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KIITEE M. TECH.(2 Years) Civil Exam Paper

Kalinga Institute of Industrial Technology Entrance Examination

CIVIL ENGINEERING

1. Poisson's ratio of steel is taken as

   (A) 0.17 (B) 0.25 (C) 0.3 (D) 0.5

2. A point in a body consists of linearly elastic material, subjected to stress 100N/mm^2 & 60N/mm^2 along major and minor axis. The maximum shear stress is equal to

   (A) 100N/mm^2 (B) 80N/mm^2

   (C) 60N/mm^2 (D) 20N/mm^2

3. A thin cylinders 200mm diameter, closed at ends subjected to internal pressure of 10N/mm^2.What is the maximum shear stress that occurs in wall of the cylinder if thickness of wall is 5mm .

   (A) 200N/mm^2 (B)150 N/mm^2

   (C) 50N/mm^2 (D) 25N/mm^2

4. A simple supported beam of span *l* carries a gradually varying load, zero at supports and w/m at mid span the maximum BM at mid span is

   (A) $\frac{wl^2}{8}$ (B) $\frac{wl^2}{10}$

   (C) $\frac{wl^2}{12}$ (D) $\frac{wl^2}{24}$

5. A cantilever beam of constant EI & Span *l*, subject to an u.d .l of w/m for full span, the vertical deflection at free end is

   (A) $5\frac{wl^4}{284EI}$ (B) $\frac{wl^4}{48EI}$

   (C) $\frac{wl^4}{8EI}$ (D) $\frac{wa^4}{8EI}\frac{wa^4}{6EI}$

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SPACE FOR ROUGH WORK

CSE / CS & IS

1. A full subtractor circuit requires _____.

   (A) two inputs and two outputs

   (B) two inputs and three outputs

   (C) three inputs and one output

   (D) three inputs and two outputs

2. Give the decimal value of binary 10010.

   (A) 6 (B) 9 (C) 18 (D) 20

3. A type of digital circuit technology that uses bipolar junction transistors is _____.

   (A) TTL (B) CMOS (C) LSI (D) NMOS

4. The NAND or NOR gates are referred to as "universal" gates because either

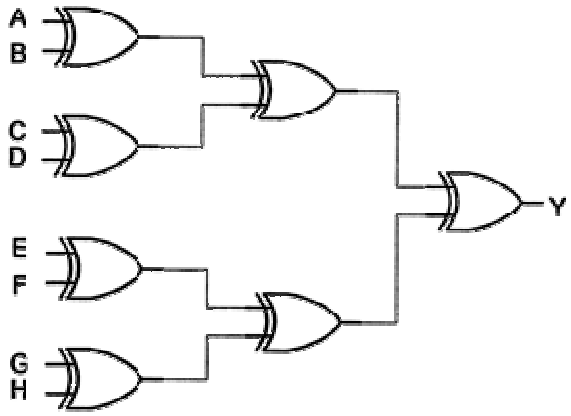
   (A) can be found in almost all digital circuits

   (B) can be used to build all the other types of gates

   (C) are used in all countries of the world

   (D) were the first gates to be integrated

5. The 8-input XOR circuit shown has an output of Y = 1. Which input combination below (ordered A – H) is correct?



   (A) 10111100 (B) 10111000

   (C) 11100111 (D) 11111000

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ELECTRICAL ENGINEERING

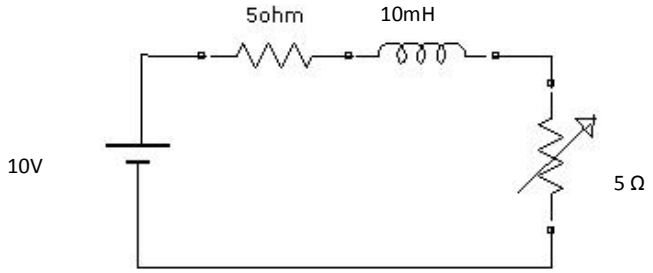
1. Voltage across the resistance in R-L-C circuit at resonant frequency is

   (A) Much higher than applied voltage (B) Much lower than applied voltage

   (C) Function of L/C ratio (D) Equal to applied voltage

2. A parallel plate capacitor has a capacitance of 2μF. If one of the sides of the plate is doubled and the distance between them is halved. The capacitance of the capacitor is

