SGGS Institute of Engineering and Technology, Vishnupuri, Nanded

Mid Term Examination (Semester-II) AY 2021-22

S.Y. B. Tech.	**Electronics and Telecommunication Engineering**
Data Structures	**ESC 284**

Date: 16-03-2022 **Time: 11:00-12:00** **Max. Marks : 30**

Note: All questions are compulsory.

Q.1	State true or false for the following. **5 Marks**		CO	BT
	F [1] It is not possible to achieve inheritance of structures in c++?		CO1	BT1
	F [2] There is no limit on the size of the numbers that can be stored in the int data type			
	T [3] Names of functions in two different files linked together must be unique.			
	T [4] Functions cannot return more than one value at a time.			
	T [5] Functions can be called either by value or reference.			
Q.2	Choose the correct alternative for the following. **5 Marks**		CO3	BT2
	[1] Which of the following statement is correct?			
	A. Class is an instance of object. B. Object is an instance of a class.			
	C. Class is an instance of data type. D. Object is an instance of data type.			
	[2] Which of the following access specifier is used as a default in a class definition?			
	A. protected B. public C. private D. friend			
	[3] Which of the following is used to make an abstract class?			
	A. Declaring it abstract using static keyword.			
	B. Declaring it abstract using virtual keyword.			
	C. Making at least one member function as virtual function.			
	D. Making at least one member function as pure virtual function.			
	[4] Which of the following statements is correct in C++?			
	A. Classes cannot have data as protected members.			
	B. Structures can have functions as members.			
	C. Class members are public by default.			
	D. Structure members are private by default.			
	[5] Which of the following concepts means wrapping up of data and functions together?			
	A. Abstraction B. Encapsulation C. Inheritance D. Polymorphism			
Q.3	What are linked lists? Explain. **4 Marks**		CO1	BT4
Q.4	Write a short note on basic axioms with respect to time complexity of programs. **6 Marks**		CO1	BT2

Q.5 **4 Marks**

Using detailed model of computer determine the total running time for the following function.

```
int sum (int x, int n)
{
int sum=0;
for(int i=0; i < = n; i++)
{
int prod=1;
for( (int j =0; j< i ; j++)
prod * = x;
sum + = prod;
}
Return sum;
}
```

Q. 6 Write the output for the following programs.

[A] 2 Marks

```
#include<iostream>
using namespace std;
int x = 1;
int main()
{
   int x = 2;
   {
      int x = 3;
      cout << ::x <<
endl;
   }
   return 0;
}
```

[B] 2 Marks

```
#include<iostream>
using namespace std;

int main(int x)
{
   int i = 5;
   if (--i)
   {
      cout << i;
      main(10);
   }
   return 0;
}
```

[C] 2 Marks

```
#include<iostream>
using namespace std;

int main()
{
   int *ptr = new int(5);
   cout << *ptr;
   return 0;
}
```

CO	CO1	CO2	CO2	CO2
BT	BT3	BT4	BT4	BT4

End of Question Paper

	S. G. G. S. Institute of Engineering and Technology, Vishnupuri, Nanded. Mid Term Examination Sem-II, AY 2021-22 **Class : SY Electronics and Telecommunication Engineering**	
Date: 22/3/2022 Time: 11am to 12pm	**Subject: Microcontroller and Applications** **Code: EC258/PCC-EC206**	Max. Marks : 30

