d) None of the above

9. For an op-amp with negative feedback, the output is _____.

- (a) Increased
- (b) Feedback to the inverting input
- (c) Feedback to the non inverting input
- (d) Equal to the input

10. Shielding is used to _____.

- (a) Reduce noise current
- (b) Reduce output gain
- (c) Reduce output power
- (d) Increase noise voltage

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PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Construct the JFET and explain its operation.

Or

(b) Give short note on 'IC'.

12. (a) Explain the working of D-flip flop.

Or

(b) Briefly discuss the operation of NOR gate.

13. (a) What do you mean by High pass filter? Explain its function with neat graphical representation.

Or

(b) Write the applications of op-amp.

14. (a) What is FSK modulation? Write the necessary procedure for its modulation.

Or

(b) Briefly detail the internal structure of 555 Timer.

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[P.T.O.]



15. (a) Write the short notes on the following :

(i) Sensors

(ii) Transducer.

Or

(b) Explain how can remove the noise from a signal.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the construction, working and V-I characteristics of SCR.

Or

(b) Discuss the various steps of IC fabrication.

17. (a) Describe the function of synchronous counters.

Or

(b) Explain the working of J-K master slave flip-flop.

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18. (a) Solve the following differential equation using analog circuit. Explain its producer $\frac{dy}{dt} + 7y = 3$.

Or

(b) Give any two analog multiplexer and explain its operation.

19. (a) Construct an astable multivibrator using 555 Timer IC and give its operation.

Or

(b) Describe the function of voltage control oscillator.

20. (a) Derive an expression for box car integrator.

Or

(b) What is Fourier transform? Clarify how it decompose time function of a signal to frequency function of a signal.

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