

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022  
(Fourth Semester)

Branch – ELECTRONICS

DIGITAL & LINEAR IC's

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 x 1 = 10)

- 1 Thickness of an oxide layer  
(i) 0.2 to 2 $\mu$ m      (ii) 0.02 to 2 $\mu$ m      (iii) 0.02 to 2mm      (iv) 0.2 to 2mm
- 2 Thin film resistors have \_\_\_\_\_ temperature coefficient and thereby making them \_\_\_\_\_ system  
(i) high & unstable      (ii) high & stable  
(iii) low & unstable      (iv) low & stable
- 3 Which one of the following is a fastest IC logic family?  
(i) TTL      (ii) ECL      (iii) CMOS      (iv) RTL
- 4 In standard TTL, the totem pole stage refers to  
(i) Multi emitter input stage      (ii) Phase splitter  
(iii) Open collector output stage      (iv) Output buffer
- 5 An Integrator has \_\_\_\_\_ in the feedback loop  
(i) Inductor      (ii) Resistor      (iii) Capacitor      (iv) Diode
- 6 The unit of Slew rate is  
(i) v/ms      (ii) mv/ $\mu$ s      (iii) v/  $\mu$ s      (iv) v
- 7 The total phase shift around the closed loop in an oscillator is  
(i) 90°      (ii) 180°      (iii) 360°      (iv) 270°
- 8 Regenerative comparator is also known as  
(i) Astable Multivibrator      (ii) Monostable Multivibrator  
(iii) Linear Ramp generator      (iv) Schmitt trigger
- 9 PLL is said to be locked if  
(i)  $f_o = f_s$       (ii)  $f_o < f_s$       (iii)  $f_o > f_s$       (iv)  $f_o \neq f_s$
- 10 Which one of the following has one stable state and one quasi state?  
(i) Astable Multivibrator      (ii) Monostable Multivibrator  
(iii) Bistable Multivibrator      (iv) Schmitt trigger

Cont...

**SECTION - B (25 Marks)**Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 x 5 = 25)

- 11 a Describe the Epitaxial growth process.  
(OR)  
b Sketch and explain the cross sectional structure of Multi emitter technology.
- 12 a Compare the performance of different MOS logic families.  
(OR)  
b Summarize the operation of Schottky TTL gate.
- 13 a Explain the working of Non - Inverting amplifier.  
(OR)  
b Sketch the Log amplifier and explain its operation.
- 14 a Show how an Op – amp can be used as a zero crossing detector.  
(OR)  
b Describe the generation of triangular wave using an Op – amp.
- 15 a Illustrate the function of Linear ramp generator circuit.  
(OR)  
b Explain the principle of operation of frequency division/ multiplication circuit.

**SECTION -C (40 Marks)**Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 x 8 = 40)

- 16 a Discuss the steps involved in Silicon Wafer Preparation.  
(OR)  
b Explain the different methods for obtaining an integrated capacitor.
- 17 a Elucidate the Structure of different Integrated Injection logic circuit.  
(OR)  
b Examine the working of CMOS logic circuit.
- 18 a Discuss the parameters of an Op – amp.  
(OR)  
b Analyse the function of V to I converter and I to V converter.
- 19 a Discuss how an Op - amp can be used as a comparator.  
(OR)  
b Examine the operation of Wien bridge oscillator.
- 20 a Elucidate the working of timer in Astable mode.  
(OR)  
b Draw the block schematic of PLL and explain each block.

Z-Z-Z

END