Use of non-programmable calculator is permitted.--

Assume suitable data if necessary

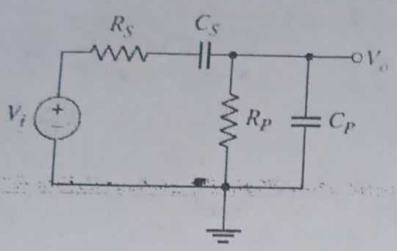
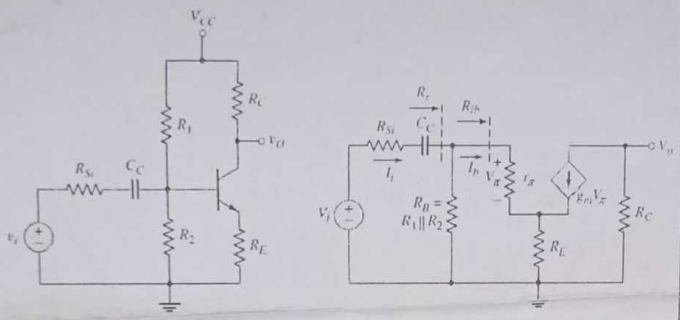
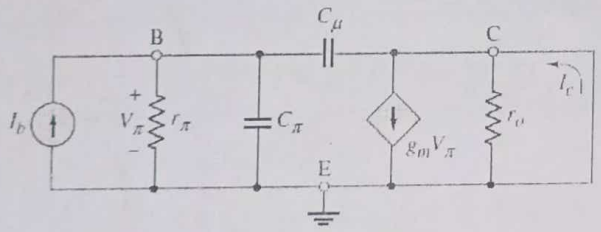
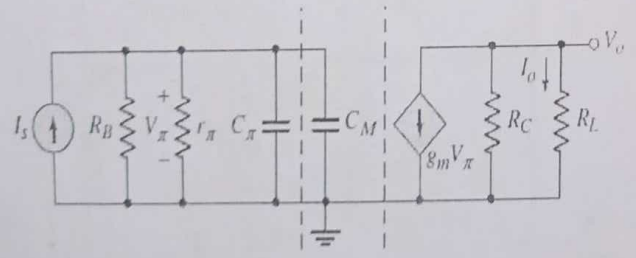
Sr. No	Questions	Marks
Q.1	Describe architecture of 8051 microcontroller using block diagram	08
Q.2	Explain immediate and indirect addressing modes in 8051 microcontroller with example.	04
Q.3	Explain CJNE and PUSH instructions.	04
Q.4	Contents of register A after execution of the following code MOV A, #37H ANL A, #0AH is ---------- (a) 02 (b) 03 (c) 10 (d) None of these	02
Q.5	Contents of register A after execution of the code CLR A, ORL A, #99H, CPL A will be ------- (a) 55H (b) 03H (c) 66H (d) None of these	02
Q.6	What is the clock source for the timers? Explain each bit TMOD register.	4
Q.7	Write a program which will create a square wave of 50% duty cycle on port 2.3 bit. Use timer 1 in mode 1 to generate a time delay of 5 ms . Assume the crystal frequency of 12MHz.	6

Carry jump. Not equal to

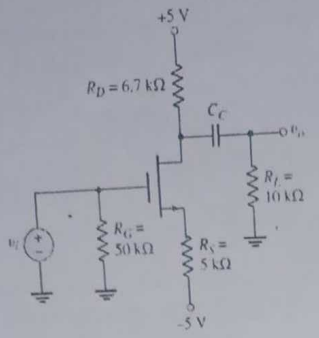
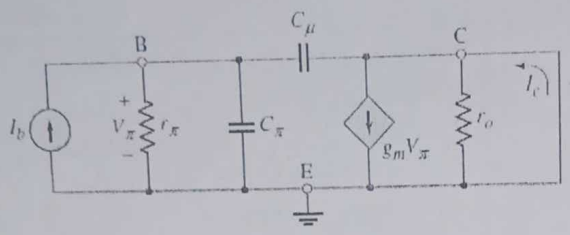
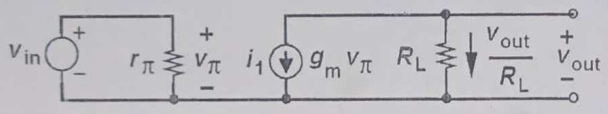
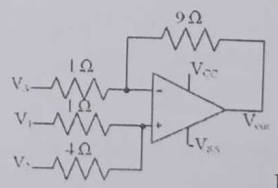
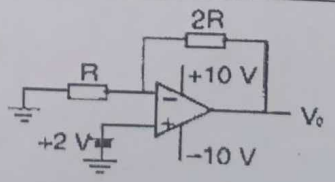
10