   (A) 1μF (B) 0.5μF (C) 2μF (D) 8μF



3. In the above circuit, the current at 1ms after switching on is

   (A) 1.0 A (B) 0.63A (C) 0.37 A (D) 0.5A

4. In the above circuit the voltage across the inductor at t=0 and t=∞ are respectively

   (A) 0V, 10V (B) 10V, 0V (C) 0V, 5V (D) 5V, 0V

5. The combined inductance of two coils connected in series, are 1.2H or 0.2H depending on the relative directions of the current in the coils. The mutual inductance of the coils is

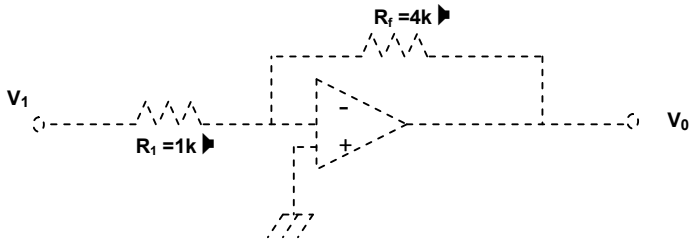
   (A) 0.25H (B) 1.4H

   (C) 1.0H (D None of the above

SPACE FOR ROUGH WORK

ELECTRONICS & TELECOMMUNICATION ENGINEERING

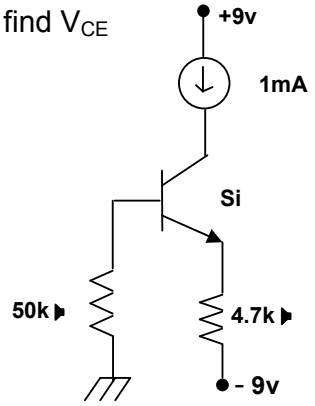
1.



Given the bandwidth of the circuit above is 100MHz. For what value of R_f, the bandwidth will become 25MHz.

(A) 2kΩ (B) 1kΩ (C) 16kΩ (D)None of these

2. For the transistor shown below, β_{DC} = 50, find V_{CE}



(A) 3.13 V

(B) 0.2V

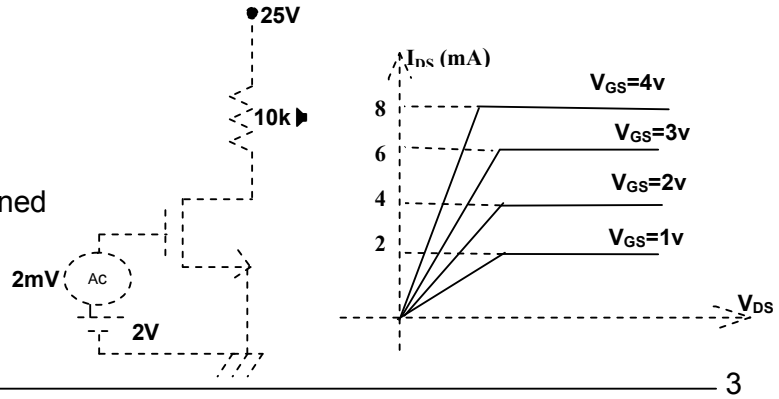
(C) 18V

(D) None of these

3. In a forward biased Ge diode, a current of 26mA is flowing, If the voltage equivalent of temperature is 0.026 v and carrier life time is 20 μ sec, what will be the value of diffusion capacitance

(A) 10 μ F (B) 15 μ F (C) 20 μ F (D) 25 μ F

4. What will be the voltage gain of the following circuit



(A) -20

(B) -10

(C) Cannot be determined

(D) None of these

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MECHANICAL ENGINEERING

1. According to Indian standard specifications, a plain carbon steel designated by 40C8 means that

   (A) carbon content is 0.04 percent and manganese is 0.8 percent.

   (B) carbon content is 0.4 percent and manganese is 0.8 percent.

   (C) carbon content is 0.35 to 0.45 percent and manganese is 0.6 to 0.9 percent.

   (D) carbon content is 0.6 to 0.8 percent and manganese is 0.8 to 1.2 percent.

2. $\frac{18}{8}$ Steel contains

   (A) 18 percent nickel and 8 percent chromium.

   (B) 18 percent chromium and 8 percent nickel.

   (C) 18 percent nickel and 8 percent vanadium.

   (D) 18 percent vanadium and 8 percent nickel.

3. The temperature at which the new grains are formed in the metal is called

   (A) lower critical temperature

   (B) upper critical temperature

   (C) eutectic temperature

   (D) recrystallisation temperature

4. A basic shaft is one whose

   (A) lower deviation is zero

   (B) upper deviation is zero

   (C) lower and upper deviations are zero

   (D) none of these

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