	SGGS Institute of Engineering and Technology, Vishnupuri, Nanded	
	Mid Term Examination (Semester-II) 2021-22	
	S.Y. B. Tech.	**Electronics and Telecommunication Engineering**
Date: 17 March 2022	**Analog Circuit Design**	**PCC-EC205 / EC255**
	Time: 11:00 to 12:00	**Max. Marks: 30**

Note:(i) Attempt all questions. (ii) Assume suitable data if necessary (iii) Use of non-programmable calculators is permitted.

Q. N.		Question		Marks	CO	BT
Q.1	a	 Figure 1.a	For the circuits in Figure 1.a the parameters are: R_S = 1 KΩ, R_P = 10 KΩ, C_S = 10 μF, and C_P = 30 pF. Find lower and higher cut off frequencies.	1	1	1
	b	 Figure 1.b	For the circuit shown in Figure 1.b, the parameters are: R_1 = 51.2 KΩ, R_2 = 9.6 KΩ, R_C = 2 KΩ, R_E = 0.4 KΩ, R_{Si} = 0.1 KΩ, C_C = 0.1 μF, and V_{CC} = 10 V. The transistor parameters are: $V_{BE(on)}$ = 0.7 V, β = 100, and V_A = ∞. Find lower cutoff frequency and voltage gain.	2	1	2
	c	 Figure 1.c	Consider a bipolar transistor with parameters r_π = 2.6 KΩ, C_π = 0.5 pF, and C_μ = 0.025 pF. Determine the 3 dB frequency of the short-circuit current gain of a bipolar transistor. (Figure 1.c)	2	2	3
Q.2	a	 Figure 2.a	Determine the 3 dB frequency of the current gain for the circuit shown in Figure 2.a, both with and without the effect of C_M. The circuit parameters are: R_C = R_L = 4 KΩ, r_π = 2.6 KΩ, R_B = 200 KΩ, Cπ = 0.8 pF, C_μ = 0.05 pF, and g_m = 38.5 mA/V.	2	6	4

(PT O)

	b	 Figure 2.b	What is the f_H? (Figure 2.b)	1		
Q.3	a	 Figure 3.a The parameters of an n-channel MOSFET are K_n = 1.2 mA/V^2, V_{TN} = 0.5 V, λ = 0, C_{gd} = 8 fF, and C_{gs} = 60 fF.	The unity-gain frequency is found to be f_T = 3 GHz. Determine the transconductance and the bias current of the MOSFET. Determine the Miller capacitance and cutoff frequency of an FET circuit, when a load resistance of 10 K is connected at the output. (Figure 3.a)	3	3	4
	b	A cell phone receives a signal level of 20 μV, but it must deliver a swing of 50 mV to the speaker that reproduces the voice. Calculate the required voltage gain in decibels.		1	1	1
Q.4	a	 Figure 4.a	Determine the voltage gain of this amplifier? (Figure 4.a)	2	2	3
	b	A transistor is biased at a collector current of 1 mA. Determine the small-signal model (transconductance and r_π) if β = 100 and Early voltage is 15 V.		1	1	1
~~Q.5~~	~~a~~	~~Distinguish between practical and ideal op amp.~~		3	3	2,4
	~~b~~	~~Differentiate between op amp differentiator and integrator.~~		2	3	
Q.6	a	For the given circuit,(Figure 6.a) show that $V_{out} = 8V_1 + 2V_2 - 9V_3$	 Figure 6.a	3	3	4,5
	b	For the given circuit (Figure 6.b) find V_o	 Figure 6.b	2	3	5
Q.7		Neatly sketch the non inverting differential amplifier circuit using Opamp and derive expression for V_{out}		5	3	6

**********All the very best**********

For information only: Course Outcomes (CO): (1) Constructing BJT and MOSFET amplifiers and measuring gain and frequency response. (2) Design and analysis of multistage amplifiers. (3) Analyzing feedback in amplifier circuits. (4) Build and compare power amplifiers. (5) Design and analysis of oscillators. (6) Tackling noise in amplifiers.

Bloom's Taxonomy (BT) : BT1- Remember, BT2- Understand, BT3- Apply, BT4- Analyze, BT5- Evaluate, BT6- Create

SGGS Institute of Engineering and Technology, Vishnupuri, Nanded		
Class : Second Year B.Tech (ALL)	Academic Year: 2019-20	Semester: II
Examination: Mid Term Exam	Subject: Human Values and Professional Ethics	Course Code: HMC278/HS222
Date: 17/02/2020	Time: 11:00 to 12:00	Max. Marks :30

Notes:

1. Solve Any Three questions.
2. Figures to right indicate full marks.

Question No.	Question	Marks
Q. 1	Define Human Being. Explain the Difference Between Body & I on the Basis of Different Characteristics.	10
Q. 2	What is Harmony? What are the 4 Levels of Human Existence?	10
Q. 3	Elucidate Abraham Maslow's Hierarchy of Needs in Detail.	10
Q. 4	Briefly Explain Schwartz Theory of Basic Human Values.	10

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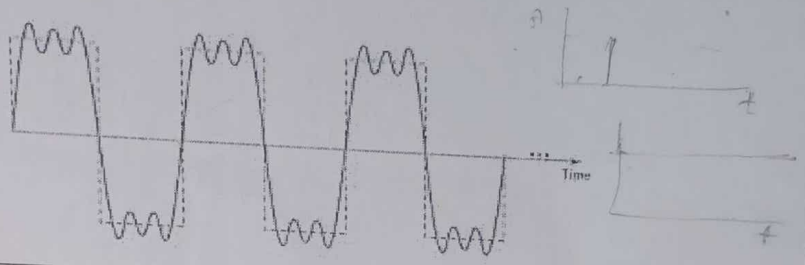
SGGS Institute of Engineering and Technology, Vishnupuri, Nanded	
Mid Term Examination (Semester-II) 2021-22	
S.Y. B. Tech.	Electronics & Telecommunication Engineering
Communication Engineering Principles	EC257/PCC-EC204
Date: 21/03/2022 Time:11am	Max. Marks : 30

Note: i. Attempt all questions
ii. Assume suitable data if necessary
iii. Use of non-programmable calculator is permitted.
iv. This paper contains one page.

Q.N.		Question	Marks	CO	BT
Q.1		A given composite signal consists of dc 10V, 15Hz of 8V, 8Hz of 6V, 4Hz of 4V and 2Hz of 2V. Draw these signals in time and frequency domain. 	[5]	EC204.1	BT4
Q.2		A non- periodic finite signal $x(t) = \begin{cases} t & 0 \le t \le 1 \\ t-1 & 1 \le t \le 2 \end{cases}$ Find the energy of the signal.	[5]	EC204.4	BT5
Q.3		Draw the block diagram and describe each of the blocks of communication system.	[5]	EC2041&2	BT1
Q.4		Draw the block diagram of transmitting antenna and its equivalent circuit diagram, also explain how maximum power is transmitted from this transmitting antenna. **Or** Explain the need of modulation in communication system.	[5]	EC2041&3	BT3
Q.5		The modulated signal $12\cos(2\pi 10^2 t)$ is used to modulate a carrier signal $30\cos(2\pi 10^8 t)$. Find the modulation index, percentage modulation, frequencies of side band component and their amplitudes. What is the bandwidth of the modulated signal?	[5]	EC204.5	BT4
Q.6		Draw the block diagram of square law modulator and derive the expression of square law modulated signal.	[5]	EC2041&4	BT2

Course Outcomes (CO)
EC204.1-Draw
EC204.2- Describe
EC204.3-Explain
EC204.4-Derive
EC204.5- Calculate

Bloom's Taxonomy (BT)
BT1- Remember, BT2- Understand, BT3- Apply, BT4- Analyze, BT5- Evaluate, BT6- Create